School of Medicine
Academic Year 2011-2012
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Medical education is a complex mixture of graduate and professional education. Students are expected to master basic principles and theories as well as to obtain sufficient knowledge and experience to practice medicine. The education must convey the continually expanding body of medical science and prepare students for a lifetime of competent and thoughtful interactions with patients at a time of rapid change in technology and societal needs.

To meet these educational goals, schools of medicine must be at once conservative and creative. They may often seem overly conservative, but this can be attributed to the physician's painfully acquired distrust of panaceas. There is a generally accepted need to preserve certain fundamental principles—the axiom, for example, that the rational practice of medicine rests on a firm understanding of the basic medical sciences. Yet the great advances in medicine, the need to reasonably limit the number of years of formal education, the increasing number and complexity of special fields, and the diversity of interests and talents among students all demand continual examination of our educational aims and process.

Old traditions and new methods are characteristics of the Johns Hopkins University School of Medicine, which to a large degree was founded in response to the highly variable standards of medical education at the time. Hopkins was the first medical school in the United States to require a college degree for admission, quite a radical idea when the first class entered over one hundred years ago. A college degree is still required, and current admission policies encourage a broad undergraduate education and permit successful applicants to select from a number of options prior to matriculation. The relative flexibility of the original curriculum foreshadowed the even greater number of choices available today. The wide variety of elective courses in the current curriculum allows students to extend their knowledge in special fields of interest and to schedule elective and required clinical courses in a flexible manner.

In addition to the four-year M.D. program, the School of Medicine provides a number of graduate programs in biomedical sciences and related fields that will lead to a Ph.D. or Master's degree. Also, selected students are given the opportunity to work simultaneously towards both the M.D. and the Ph.D. degrees.

The diversity of these educational options is detailed in this catalogue.
THE UNIVERSITY
Johns Hopkins was a Quaker merchant of Baltimore who bequeathed $7,000,000 for the establishment of a university and hospital. The University was incorporated in 1867 under the terms of his bequest, and instruction began in 1876, three years after his death.

Daniel Coit Gilman, a graduate of Yale in the class of 1852 and president of the University of California, was elected first president of the Johns Hopkins University. It was a most propitious choice. In his inaugural address in 1876, Gilman elaborated his philosophy of education, in terms both prophetic and practical, which was to become the guiding principle of the University. Students should be free to select under guidance their courses of study; professors should be free of routine; investigators should be “free, competent, and willing” research and teaching should supplement one another.

“The object of the University,” said Gilman, “is to develop character—to make men. It misses its aim if it produces learned pedants, or simple artisans, or cunning sophists, or pretentious practitioners. Its purport is not so much to impart knowledge to the pupils, as to whet the appetite, exhibit methods, develop powers, strengthen judgment, and invigorate the intellectual and moral forces. It should prepare for the service of society a class of students who will be wise, thoughtful, progressive guides in whatever department of work or thought they may be engaged.”

During President Gilman’s twenty-five years of enlightened leadership, his high hopes came to full fruition. It was in this environment of the first true university in America that the School of Medicine was evolved.

THE SCHOOL OF MEDICINE
The School of Medicine was opened in 1893, seventeen years after the University’s founding. Part of this delay was occasioned by the desire to have a fully equipped hospital before students were accepted. The Johns Hopkins Hospital was completed in 1889, and from the outset its destiny has been inextricably woven with that of the School of Medicine. This policy was established in a letter from Mr. Hopkins to the first trustees of the Hospital: “In all your arrangements in relation to this hospital,” he wrote, “you will bear constantly in mind that it is my wish and purpose that the institution shall ultimately form a part of the Medical School of that university for which I have made ample provision by my will”. Unfortunately, what was ample in 1867 was no longer so twenty years later. The final establishment of the School was made possible by the generosity of a number of Baltimore women, of whom Miss Mary E. Garrett was the principal donor.

President Gilman took steps to lay the educational foundation of the School of Medicine soon after his investiture. He was duly concerned with the lack of fundamental knowledge of biology, chemistry, physics, and modern languages in students undertaking the study of medicine. He therefore organized a “preliminary medical course” in the Faculty of Philosophy, setting a standard which ultimately became a prerequisite for admission to many medical schools in the United States. His action influenced Miss Garrett to make her grant to the School contingent on its admitting only students whose preparation had been the equivalent of the Hopkins preliminary medical course. This was a great departure from the then accepted requirements for admission (see Appendix).

Although it occasioned disappointment at the time, the delay in opening the School of Medicine was a blessing in disguise, for it allowed time to assemble an excellent faculty. The first appointments, made in 1884, were those of Professors H. Newell Martin, Ira Remsen, John Shaw Billings, and William H. Welch. Assisted by William T. Councilman, Welch began to organize courses in pathology and bacteriology for practicing physicians. He also assembled a group of young men, among them Mall, Flexner, Nuttall, and Abbott, with whom he carried out fundamental research which reflected great credit on the Hospital and University. Thus, the principles of postgraduate medical education and research were established even before the School was officially in existence.

In 1888 William Osler was called from the University of Pennsylvania to be Physician-In-Chief to the Hospital and Professor of the Theory and Practice of Medicine in the University. The following year William S. Halsted and Howard A. Kelly were summoned to the chairs of Surgery and Gynecology and Obstetrics, respectively. Also called from many parts of
the country to serve on the faculty when the school opened in 1893 were Henry M. Hurd, Superintendent of the Johns Hopkins Hospital and subsequently Professor of Psychiatry, Franklin P. Mall, Professor of Anatomy, John J. Abel, Professor of Pharmacology, and William H. Howell, Professor of Physiology. William H. Welch served as Professor of Pathology and Dean of the Medical Faculty.

The opening of the Johns Hopkins University School of Medicine marked a new departure in medical education in America because it was the first time that all professors in the preclinical branches served on a full-time or university basis. The chairs of Anatomy, Physiology, Pharmacology, and Pathology in the School were from the outset true university chairs, filled by men who gave their “entire time and strength” to the University, to use Gilman’s words. Available to their respective departments were funds, all too meager, making it possible for the professors and their assistants to carry out research in fields of their own choice. Thereafter, medical schools all over the country would follow the lead, and medical education, instead of being largely a proprietary business conducted for profit, would become a major concern of university endeavor.

The clinical as well as the preclinical departments of the School continued to prosper in the succeeding years. Osler contributed to the development in America of exact diagnosis, with the assistance of the laboratory, and of detailed description of disease. He also laid the foundations for intern and residency training in American hospitals. Halsted and his colleagues developed in the laboratories and clinics a new approach to surgery based on meticulous operative technique. He also, with Welch, championed the system of full-time clinical departments. The General Education Board’s establishment, in 1913, of The William H. Welch Endowment for Clinical Education and Research made it possible for the responsible instructors in Medicine, Surgery, Pediatrics, and Obstetrics to devote their entire time to their university duties. The endowments of the Henry Phipps Psychiatric Clinic and the William Holland Wilmer Ophthalmological Institute accomplished the same ends for the Departments of Psychiatry and Ophthalmology. Each of the clinical departments of the School is now staffed by men and women who devote their entire time to teaching, hospital practice, and research, as well as by practicing physicians who perform these duties on a part-time basis.

The organization of the preclinical and clinical departments as full-time university faculties was an innovation that has been accepted by many American medical schools. Of comparable significance, perhaps, was the development of the graduate school concept in medical education. Students in their clinical years at the Johns Hopkins School of Medicine became an integral part of the staff of the Hospital, learning largely by actual participation in patient care rather than by attendance at lectures. They were also encouraged to participate in research activities in the laboratories and clinics under the supervision of members of the faculty. Graduates of the School introduced the Hopkins practices elsewhere when called to fill posts at other institutions.
The mission of the Johns Hopkins School of Medicine is to educate medical students, graduate students, and postdoctoral fellows in accordance with the highest professional standards; to prepare clinicians to practice patient-centered medicine of the highest standard; and to identify and answer fundamental questions in the mechanisms, prevention and treatment of disease, in health care delivery and in the basic sciences.

The aim of the pre-doctoral curriculum of the School of Medicine is to produce leaders in Medicine who will take the foundation of a broad education in Medicine to improve health through patient care, research, and education.

As a measure of their competence, every graduate of the Johns Hopkins University School of Medicine will:

**The Science and Practice of Medicine**
- Apply scientific principles and a multidisciplinary body of scientific knowledge to the diagnosis, management, and prevention of clinical problems.
- Understand the variation in the expression of health and disease through critical evaluation of biomedical research.

**Clinical Competence**
- Obtain a sufficient level of medical knowledge to understand the basic facts, concepts, and principles essential to competent medical practice.
- Exhibit the highest level of effective and efficient performance in data gathering, organization, interpretation and clinical decision making in the prevention, diagnosis, and management of disease.

**The Social Context of Medicine**
- Understand and respond to factors that influence the social, behavioral, and economical factors in health, disease and medical care.

**Communication**
- Demonstrate effective and compassionate interpersonal communication skill toward patients and families necessary to form and sustain effective medical care.
- Present information and ideas in an organized and clear manner to educate or inform patients, families, colleagues and community.

**Professionalism**
- Display the personal attributes of compassion, honesty and integrity in relationship with patients, families, and the medical community.
- Adhere to the highest ethical standards of judgment and conduct as it applies to the health care milieu.
- Demonstrate a critical self-appraisal in his/her knowledge and practice of medicine, as well as received and give constructive appraisal to/from patients, families, colleagues and other healthcare professionals.

**Lifelong Learning**
- Understand the limits of personal knowledge and experience and will demonstrate the intellectual curiosity to actively pursue the acquisition of new knowledge and skills necessary to refine and improve his/her medical practice or to contribute to the scientific body of medical knowledge.
The Johns Hopkins Medical Institutions

The School of Medicine, the Bloomberg School of Public Health, the School of Nursing, the Welch Library of the University, and The Johns Hopkins Hospital are often referred to as the Johns Hopkins Medical Institutions.

THE SCHOOL OF MEDICINE
The school is located in the eastern part of Baltimore, about twenty minutes by car from the Homewood campus. The preclinical curriculum for medical students is taught in the Anne and Michael Armstrong Building, a four story, 100,000 square foot structure which opened in the Fall of 2009. The Armstrong building was designed to accommodate, nurture, and encourage learning opportunities. The building’s advanced anatomy lab, digital classrooms, and laboratories, lecture halls and study areas are designed to better prepare physicians for fully understanding the relevance of science to patient care.

The preclinical departments of Biological Chemistry, Biophysics and Biophysical Chemistry, Cell Biology, Functional Anatomy and Evolution, Molecular Biology and Genetics, Neuroscience, Pharmacology and Molecular Sciences, and Physiology are primarily situated in the Hunterian III, Wood Basic Science, Preclinical Teaching Building, Biophysics, Physiology, and the Broadway Research buildings. The Wood Basic Science Building and the Preclinical Teaching Building contain teaching laboratories, conference rooms, and lecture halls for graduate student teaching, as well as research laboratories. The Department of Pathology occupies a building across Monument Street from the other preclinical departments and adjacent to buildings accommodating the clinical departments. The Richard Starr Ross Research Building houses the research laboratories of the clinical departments.

The Traylor Research Building augments the basic research facilities of the clinical departments and houses the Department of Biomedical Engineering. The Turner Auditorium Building contains a 750 seat auditorium, a 150 seat auditorium, and conference and seminar rooms. The Broadway Research Building is home to the Department of Molecular and Comparative Pathobiology, the McKusick-Nathans Institute of Genetic Medicine, the Institute for Basic Biomedical Sciences High Throughput Biology, and the Institute of Cell Engineering. Johns Hopkins Medicine and School of Medicine administrative offices are also located in the building.

The offices, research laboratories, and facilities for patient care of the clinical departments are located in buildings operated by the Johns Hopkins Hospital but owned jointly by the Hospital and University.

Instruction in the School of Medicine is under the supervision of the Advisory Board of the Medical Faculty, composed of the President of the University, the Dean and the departmental directors.

THE BLOOMBERG SCHOOL OF PUBLIC HEALTH
The Bloomberg School was founded in 1916 by William H. Welch and John D. Rockefeller and was the first institution of its kind worldwide. Today, it is the largest school of public health and provides opportunities for graduate education to individuals from a wide variety of backgrounds and experience.

Ten departments offer nine graduate degrees, including a school-wide Master of Public Health. Programs of study embrace research and service in diverse fields: professional practice, basic and applied research; social policy; planning, management and evaluation of the delivery of health services; and the biological and environmental health sciences. Graduate training programs in clinical investigation, postdoctoral training programs, certificate programs, and other continuing education opportunities are also offered.

The School is situated on Wolfe and Monument Streets, directly opposite the Welch Medical Library.

THE SCHOOL OF NURSING
The School of Nursing was established in 1983 as the eighth academic division of the University. Its mission is to improve the health of individuals and diverse communities locally and globally through leadership and excellence in nursing education, research, practice, and service.

The School of Nursing offers baccalaureate, master’s and doctoral degrees in nursing.
The baccalaureate program is offered in two accelerated formats; a 17 month program and 13 month program. These options are for students with previous degrees in a field other than nursing. The School offers a Peace Corps Fellows option for individuals who have successfully completed Peace Corps Service and desire to participate in community nursing practice.

The Master’s program includes nurse practitioner, clinical specialist, nursing management and community health options. In addition, the School offers a combined MSN/MBA in conjunction with the Carey School of Business, and a MSN/MPH with the Bloomberg School of Public Health. Certificate programs are available in the Business of Nursing and in post-master’s nurse practitioner and clinical specialist options.

The School of Nursing offers an individualized Ph.D. program in selected areas of research congruent with the student’s area of interest and the expertise of the research faculty. The School began offering a Doctor of Nursing Practice program in January 2008. This practice-focused doctoral program is designed to prepare expert nurse clinicians, administrators, and executive leaders to improve health and health care outcomes. Selected postdoctoral programs prepare nurse scientists with advanced skills and knowledge in a selected area of practice and with expertise in the design and conduct of related research.

The School of Nursing is located at 525 N. Wolfe Street, directly across the street from the Johns Hopkins Hospital. This ten year old structure, named in honor of Anne M. Pinkard, is the first building dedicated solely to nursing education at Johns Hopkins.

THE WELCH MEDICAL LIBRARY

The William H. Welch Medical Library provides the Johns Hopkins Medical Institutions (School of Medicine, the Johns Hopkins Bloomberg School of Public Health, Johns Hopkins School of Nursing, Johns Hopkins Hospital, Kennedy-Krieger Institute) and its affiliates with information services that advance research, teaching, and patient care. Since 2001, Welch has been organizing library services around the all-digital collection of the future, creating state-of-the-art interfaces to these collections and redefining the role of librarians supporting the digital collection. WelchWeb (http://www.welch.jhu.edu) guides users to a rich array of electronic information resources and library services. The Welch Library offers a wide range of services to the Medical Institutions including liaison consultation, classes and online tutorials, document delivery, and an editing referral service. All Welch services are available online.

Faculty, staff and students can search a range of databases and full-text electronic journals, as well as take advantage of the library’s information services and classes. The WelchWeb (http://www.welch.jhu.edu) provides users with Internet access to databases in many disciplines, a collection of online full-text journals, and online reference services called “Ask a Librarian”. Welch provides access to over 25,000 online journals and 7,500 medical e-books. Materials not in the Welch collection can be requested online through the WelDoc service (http://weldoc.welch.jhmi.edu/weldoc/). Print materials in the Welch collection also can be requested online. Email delivery is used whenever possible. If the request is too large for scanning then the physical item- the book- is delivered to the user’s office. With an emphasis on providing services at the point of use, a number of Welch spaces have been created for Hopkins communities in Hampton House, the School of Nursing and the Hopkins Population Center. Customized information portals continue to be created for departments and user groups some of which include the Basic Sciences (http://infosuite.welch.jhmi.edu/BS/), the Department of Physical Medicine and Rehabilitation (http://infosuite.welch.jhmi.edu/PMR/), the Welch Center for Prevention, Epidemiology, and Clinical Research (http://infosuite.welch.jhmi.edu/WelchCenter/), and the Hopkins Population Center (http://infosuite.welch.jhmi.edu/PopCenter/). Authors at the Medical Institutions can find open access publishing resources from WelchWeb or directly from a website sponsored by University’s Scholarly Communications Group as well as step-by-step instructions for complying with the NIH Public Access Policy (http://guides.library.jhu.edu/scholcomm).

The library’s education program is designed around tools and technologies for biomedical communication. Online tutorials on information resources and tools are made available on Welch Web as they are developed. Classes are offered to advance skills in searching online databases, managing information, finding funding for research, and the use of various tools to promote scholarship. Details may be found at http://www.welch.jhu.edu/welchone/classes-and-lectures.

A special library of historical materials, administered by the Department of History of Medicine, Science, and Technology, is located on the third floor of the Welch Building.
Johns Hopkins Medicine

The Johns Hopkins University and the Johns Hopkins Health System Corporation (JHHSC) have entered into a collaboration called Johns Hopkins Medicine. Johns Hopkins Medicine provides a vehicle for internal operational coordination among JHHSC and its affiliates and the Johns Hopkins University School of Medicine (JHUSOM). Johns Hopkins Medicine also provides a united voice for external activities. JHU and JHHSC, as distinct yet independent corporations, are now able to respond in an integrated fashion to opportunities and pressures affecting the medical enterprise. The Dean of the JHUSOM serves as the Chief Executive Officer of Johns Hopkins Medicine.

THE JOHNS HOPKINS HEALTH SYSTEM

One of the first of its kind, the Johns Hopkins Health System is a nonprofit, academically based integrated health care system offering a comprehensive array of services, including inpatient care, ambulatory surgery, community hospital care, home health care, and long-term care for the elderly as well as sophisticated treatment centers in virtually every area of medical specialization.

Formed in July 1986, the Johns Hopkins Health System includes the following chief components: The Johns Hopkins Hospital; Johns Hopkins Bayview Medical Center; Howard County General Hospital; Suburban Hospital; Sibley Memorial Hospital; All Children’s Hospital in St. Petersburg, Fla., and Johns Hopkins Community Physicians which operates 29 primary care centers. Johns Hopkins Medicine specialty physicians practice at two major health and surgery centers in Baltimore County, one in Anne Arundel County, and one in Montgomery County. These facilities offer care in a variety of medical and surgical sub-specialties. Once within the Johns Hopkins Health System, patients have access to the resources, services, and facilities of The Johns Hopkins Hospital.

The Johns Hopkins Hospital and East Baltimore Medical Campus Expansion

Under the provisions of Johns Hopkins’ bequest, The Johns Hopkins Hospital already was destined at its opening in 1889 to be affiliated with the still-to-be-created School of Medicine of The Johns Hopkins University. After the school’s founding in 1893, it became the first to be intimately allied with both a university and a hospital that was especially designed as an institutional partner. Today, the hospital is a collection of more than a dozen “mini-hospitals” and centers, 51 buildings, more than 200 separate clinical services and 1,051 licensed beds sprawling over half of the 80 acres housing the Johns Hopkins Medical Campus in East Baltimore. All of the hospital’s, and most of the medical institutions’ buildings, including parking garages, are connected by covered corridors or tunnels.

In recent years, the East Baltimore Medical Campus has witnessed an unprecedented expansion in new building construction. More than $1.7 billion in redevelopment projects encompass the construction of a new, state-of-the-art, expanded hospital building that is nearing completion, while several other buildings have already been completed. These include the Robert H. and Clarice Smith Wilmot Eye Institute Outpatient Surgery and Laboratory Building, the Anne and Mike Armstrong Medical Education Building, two cancer research buildings, the Hackerman-Patz Patient and Family Pavilion, the David M. Rubenstein Child Health Building and a basic biomedical sciences laboratory and office building also known as the Broadway Research Building. With a total of 2.6 million square feet of new construction, numerous health, safety and space challenges resulting from outdated facilities are being addressed.

The expanded Johns Hopkins Hospital that is opening in April 2012 will consist of two connected 12-story towers—the Sheikh Zayed bin Sultan Al Nahyan Cardiovascular and Critical Care Adult Tower and The Charlotte R. Bloomberg Children’s Center. Together, they will contain 560 private rooms—355 of those will be adult inpatient rooms and 205 will be pediatric rooms—encompassing 1.6 million square feet with a main entrance larger than a football field. Located on a five-acre site, the new clinical buildings will house 33 state-of-the-art operating rooms. Ten of those operating rooms are designated for pediatrics. New radiology suites will also have the latest imaging equipment, such as an intraoperative MRI suspended on steel beams that allow it to move between two of the ORs. A new adult Emergency Department as well as a new Pediatric Emergency Service will share trauma capacity, because the Children’s Center is the designated pediatric trauma center for the State of Maryland.

The adult tower is named to honor the father of His Highness Sheikh Khalifa bin Zayed Al Nahyan, the president of the United Arab Emirates (UAE). Among the tower’s 355 private rooms, there will be 96 intensive care rooms and 35 obstetrics rooms.
The children's hospital, named in honor of the mother of New York City Mayor Michael Bloomberg, will completely replace the current one and is designed to be “kid friendly.” Included in the bed numbers are a 45-bed neonatal intensive care unit and a 40-bed pediatric intensive care unit. The new Pediatric Emergency Department will nearly double the current capacity. Whimsical animal sculptures adorn the lobby area, which will have a soaring, light-filled, four-story atrium. The building will be surrounded by gardens. All patient rooms will be private and parents can sleep by their child in each room on a comfortable sleep sofa. Rooms will have an interactive in-house television system to play games, access the Internet or watch movies. Pediatric patients can also have meals on demand. The children’s hospital will also feature a new auditorium and special events area, and a two-story playroom on the 11th and 12th floors that boasts a basketball court and giant movie screen.

Immediately south of Orleans Street is the 90,000-square-foot David Rubenstein Child Health Building which provides primary health care to children living in the East Baltimore community as well as specialty services to a broader population. The Orleans Street Garage provides 2,300 parking spaces and mixed-use space that includes a new loading dock, kitchen space to serve the new clinical building and an adjacent 45,000 square-foot energy plant.

The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins encompasses a wide spectrum of specialty programs for patients coping with cancer, including bone marrow transplantation and new drug development. The Harry and Jeanette Weinberg Building houses the Cancer Center’s patient care and clinical services, including surgical suites. The Bunting-Blaustein Cancer Research Building and the David H. Koch Cancer Research Building are state-of-the-art cancer research and teaching buildings that mirror each other in design and are connected to each other to enhance interdisciplinary interaction, which is integral to understanding cancer.

The Kimmel Cancer Center also offers complete family and patient services that include a Cancer Counseling Center, survivor and palliative care programs, and the 39-suite Hackerman-Patz Patient and Family Pavilion for patients and their families who are traveling from out of town.

A century ago, Johns Hopkins became the first to fully integrate the missions of teaching, research and patient care, a synergistic triangle that became a “model of its kind” and has been adopted by virtually every American medical school. The model’s strength rests on the autonomy of each of its member institutions. Thus, The Johns Hopkins Hospital is a separate corporation governed by its own board of trustees and has an endowment that is independent of the university’s. But in keeping with the vision of founder Johns Hopkins, relations between the School of Medicine and the hospital are close and formal and were further reinforced in 1997 with the creation of Johns Hopkins Medicine. Johns Hopkins Medicine provides a unified governing structure for both the hospital and the School of Medicine, more firmly uniting the physicians and scientists of the Johns Hopkins University School of Medicine with the health professionals and facilities that make up the broad, integrated Johns Hopkins Health System.

The head of each clinical department of the hospital also is director of the corresponding academic department of the School of Medicine. The president of the hospital, the department heads and medical staff representatives make up the medical board of the hospital, which advises the trustees in all matters related to patient care.

The Johns Hopkins Community Physicians

Johns Hopkins Community Physicians is a wholly-owned subsidiary of the Johns Hopkins Health System. It provides quality primary, secondary, and hospital-based care to families throughout Maryland and the Greater Washington regions. JHCP owns and operates numerous attractive, convenient medical centers in communities across the state including: Baltimore City, and Anne Arundel, Baltimore, Carroll, Charles, Frederick, Harford, Howard, Montgomery, Prince George’s, Queen Anne, Washington counties, and The District of Columbia. JHCP centers offer easy access to primary care physicians, specialty physicians, diagnostic and laboratory services, and, at Wyman Park Medical Center, optical services. Through its physician group, more than 450 physicians, nurse practitioners, nurse midwives, and physician assistants provide care to over 200,000 patients. JHCP has implemented a fully electronic medical record so that patients’ records can be viewed from any of our locations. JHCP at Water’s Edge in Harford County, JHCP at Canton Crossing, JHCP at Wyman Park, JHCP Hagerstown, and JHCP Montgomery Grove are level 3 NCQA Certified Patient Centered Medical Homes, a designation bestowed on few practices in Maryland. JHCP accepts most insurance plans. In addition, as a Department of
Defense designated uniformed services treatment facility, JHCP provides managed health care to active duty and retired military families and retired military members under the Uniformed Services Family Health Plan, a Tricare Prime designated provider.

**Johns Hopkins Bayview Medical Center**

Johns Hopkins Bayview Medical Center, located just three miles from The Johns Hopkins Hospital, is home to major centers for research, teaching, and clinical activities for the Johns Hopkins Health System, the Johns Hopkins University School of Medicine, the National Institute on Aging (NIA) and the National Institute on Drug Abuse (NIDA).

Johns Hopkins Bayview is a full-service, Joint Commission-accredited academic medical center. Among the wide range of services offered are an area-wide trauma center and the state’s only regional adult burn center. Founded in 1773, our 558-bed facility features several centers of excellence including stroke, geriatrics, joint replacement, wound care and bariatrics, to name a few.

The Bayview Medical Offices (BMO) provide clinic and ambulatory care. From July 2011 to June 2012, there were 240,840 emergency and ambulatory visits; 246,007 visits to programs in psychiatry, alcohol and drug abuse; 20,766 admissions to the acute care hospital; and 10,330 operations in the surgical suite.

As part of the Johns Hopkins Health System, Johns Hopkins Bayview physicians hold full-time faculty positions at The Johns Hopkins University School of Medicine. Residents and medical students participate in basic and advanced rotations, as well as fellowships and elective rotations at Johns Hopkins Bayview.

Extensive research programs on the campus reflect the commitment to expand and understand the pathophysiology of disease and develop innovative treatments for their cure. The 200,000 square-foot Asthma & Allergy Center, with state-of-the-art laboratories and other facilities, has served as the focus of this research for the School of Medicine. NIDA’s Addiction Research Center and NIA’s Gerontology Research Center are located in the National Institute of Health’s Biomedical Research Center, a 550,000 square-foot facility on the Johns Hopkins Bayview campus.

**ASSOCIATED INSTITUTIONS**

**Kennedy Krieger Institute, Inc.** - located adjacent to the Children’s Medical and Surgical Center of the Johns Hopkins Medical Institutions, directs its efforts toward improving the lives of children and adolescents with disorders of the brain, spinal cord, and musculoskeletal system by building patient independence and strengthening participation in home, school and community life. Services are provided in inpatient, day treatment, outpatient, community and home-based settings. Furthermore, the Institute focuses upon biomedical and behavioral research, training of healthcare professionals, and lower, middle and high school programs for children and teens with a variety of learning, emotional, physical, neurological, and developmental disabilities (including autism).

The major inpatient programs that constitute the 70-bed hospital follow. The Pediatric Rehabilitation Unit (Brain Injury Program and Comprehensive Inpatient Rehabilitation Program) provides services for patients with a wide range of diagnoses or conditions, including traumatic brain and spinal cord injuries, developmental disabilities, recovery from orthopedic surgery and spina bifida. The Neurobehavioral Unit serves children and adolescents with developmental and intellectual disabilities with severe behavior disorders who have highly treatment-resistant problems and require intensive behavioral assessment and treatment services as well as targeted application of behavioral and pharmacological interventions. The Pediatric Feeding Disorders Program offers evaluation and treatment of severe pediatric feeding disorders in children (average age of 36 months) with the most severe, life threatening feeding problems. Ambulatory care services comprise more than 40 specialized clinics.

Whether serving inpatients or outpatients, comprehensive interdisciplinary care features the medical disciplines of pediatrics, neurology, rehabilitation medicine, orthopedic surgery, psychiatry, and neurodevelopmental disabilities as well as 15 clinical disciplines such as nursing, physical therapy, social work, and behavioral psychology.

The International Center for Spinal Cord Injury serves children and adults with spinal cord injury due to a variety of causes. Services extend beyond the immediate acute phase of injury by applying cutting edge treatment that promotes improved health and recovery of function.

Since June 2009, the Center for Genetic Muscle Disorders provides multidisciplinary and individualized care (diagnosis and management) for children and adults with muscular dystrophy and congenital myopathy.

Biomedical, behavioral, and translational research focus on the diagnosis, treatment, and ultimately, prevention and cure of child-
hood neurological disorders and neurodevelopmental disabilities. Many studies are underway in such areas as autism, spinal cord injury, learning disabilities, Down syndrome, adrenoleukodystrophy (ALD), and cerebral palsy that will help identify treatments and improve outcomes.

Multidisciplinary programs related to autism spectrum disorders combine research, assessment, treatment, community outreach and training. IAN, the Interactive Autism Network, an online national database project, is designed to facilitate research that will lead to advancements in the treatment, care, and prevention of these disorders.

The F.M. Kirby Research Center for Functional Brain Imaging, a joint venture between the JHU Department of Radiology and the Institute promotes advanced neuroimaging that allows observation of the human brain as it works.

Professional training programs provide medical students, residents and postdoctoral fellows in pediatrics, neurology, physical and rehabilitation medicine, child psychiatry, and neurodevelopmental disabilities and professionals in the clinical disciplines with a comprehensive approach to the child and adolescent with a brain disorder, spinal cord injury, or musculoskeletal disorder and a knowledge of the methods in which diagnosis, management and therapy may best be accomplished.

The Medstar Good Samaritan Hospital of Maryland, Inc., situated on a 43-acre site in residential northeast Baltimore, is a 317-bed academic/community and specialty center particularly known for its orthopaedic, rheumatology and rehabilitation programs which are affiliated with the Johns Hopkins University School of Medicine.

The hospital recently completed a major renovation project with the expansion of its full service emergency department, backed up by fully equipped intensive care and critical care units, a cardiac catheterization laboratory, a state-of-the-art surgical complex, and two new inpatient units.

The hospital has 236 licensed acute-care beds, 51 rehabilitation beds and a 62-station renal dialysis unit and a 30 bed Transitional Care Unit. The outpatient departments have approximately 200,000 visits a year, over 55,000 of which are through the emergency department. In addition, the hospital’s ambulatory surgery center performs approximately 9,000 procedures annually.

Teaching programs are developed primarily for postgraduate education and research programs. There is an exchange of medical house officers and residents at various levels from Medstar Good Samaritan Hospital and the Johns Hopkins Hospital. Clinical clerkships and externships are available for predoctoral medical students during elective periods. In addition, Medstar Good Samaritan Hospital’s Department of Medicine offers an Internal Medicine Residency Program which provides a range of patient care and didactic experiences designed to prepare its trainees for entry into clinical practice or fellowship training.

The hospital is involved in research at both the basic and applied levels. The Thomas O’Neill Memorial Research Laboratories occupy the north wing, conveniently located adjacent to patient care areas.

Good Samaritan Hospital is part of MedStar Health which includes Union Memorial Hospital, Franklin Square Hospital Center, Harbor Hospital, Washington Hospital Center, National Rehabilitation Hospital, Georgetown University Hospital, Montgomery General Hospital, and St. Mary’s Hospital. To assure that the most appropriate level of health care is available to all members of the community, the Medstar Good Samaritan Hospital has constructed two professional office buildings, two housing complexes for the elderly and a 147 bed nursing home on its grounds.

Sinai Hospital of Baltimore has a long and proud tradition of leadership among community-based teaching hospitals. The hospital serves as a model for the delivery of quality health care to patients of diverse socio-economic backgrounds.

Sinai Hospital was founded in 1866, as a voluntary hospital and for many years was located on Monument Street opposite The Johns Hopkins Hospital and School of Medicine. During the 1950's Sinai Hospital developed a full-time chief system in its clinical departments to complement its full-time chiefs of radiology and pathology, and a formal affiliation between the Johns Hopkins Medical School and the Sinai Hospital was developed. In 1959 Sinai Hospital moved into its entirely new physical plant about six miles from the former location, where it serves a large segment of the population of northwest Baltimore and the adjacent suburbs.

Sinai Hospital has become one of the most active medical centers in the state of Maryland and maintains its dedication to the highest standards of service and education. The acute general hospital has 481 acute care beds, 21 NICU beds and 35 bassinets. There are approximately 28,410 patients admitted to Sinai Hospital annually plus nearly 2,600 deliveries. The Outpatient Departments have more than 69,506 clinic visits a year and the active emergency service has more than 74,000 patient visits. ER-7, the...
34,500 square foot Emergency Center, provides seven specialized care centers: Emergency, Trauma, Urgent, Fast Track, Pediatrics, Chest Pain Evaluation and Observation. The hospital has a comprehensive Psychiatric Care Program including a 24 bed inpatient psychiatric unit and an open-heart surgery program. Sinai has a large Rehabilitation Center with a 57 bed rehabilitation hospital for inpatients, 10 of which are traumatic brain injury beds. Across the street is the 292 bed Levindale Hebrew Geriatric Center and Hospital, which provides subacute, chronic and long-term care. In 1998, Sinai Hospital and Levindale merged with Northwest Hospital Center to form LifeBridge Health, which now provides under one umbrella virtually all health services, ranging from prenatal care to hospice care. LifeBridge Health is one of the regions most innovative providers of high quality health care. In 2000, Levindale merged with Jewish Convalescent & Nursing Home. LifeBridge Health & Fitness is a national model for hospital-sponsored wellness centers.

The Medical Staff of Sinai Hospital numbers over 1,023 full-time and private practicing physicians. There are chiefs of Anesthesiology, Medicine, Obstetrics-Gynecology, Ophthalmology, Orthopedics, Otolaryngology, Pathology, Pediatrics, Psychiatry, Radiology, Radiation Oncology, Rehabilitation Medicine, Surgery, Urology, Emergency Medicine, Neurology, Neurosurgery and Dentistry, most of whom hold teaching appointments in the Johns Hopkins Medical School.

Sinai Hospital offers residency training programs in Obstetrics and Gynecology, Physical Medicine and Rehabilitation, Pediatrics, General Surgery, and Ophthalmology. Sinai also offers the Johns Hopkins/Sinai Hospital program in Internal Medicine. Residents from the Johns Hopkins University rotate to various Sinai Hospital services.

There is a long-standing commitment to both basic science and clinical research. The Research Building houses laboratories in biochemistry, obstetrics and gynecology, pathology, surgery, medicine, and animal facilities to accommodate the activities of a staff of physicians and scientists. Johns Hopkins medical students have the opportunity to receive instruction on the clinical services of the departments of Medicine, Obstetrics-Gynecology, Pediatrics, Rehabilitation Medicine, and Surgery. Students at any level of training are eligible to participate in the research activities of the departments listed.

Other Hospitals participating in instruction offered by several clinical departments include Union Memorial Hospital, Franklin Square Hospital, Greater Baltimore Medical Center and St. Agnes Hospital.
CURRICULUM

The curriculum is organized to allow each of our graduates to achieve the eleven educational objectives noted in the Mission and Education Program Objectives for the Johns Hopkins University School of Medicine (page 9). The regular M.D. curriculum comprises four academic years designated First through Fourth Years. The academic requirements of this program can be combined with graduate study leading to a Masters or Ph.D. degree. These programs are described in later sections.

The Genes to Society curriculum is highly integrated both vertically and horizontally across the four years. Elective time is available beginning in Quarter 4 of the Second Year. Elective courses are described in the programs of the various departments in the section under Departments and Divisions, Centers, Institutes and Subjects of Instruction. This information is supplemented by an elective book which is updated annually. Selected students may interrupt the regular curriculum for one or more years in order to pursue special studies.

The study of science basic to the practice of medicine begins in the First Year with four months of Foundations courses, including Foundations of Human Anatomy, Scientific Foundations, Clinical Foundations and Foundations in Public Health: Epidemiology, Ethics and Health Care Systems. These courses are intended to introduce students to the basic language and concepts of biomedical science, including molecular biology, cell biology, biochemistry, anatomy, and the social and behavioral sciences. During Clinical Foundations, students begin training in the physician-patient medical interview, physical diagnostics and clinical reasoning. Each student is assigned a college advisor (see Student Advising, page 73) upon entry to medical school, who serves as the instructor in Clinical Foundations, and academic and career advisor for the remainder of the four years.

Following winter break in First Year, students begin an 18-month organ systems-based course, Genes to Society, which presents genetics, molecular biology, advanced anatomy, physiology, pathology, pathophysiology and clinical presentations related to each organ system. Dermatology, Immunology, Infectious Disease, Hematology/Oncology, Brain, Mind and Behavior, and Nerve and Special Senses are covered in the First Year. One half-day per week is devoted to a precepted clinical experience, the Longitudinal Clerkship, which provides further training in patient-centered interviewing, physical diagnosis, and health care systems.

Beginning with the first week of medical school and periodically in between courses, 3-day TIME (Topics in Interdisciplinary Medicine) courses will focus students on a multidisciplinary topic related to the social and behavioral sciences. The First Year TIME courses are Health Care Disparities, Health Promotion and Disease Prevention, Global Health, Pain Care and Disaster Medicine. Students will have a variety of lecture and small group discussions supplemented by experiential and skill learning in each course. In the afternoons of these TIME courses students will be attending a Scholarly Concentration course in one of five concentrations: Basic Science Research, Clinical Research, Public and Community Health Service, History of Medicine, and Medical Humanities, Bioethics and the Healing Arts. Beginning as a seminar series, each student will eventually complete a mentored scholarly project by the end of the Second Year of study.

Second Year students return in late August to complete the Genes to Society course in the following organ systems: Pulmonary, Renal, Cardiovascular, GI/Liver, Endocrine, Reproductive, and Musculoskeletal. The Longitudinal Clerkship continues one-half day per week until the winter break. The TIME courses in the Second Year are Substance Abuse Care, Patient Safety, and End-of-Life and Palliative Care. The Genes to Society course ends in February of the Second Year, and is followed by a 4-week Transitions to the Wards course, which provides intensive training in procedural skills, team communication skills, and clinical reasoning in preparation for the hospital-based clerkships that follow.

In the final quarter of the Second year, students begin the core clinical clerkships. These are 8-week rotations in the clinical disciplines of Medicine, Surgery, Pediatrics, and Gynecology, Obstetrics and Women’s Health, 4-week rotations in Neurology and Psychiatry, and a 4.5-week rotation in Emergency Medicine. A week of Translational
Medicine is required after each 8-week clerkship; during these weeks, students will return to a discussion of state of the art biomedical investigation. Students may elect to delay one 8 week rotation in the next 5 quarters, but must complete this required core of rotations by the end of the first quarter in Year 4. Three one-month advanced clinical rotations are required prior to graduation: Chronic Disease and Disability, Subinternship, and Critical Care Medicine.

The clinical clerkships are devoted to the study of health and disease in the various clinical departments of the School of Medicine, The Johns Hopkins Hospital, Johns Hopkins Bayview Medical Center, Sinai Hospital and other affiliated hospitals. Students are introduced to practical clinical problems through instruction and participation in a health care team. Elective courses available in every department range from direct participation in current biomedical research to advanced clinical work. Many clerkships and elective courses may be taken during the summer.

In addition to the advanced clinical clerkships noted above, students are required to complete a 2-week course in the Fourth Year designed to refresh clinical skills and prepare them for internship. This course, Transition to Internship and Residency and Preparation for Life (TRIPLE), is offered twice in the spring of the Fourth Year, and includes simulation-based training, advanced cardiac life support, and advanced communication skills.

The academic year for first year students begins in August and ends in mid-June. There is a winter break in December and a spring break in March. Between the First and Second Years there is a summer vacation of eight to nine weeks when students may engage in research or other studies. Students must arrange their schedules to include, between the start of the fourth quarter of the Second Year and graduation in May of the Fourth Year, 7 quarters and 2 weeks of required clinical clerkships and 20 weeks of elective work; two additional vacation periods may also be scheduled. At the student’s discretion, vacation quarters may be used for research, board preparation, or additional elective study. Graduating students cannot schedule required clerkships during the fourth quarter of the Fourth Year, unless approved by the Associate Dean for Student Affairs.

The total number of students in each class of the regular four year program is 120.

Electives
Programs in which elective study and research leading to graduate degrees are integrated with the medical program are described in a later section (“M.D.-Ph.D. Programs”). A limited number of stipends are available for students who wish to devote one full year to research. Approval may be granted for elective study at institutions other than the Johns Hopkins University. In such instances, the student must present a description of the elective including goals and objectives to the Associate Dean for Student Affairs for approval. One of the required 2 1/4 elective quarters may be taken at another non-affiliated medical institution. Students desiring to study at other institutions must make final arrangements through the Office of the Registrar of the Johns Hopkins University School of Medicine.

Students visiting other institutions and those who devote their free time to elective courses in this institution will be held responsible for proficient work just as in the case of the required subjects of instruction. Formal registration for elective quarter programs is through the Office of the Registrar of the School of Medicine. The elective work for the Second through the Fourth Years is denoted by the symbol E (e.g., Neurology E). Such courses are listed numerically by department or sub-department. The catalog does not list all elective courses. The Elective Book, an up-to-date description of all elective opportunities, is maintained by the Registrar and is available from the Registrar’s Office or the following website: http://www.hopkinsmedicine.org/som/students/Academics/electives.html.

Required Work
The required departmental work for each course and basic clerkship is usually regarded as a unit. It may be offered and graded as a single course, although the catalogue may indicate various course elements that comprise the whole. Formal registration for all required courses must be made through the Registrar of the School of Medicine.

REQUIREMENTS FOR M.D. DEGREE
To be eligible for the M.D. degree, candidates must successfully complete the prescribed course of study of the First through the Fourth Years.

PREPARATION FOR MEDICAL SCHOOL
The courses taken and the grades earned are but a portion of an applicant’s credentials. Certain areas of study (i.e. introductory biol-
ogy, chemistry, physics and organic chemistry with associated laboratory exercises and calculus) have traditionally been of value to medical students. Beyond the successful fulfillment of these basic prerequisites the Committee on Admissions is concerned solely with the quality and scope of an applicant’s undergraduate educational experience. The field of concentration for undergraduate studies and the selection of additional courses in the sciences and mathematics should be the choice of the student and will not affect the admissions process.

REQUIREMENTS FOR ADMISSION

The following general requirements must be met by all applicants:

1. Accredited Institution. All applicants must be or have previously been in attendance at an institution on the list entitled “Accredited Institutions of Postsecondary Education,” authorized and published by the American Council on Education, One DuPont Circle, N.W., Washington, D.C. 20036. Extension or evening courses taken in fulfillment of premedical course requirements are not acceptable unless they are identical to courses offered in the college’s regular academic program. Preparation in foreign universities, in most cases, must be supplemented by a year or more of course work in an accredited United States university.

2. Required Academic Work. Each applicant must have received the B.A. degree or its equivalent prior to matriculation. A list of specific pre-medical course requirements may be found on page 22. In order to assess the classroom performance of an applicant, the Committee on Admission requires that all of the coursework submitted in fulfillment of admission requirements must be evaluated on the basis of a traditional grading system. Such a system must employ a range of numbers or letters to indicate the comparative level of performance. If the applicant has received a grade of Pass/Credit for any of the specified premedical course requirements, the instructor must supply, in writing, a statement evaluating the student’s performance in that course. CLEP credits may not be substituted for any course requirement.

3. Conditions of Admission. Students admitted to the School of Medicine on a conditional basis (i.e. requirement(s) yet to be completed) must fulfill those conditions prior to matriculation in the School of Medicine.

4. Standardized Testing. The Medical College Admissions Test (MCAT) is required for acceptance. The MCAT must be taken no later than September in the year the application is submitted. The oldest MCAT considered will be from four years prior to the year of matriculation.

5. Letters of Recommendation. A recommendation from the applicant’s college premedical committee or an officially designated premedical advisor is required. If the college does not have a premedical advisor or premedical committee, two letters of recommendation are required from science faculty members in science departments who have taught the applicant and one non-science faculty member who has also taught the applicant. In addition to the letters indicated above, applicants with advanced degrees and/or full time employment are required to submit recommendations from each component of their education and major work experiences.

6. Non-U.S. Citizen Applicants. Official transcripts are required from all colleges attended outside the United States and Canada. Applicants who do not hold a permanent resident visa or an immigrant visa are not eligible for the financial aid program from Johns Hopkins University School of Medicine due to federal restrictions on the use of a large percentage of the loan funds which support the aid program. Because of these limitations, qualified students will be issued conditional acceptances into the School of Medicine under the following terms: on or before July 1 of the year of matriculation the accepted student must provide an escrow account or a four year irrevocable letter of credit drawn on a major United States bank in the favor of Johns Hopkins University. These funds must be sufficient to meet all tuition, mandatory fees and living expenses for the anticipated period of enrollment. The current escrow requirement is $300,000. In the event of tuition increases for future years, accepted students will be billed for additional charges as they become due. Details of financial requirements will be included in letters of acceptance.

7. Application Review. Following receipt of all required credentials, the committee on admission will review applications and make interview decisions. Applicants selected for interview will be notified by the committee. With the approval of the Assistant Dean, it may be possible to arrange a SKYPE interview when the applicant lives at some distance from Baltimore. Notification of acceptances are made between October 15 and April 15.

APPLICATION FOR ADMISSION

Applicants must first submit an on-line application with the Association of American Medical Colleges: www.aamc.org; 2501 M Street,
Course Requirements for Regular M.D. and M.D.-Ph.D. Applicants

Effective with the class entering in 2012.

1. BIOLOGY
College Biology with laboratory, one year (8 semester hours)
The student should have an appreciation for the diversity of life such as viruses, prokaryotes, plants and animals, and a familiarity with the life cycles and metabolic activities of these organisms. The student should attain a basic understanding of the structure and function of the mammalian cell. Included should be a basic understanding of mammalian genetics. Credit for advanced placement is not acceptable as a substitute. Individuals who have completed their studies in biology more than 4 years prior to their application are strongly advised to take a one semester advanced mammalian biology course.

2. CHEMISTRY
General college chemistry with laboratory, one year (8 semester hours)
Organic Chemistry with laboratory, one semester, and one semester of biochemistry without a laboratory. The student should have knowledge of chemical equilibrium and thermodynamics, acid/base chemistry, the nature of ions in solution and redox reactions, the structure of molecules with special emphasis on bioorganic compounds, reaction rates, binding coefficients, and reaction mechanisms involved in enzyme kinetics. Also important is a basic understanding of the structure of nucleic acids including how they store and transfer information. Applicants with advanced placement in general chemistry must take one additional semester of advanced chemistry with lab.

3. COMPUTER LITERACY
It is highly recommended that the student have a working knowledge of computers including the use of computers to retrieve information and to communicate with others.

4. HUMANITIES, SOCIAL & BEHAVIORAL SCIENCES
The study of the humanities, social and behavioral sciences is an essential foundation for the study of medicine. (24 semester hours)
An applicant’s educational experience must include at least 24 semester hours in these disciplines. Effective communication skills are essential and candidates must be proficient in spoken and written English and be able to communicate well. Successful passage of the TOEFL examination is required for all students whose undergraduate instruction was conducted primarily in a language other than English.

5. MATHEMATICS
Calculus or statistics, one year (6-8 semester hours)
Mathematics courses should enable the student to develop equations, to interpret graphical representations of function and to evaluate probability involved in testing hypotheses. Advanced Placement credit for calculus, acceptable to the student’s undergraduate college, may be used in fulfillment of the math requirement. Regardless of such credit, it is strongly recommended that applicants take at least one semester of statistics or epidemiology.

6. PHYSICS
General College Physics with laboratory, one year (8 semester hours)
The student should have an understanding of the constants and units of physical measurement, Newtonian mechanics, the physical properties of various states of matter such as liquids, solids and gases, and the basic aspects of electricity, magnetism and optics. Advanced Placement credit for physics, acceptable to the student’s undergraduate college, may be used in fulfillment of the physics requirement.
Once you have completed your AMCAS application and received your AAMC ID number, you may then submit the Johns Hopkins secondary application via the internet at www.hopkinsmedicine.org/admissions. The deadline for submission of the secondary application to the MD-PhD Program is November 15. The deadline for submission of the secondary application for the regular MD Program is December 1.

Letters of recommendation to the MD-PhD Program must be received by November 15. Letters of recommendation to the regular MD Program must be received by December 1. All letters of recommendation should be sent to the AMCAS letter service: http://www.aamc.org/students/amcas/faq/amcasletters.htm.

Application Fee: The secondary application fee for Johns Hopkins University School of Medicine is $80. This fee is non-refundable and must be paid on-line when submitting the secondary application. The application fee will be waived for applicants who have received an AMCAS fee waiver. Specific details are available in the secondary application instructions.

For the latest information concerning admissions requirements and procedures, please visit our website at: www.hopkinsmedicine.org/admissions/. Specific questions about applying to the School of Medicine may be answered by calling the Admissions Office at 410-955-3182. Information may also be requested by writing to: Committee on Admissions, Johns Hopkins University School of Medicine, 733 N. Broadway, Suite G-49, Baltimore, MD 21205 or via email at somadmiss@jhmi.edu.

Accepted Applicants: It is the policy of the Johns Hopkins University School of Medicine to require criminal background investigations on accepted students in any professional or graduate program at the School of Medicine, interns, residents, and clinical fellows in any Graduate Medical Education program sponsored by Johns Hopkins, and other clinical and research postdoctoral fellows at the School of Medicine.

SCHOOL OF MEDICINE
TECHNICAL STANDARDS FOR ADMISSION

Applicants to the Johns Hopkins University School of Medicine are considered without regard to disability, but with expectation that they can complete satisfactorily all parts of the curriculum within the prescribed four year period. The School does not offer a decelerated curriculum. In addition to certain academic standards, candidates for the M.D. degree must have abilities and skills in observation, communication, motor function, quantification, abstraction, integration, conceptualization and interpersonal relationships and behavior. Some disabilities in certain of these areas may be overcome technologically, but candidates for the medical degree must be able to perform in a reasonably independent manner without the use of trained assistants. The candidate must have sufficient motor function to elicit information from patients by palpation, auscultation, percussion, and other diagnostic maneuvers. The candidate must be able to execute motor movements reasonably required to provide general care in emergency treatments to patients. Such actions require coordination of both gross and fine motor muscular movement, equilibrium and functional use of the senses of touch and vision. Those desiring additional information should contact the Admission’s Office.

EARLY DECISION

We do not accept applications for early decision.

DEFERRED ADMISSION

The Deferred Admission Plan enables students to diversify their educational and life experiences as they prepare for a career in medicine. Deferred admission may be approved for a period of one to three years to pursue international fellowships (Rhodes, Rotary, Marshall, Watson, Fulbright scholarships, etc.), join the Peace Corps, participate in service assignments in the United States or abroad, teach, or conduct research. Admitted applicants who are interested in deferring their matriculation into the first year class, must submit a written request by May 1 for review and approval by the Deferral Committee. If approved, applicants must complete an AMCAS application by the August 1 deadline of the year prior to matriculation. Please contact the Admissions Office for further information.

COMBINED STUDY-M.D.-Ph.D.

The Committee on Admission accepts applications not only from applicants for the M.D. program but from those who are interested in a combined M.D.-Ph.D. degree. Provided with the Johns Hopkins application for the M.D. program is a supplemental form which should be completed by those applicants for the combined degree. Under the section
“Graduate Programs” in this catalogue, those departments which offer study leading to a Ph.D. degree are listed. When the application for the M.D. program as well as the “Application Supplement for Admission to Combined M.D.-Ph.D. Study” are received along with all necessary letters of recommendation, they will be reviewed by the Committee on Admission, the M.D.-Ph.D. Committee, and by the appropriate graduate department. If admitted to both degree programs, the student will ordinarily be expected to complete at least the first year of M.D. study before starting full-time Ph.D. work. Students initially accepted for only one of the two degrees are eligible to reapply for study towards the other at a later time. Students enrolled in the M.D. program may make application for a graduate program at any time during the course of their medical training. See section entitled “The Training of Medical Scientists: M.D.-Ph.D. Programs.”

**Advanced Standing**
Due to space limitations, the School of Medicine is unable to admit transfer students.

**Doctors of Medicine**
Persons who have already received the degree of Doctor of Medicine elsewhere will not be admitted as candidates for that degree from the Johns Hopkins University.

**Grading and Examinations**
Grading at the Johns Hopkins University School of Medicine is not viewed as an end in itself. Although grades are an appropriate means for monitoring and recording achievement and progress towards the M.D. degree, they represent but one indicator of a student’s performance and attributes. Descriptive evaluations are of equal importance.

Students at Johns Hopkins receive continual feedback on their progress toward achieving the educational objectives of the curriculum. For the knowledge-based courses in the first 20 months of the curriculum, written assessments occur approximately every 2-3 weeks; students also receive narrative feedback from course and small group leaders for each course block. In Clinical Foundations, detailed feedback is provided in face-to-face meetings with college advisors, as well as with online evaluations. With the Genes to Society curriculum, the student portfolio was introduced as another method of feedback and assessment. Periodically, students are asked to enter documentation into the portfolio, such as reflective writing, credentialing, and patient care documentation. This portfolio is reviewed twice a year with the College advisor and used as a framework for individualized learning plans.

At Johns Hopkins, the student has access to grades and written evaluations. Competition between students for grades per se is strongly discouraged, emphasis being placed instead on giving each student full opportunity to develop his or her particular abilities and interests.

Grades in the preclinical courses are designated as Pass or Fail. Beginning with the Longitudinal Clerkship and Transition to the Wards, and continuing with subsequent clinical clerkships and electives, grades are designated as Honors, High Pass, Pass or Fail. Pass is awarded to the student who fulfills all of the requirements of a course or clerkship in an entirely satisfactory manner. High Pass is awarded to students for excellent performance. Honors is awarded to a student who has been consistently outstanding in scholarship and professionalism.

The grade of Fail is used if a student does not meet the minimum performance requirements of a course or clerkship as defined by the course directors.

If a student exhibits a marginal performance in which the minimal performance expectations of a course or clerkship are met, but individual components of the course have not been satisfactorily mastered, a grade of Unsatisfactory may be given. Remedial work will be required before a grade of Pass is awarded. Remedial work will not allow an Unsatisfactory grade to be remediated higher than a Pass. If the remedial work for a failing grade requires repetition of the entire course or clerkship, the resulting grade will reflect the student’s performance on the retaken course/ clerkship and will be recorded next to the failing grade already entered on the transcript.

Students who do not complete all required components of a course are given an Incomplete. When students are unable to complete requirements because of illness or other compelling personal circumstances, they should promptly contact the Associate Dean for Student Affairs in order to request permission for a temporary interruption of studies. The Associate Dean for Student Affairs will assist in making arrangements for completion of course requirements by an excused student. The Incomplete is a neutral statement and reflects nothing per se about the quality of a student’s performance. The Incomplete may be remediated to Pass, High Pass or Honors. The Incomplete must not be used in lieu of a failing or marginal grade.
Promotions

The record of each student will be reviewed by the appropriate Committee on Student Promotion at scheduled intervals and action will be taken on each student's status. In addition to maintaining good academic standing, students are expected to adhere to the accepted standards of professional behavior in their contacts with fellow students, faculty, patients, staff, and others. A student must satisfactorily complete the work of an academic year in all respects and be in good standing before advancement to the next year.

During years one and two, students must pass every course in order to be promoted. In either the first or second year, dismissal is automatic if a student receives two failing grades, one failing and one unsatisfactory grade, or unexcused incompletes in two or more courses.

A student may repeat only one year of the first two years of the curriculum. During the repeat year dismissal is automatic if the student receives one failing grade or two unsatisfactory grades.

During the clinical years, a failure in a required course/clerkship will be referred immediately to the Promotions Committee for discussion and presentation of a remediation plan, unless the student's overall performance requires consideration of dismissal. The student will be permitted to complete any subsequent required course/clerkship he/she has begun, but no additional required clerkships can be taken unless the failure is remediated. Unsatisfactory performance in two courses/clerkships or failure in a subsequent course will result in dismissal from school at the discretion of the Promotions Committee.

The Committee on Student Promotion may make specific recommendations regarding remediation of grades in any year.

A student dismissed for academic reasons may submit a written petition for readmission to the appropriate Committee on Student Promotion setting forth an explanation for the student's deficient performance, any extenuating circumstances, and any other information relevant to the student's fitness to continue the academic program. The student additionally may request the opportunity to appear personally before the Committee on Student Promotion.

In accordance with the high standard of ethical conduct required of a physician, students are expected to refrain from acts of dishonesty which impair the academic integrity of the University. Students whose behavior appears to be unbefitting a physician will be reviewed by an ad hoc committee of the Advisory Board of the Medical Faculty, and such other persons as may be deemed appropriate. The ad hoc committee will be appointed by the Dean, or in the Dean's absence, the Vice Dean for Education. This committee will decide on the student's status within the school. Students reviewed under such circumstances will have the opportunity to meet with the ad hoc committee in person prior to a decision. A student whose status is affected by a decision of the ad hoc committee will be afforded an opportunity to appeal to the Dean and, thereafter, to the Provost of the University. A complete description of procedures to be followed in disciplinary matters is located in this catalog in the section titled "Instruction Leading to the M.D. Degree." It is also available in the Student Affairs Office.

At the end of the Fourth Year the candidate's entire record, including both required and elective work, will be reviewed by the Committee on Student Promotion. Those who have satisfactory records and who are judged by the Committee to have demonstrated evidence of personal fitness for a career in medicine will be recommended to the Advisory Board of the Medical Faculty for the degree of Doctor of Medicine. Students must have resolved all outstanding charges of misconduct and violations of academic ethics to be eligible for graduation.

Grade Appeals Policy

The components of evaluation in a course or clerkship should be transparent to the student and discussed at the start of the student's experience. Grades are generated by the course/clerkship director. Should there be a disagreement about a grade in a course or clerkship, the student is to follow the guidelines below for grade appeals.

1. The first stage of a grade appeals process will be a meeting between the student and the course director. The course director may also request any faculty preceptors involved in evaluating the student be present for this meeting. At that time, the student will have an opportunity to voice his/her concern(s) about the grade which he/she received. The course director will have the chance to review the criteria by which the final grade is determined and will be expected to answer any questions the student has. The course director may elect to obtain additional information based upon what the student has said and would ultimately decide to maintain the original grade or submit an amended grade to the Registrar.

2. If dissatisfied with the results of the above, the student may appeal to the appropriate Promotions Committee (First and Second Year or
Third and Fourth Year) within sixty calendar
days of the date the grade is posted by the
Registrar’s Office by contacting the Office of
the Vice Dean for Education. The membership
of the Committee is described in the Grade
Appeals Bylaws. The student will be asked to
provide information regarding the grounds for
the grade appeal and will be given an opportu-
nity to address the Committee if they so desire.
The course director involved will not be allowed
a vote in the matter and will be excused for the
period of debate and voting after being given a
chance to address the Committee. After con-
sideration, the Committee will advise the Vice
Dean for Education of any changes merited.
Two standards will be employed by the Com-
mittee in evaluating the appeal which could
lead to a recommended amendment:

a. if the grade is not found to reflect valid
and consistent academic performance
standards or criteria, or the considered
academic judgment of the course director;

b. if the grade is found to be based upon
impermissible criteria beyond per-
formance, achievement, and effort such as
gender, race, age, or other factors as delin-
eeated in the policy on Teacher Learner
Relationships.

3. The student may appeal an adverse deci-
sion to the Dean of the Medical School by
notifying him/her in writing within seven days
of the decision. The Dean’s review will be
limited to review of procedural integrity and
his/her decision will be final.

Policy on USMLE
Requirement
Students must take Step 1 by September 15
of their third year and receive a passing score
in order to proceed with core clerkships. Stu-
dents must schedule both components of
Step 2 by December of their senior year and
sit for the examination prior to graduation.

Guidelines for Conduct
in Teacher/Learner
Relationships (Student
Mistreatment Policy)

Statement of Philosophy
The Johns Hopkins University School of
Medicine is committed to fostering an envi-
nronment that promotes academic and profes-
sional success in learners and teachers at all
levels. The achievement of such success is
dependent on an environment free of behav-
ors which can undermine the important
missions of our institution. An atmosphere
of mutual respect, collegiality, fairness, and
trust is essential. Although both teachers
and learners bear significant responsibility
in creating and maintaining this atmosphere,
teachers also bear particular responsibility
with respect to their evaluative roles relative
to student work and with respect to modeling
appropriate professional behaviors. Teachers
must be ever mindful of this responsibility in
their interactions with their colleagues, their
patients, and those whose education has
been entrusted to them.

Responsibilities in the Teacher/Learner
Relationship

Responsibilities of Teachers
• Treat all learners with respect and fairness.
• Treat all learners equally regardless of age,
gender, race, ethnicity, national origin, reli-
igion, disability, or sexual orientation.
• Provide current materials in an effective for-
mat for learning.
• Be on time for didactic, investigational, and
clinical encounters.
• Provide timely feedback with constructive
suggestions and opportunities for improve-
ment/remediation when needed.

Responsibilities of Learners
• Treat all fellow learners and teachers with
respect and fairness.
• Treat all fellow learners and teachers equal-
ly regardless of age, gender, race, ethnicity,
national origin, religion, disability, or sexual
orientation.
• Commit the time and energy to your studies
necessary to achieve the goals and objec-
tives of each course.
• Be on time for didactic, investigational, and
clinical encounters.
• Communicate concerns/suggestions about
the curriculum, didactic methods, teachers,
or the learning environment in a respectful,
professional manner.

Behaviors Inappropriate to the Teacher-
Learner Relationship
These behaviors are those which demon-
strate disrespect for others or lack of profes-
sionalism in interpersonal conduct. Although
there is inevitably a subjective element in the
witnessing or experiencing of such behaviors,
certain actions are clearly inappropriate and
will not be tolerated by the institution. These
include, but are not limited to, the following:
• unwanted physical contact (e.g. hitting,
slapping, kicking, pushing) or the threat of
the same;
• sexual harassment or harassment based on age, gender, race, ethnicity, national origin, religion, disability or sexual orientation;
• loss of personal civility including shouting, public or private humiliation, displays of temper (such as throwing objects);
• discrimination of any form including in teaching and assessment based upon age, gender, race, ethnicity, national origin, religion, disability, or sexual orientation;
• requests for others to perform inappropriate personal errands unrelated to the didactic, investigational, or clinical situation at hand;
• grading/evaluation on factors unrelated to performance, effort, or level of achievement.

Avenues for Addressing Inappropriate Behavior in the Teacher/Learner Context

Learners’ Concerns
Learners may address situations in which they feel that they have been the object of inappropriate behavior at various levels. At the most basic level, the most effective way to handle a situation may be to address it immediately and non-confrontationally. Oftentimes, a person is simply unaware that his/her behavior has offended someone, or even if aware, will correct the behavior appropriately if given the opportunity to do so in a way that is not threatening. The way to raise such an issue is to describe the behavior factually (“When you said…”), describe how the behavior made you feel (“I felt …”), and state that the behavior needs to stop or not be repeated (“Please, don’t do that again.”)

Sometimes, such a request is not successful, or the person repeats the behavior, or the learner does not feel comfortable speaking directly to the teacher about his/her behavior. In those cases, it may be helpful to discuss the behavior with course directors, laboratory mentors, program directors, or department chairs. Students may also elect to speak to their respective Associate or Assistant Deans for informal advice and counsel about these issues. These individuals may offer additional suggestions for resolving the matter informally, such as, for example, speaking to the individual on the learner’s behalf or on behalf of an entire class, raising the general issue in a faculty meeting, assisting the learner with writing to the individual teacher or even direct intervention to get the behavior to stop.

If no satisfactory resolution is reached after these discussions or the learner does not feel comfortable speaking to these individuals, he/she may bring the matter formally to the attention of the School of Medicine administration. The avenues for this more formal reporting vary depending upon the status of the reporting individual.

• If the person reporting the behavior is a medical student: The student should speak with one of the Associate or Assistant Deans in the Office of Student Affairs.
• If the person reporting the behavior is a graduate student or M.D./Ph.D. student pursuing their graduate studies: The student should speak with the Associate Dean for Graduate Student Affairs and/or the Director of the M.D./Ph.D. program.
• If the person reporting the behavior is a postgraduate trainee (i.e. resident or clinical fellow): The trainee should speak with the Associate Dean for Graduate Medical Education.
• If the person reporting the behavior is a research fellow: The trainee should speak with the Associate Dean for Postdoctoral Affairs.

Teachers’ Concerns
If a teacher feels that a learner has engaged in inappropriate behavior, it is likewise most effective to address the situation immediately and non-confrontationally. If the matter is not resolved satisfactorily, the teacher should contact the course director, program director, or laboratory mentor to discuss the matter. If the teacher wishes to make a formal allegation of misconduct, they should contact the following members of the administration:

• If the matter involves a medical student, contact the Associate/Assistant Dean for Student Affairs;
• If the matter involves a graduate student, contact the Associate Dean for Graduate Student Affairs;
• If the matter involves a postgraduate trainee, contact the Associate Dean for Graduate Medical Education;
• If the matter involves a research fellow, contact the Associate Dean for Postdoctoral Affairs.

These allegations will be handled according to established School of Medicine policies published elsewhere.

Procedures for Handling Allegations of Inappropriate Behavior in the Teacher/Learner Context

• If the behavior involves unlawful discrimination or sexual or other forms of unlawful harassment, the matter will be referred to the Office of Institutional Equity and be handled through University policies established for that office. The student may also directly contact that office.
• If the behavior involves unwanted physical
contact or other forms of violent or threatening acts, the matter may be referred for evaluation under the University’s Policy Addressing Campus Violence.

- Upon being notified of alleged inappropriate behavior, the Associate or Assistant Dean will notify senior administration officials in a written report within five business days of the allegation as follows:

  - If the complaint is lodged against a faculty member, the Vice Deans for Education and Faculty will be notified. Other than those matters referred to the Office of Institutional Equity, the matter will be handled in accordance with the School of Medicine’s Procedures for Dealing with Issues of Professional Misconduct.

  - If the complaint is lodged against a post-graduate trainee, the Vice Dean for Education and the Associate Dean for Graduate Medical Education will be notified. If the complaint is lodged against a research fellow, the Vice Dean for Education and the Associate Dean for Postdoctoral Affairs will be notified. Other than those matters referred to the Office of Institutional Equity, if based on the written report, those Deans decide that a formal investigation is merited, they will convene an ad hoc committee to investigate the complaint and will notify the complainant, the respondent and appropriate department chairs and program directors of such an action. The ad hoc committee will be composed of three faculty members from departments other than those of the complainant or respondent. The committee will be responsible for gathering information and interviewing the complainant, respondent, and other individuals as they deem appropriate. Based upon information gathered and their deliberations, the committee will submit a written report to the Deans involved within thirty days from when they were convened which will include their findings and recommendations for dismissal of the complaint or for disciplinary action(s). The senior Deans will then communicate to the complainant and respondent in writing that a determination has been made. If the committee finds against a post-graduate trainee, the findings will be communicated to the appropriate Department Chair and Program Director and sanctions will be determined and enforced according to the policy on Probation, Suspension, and Dismissal of Residents/Clinical Fellows published elsewhere which also includes an avenue of appeal.

  - The School of Medicine is committed to the fair treatment of all individuals involved in this process. All efforts will be made to maintain the confidentiality of the resolution process to the extent possible and subject to the overriding concern of a prompt and fair investigation and/or resolution of the complaint.

- The School of Medicine will not tolerate any form of retaliatory behavior toward learners who make allegations in good faith. Individuals who believe that action has been taken against them in retaliation for raising concerns under this policy, may address those concerns through the procedures described in this policy.

- Records of all communications as well as the written reports of the Associate Deans and ad hoc committee will be kept in the Office of the Vice Dean for Education.

- If it is determined that the allegations from the complainant were not made in good faith, the student or post-graduate trainee will be referred for disciplinary action under the appropriate University procedures which are described elsewhere.

### Procedures Relating to Student Discipline

The following procedures will govern complaints regarding the conduct of a student enrolled in the School of Medicine.

A student’s record within the School of Medicine will contain documentation reflecting conduct during the period of enrollment. A student will have access to his School record, including those documents, if any, reflecting conduct, in accordance with the standards set forth in the Family Educational Rights to Privacy Act and applicable University policy. The University’s policy on access to and release of student records is published annually and a copy may be obtained from the Office of the Registrar of the School of Medicine.

1. When information reaches the School indicating that a student has engaged in behavior unbecoming a physician and/or a medical scientist, the student will be requested to confer with the Associate Dean for Student Affairs.

2. Where a matter involving student conduct cannot be resolved to the satisfaction of the Associate Dean for Student Affairs, or where the gravity of the acts with which the student is charged appears to warrant further attention, the Dean of the Medical Faculty will appoint an ad hoc committee of the Advisory Board of the Medical Faculty to hear the charge of misconduct. The Committee may include such other persons, for example, student peers, as may be deemed appropriate. Each person appointed to the ad hoc committee shall be free of bias or personal interest
in the matter. The Dean, Vice Dean, Associate Dean and Registrar shall be non-voting ex-officio members of the ad hoc committee. The Dean, Vice Dean, or an Associate Dean shall preside at meetings of the ad hoc committee and may vote when the ad hoc committee is equally divided on a question.

3. A student charged with misconduct will be given written notice of the charges and of the date and time of the Committee hearing. Prior to the hearing an accused student shall be given access to all documentary evidence to be presented against him. An accused student may request an opportunity to consult with the Dean, Vice Dean, or an Associate Dean prior to a hearing.

4. A student may be accompanied to the hearing by a faculty member or student advisor. Representation of the accused student or the accusing party at the hearing by attorneys will not be permitted.

5. In the course of the hearing, a student will be given the opportunity to present evidence and witnesses in his behalf, to question all witnesses, and to make statements to the Committee.

6. Members of the ad hoc committee may ask questions of the student charged and of witnesses appearing before the Committee.

7. A hearing before the ad hoc committee will be closed and persons other than Deans appearing as witnesses will be asked to absent themselves before and after their testimony. Parents of the accused student will be permitted to accompany a student throughout the hearing, and, if they should wish to do so, to make a statement.

8. A hearing shall be recorded but the deliberations of the ad hoc committee shall not be recorded. Following the hearing, the accused student shall be permitted to listen to the recording upon request, but all copies of the recording shall remain in the School’s possession.

9. All parties, witnesses, and representatives shall be excused at the conclusion of the hearing and the ad hoc committee shall deliberate privately. The Committee shall make findings as to the truth or falsity of the charges against the student and, where necessary, shall submit to the Dean a recommendation of a penalty.

10. The options for disciplinary action, should the Committee decide that the student’s behavior warrants discipline, will include, but will not necessarily be limited to the following:

   a. **Reprimand** without probation or suspension.
   
   b. **Probation** for a specified time period or until explicit* conditions are met. Review and final decisions to be administrative.
   
   c. **Suspension** for a specified time period or until explicit* conditions are met. Review to be administrative.
   
   d. **Suspension** for a specified time or until explicit* conditions are met. Review by the ad hoc committee of the Advisory Board.
   
   e. **Unconditional Expulsion**

   *Explicit conditions are to be unambiguous and as objective as the conditions allow.

11. A student may appeal an adverse decision to the Dean of the School of Medicine, or, in the absence of the Dean, appeal may be made to the Vice Dean or an Associate Dean. The appeal should be made within 30 calendar days of the date of the committee decision.

12. A student may attend classes pending the proceedings before the ad hoc committee unless the student is judged by the Dean, Vice Dean, or Associate Dean to be a danger to himself or others. A student must seek the permission of the Dean, Vice Dean, or Associate Dean in order to continue the educational program pending appeal from the recommendations of the ad hoc committee.

### Attendance Policy in the Preclinical Curriculum

Among the goals of the Scientific Foundations of Medicine and the Genes to Society courses are to develop a sense of professionalism, to promote collegiality, to engage students in teaching one another, and to give students experience working in teams where different backgrounds and expertise are represented. Meeting these goals requires each student to be actively engaged, therefore attendance is mandatory at all group learning and teamwork activities. Attendance is also mandatory at all activities that involve patients and/or guests.

**Mandatory attendance:**
- Small group session
- Clinical Correlatinos
- Events involving interaction with a patient
- Case discussions
- Labs
- Activities in the Simulation Center
- GTS Workshops

Failure to attend at least 80% of these events in a block will result in the student being reported to the course and block directors and the Associate Dean for Student Affairs. Unexcused attendance below 80% will affect the student’s performance in the course and will be considered a breach of
the standards of professionalism expected by the School. In blocks where at least five sessions of one type of event occur (e.g., Small Group Discussions), attendance at 80% of these sessions is required in addition to overall attendance at 80% of interactive and patient and guest events.

Excused absences may be granted in cases of illness, religious observance, family emergency, presentations at scientific conferences, or required legal activity (e.g., jury duty) through discussion (in advance whenever feasible) with the section director, course director, and/or Associate Dean for Student Affairs.

Clinical Curriculum Attendance Policy

Attendance is required in all required clinical courses. This policy encompasses the following courses, hereafter referred to as required clinical courses:

- Longitudinal Clerkship
- Transition to the Wards
- PRECEDE
- Transition to Residency and Preparation for Life (TRIPLE)
- Core Clerkships: Emergency Medicine, Medicine, Neurology, Ob/Gyn (Women’s Health), Pediatrics, Psychiatry and Surgery
- Advanced Clerkships: Chronic Disease and Disability, Critical Care and Subinternships (Medicine, Surgery, Pediatrics, Ob/Gyn, Orthopedics, Otolaryngology, Plastic Surgery, Emergency Medicine)

Attendance rules are governed by the School of Medicine in the following ways:

School Holidays: The School of Medicine publishes an annual calendar that identifies official SOM holidays for students (http://www.hopkinsmedicine.org/som/students/academics/calendar.html). These holidays currently include the following:

- Labor Day (Quarter 1, 1 day)
- Thanksgiving (Quarter 2, 4 days [2 weekdays, 2 weekend days])
- Christmas and New Year (winter break)
- Martin Luther King Day (Quarter 3, 1 day)
- Spring vacation (spring break)
- Memorial Day (Quarter 4, 1 day)
- Independence Day (Summer Quarter, 1 day)

The holidays which occur during the required clinical course time generally fall on a Monday or Friday adjacent to a weekend. These weekend days adjacent to these weekday holidays are NOT considered official school holidays (with the exception of Thanksgiving) and required activities may be scheduled on those weekend days at the discretion of the clerkship director. University Commencement and Convocation are NOT considered holidays for required clinical course students. Similarly, election day, presidential inauguration, and other public or civic events are not considered holidays for required clinical course students.

Excused & Unexcused Absences

There are no given ‘personal days’ allowed in a required clinical course. Clarification on what qualifies as an excused and unexcused absence is as follows:

a. Residency Interviews

The following policy is to address the amount of time that fourth year students can miss from their required clinical courses for residency interviews. The goal is to ensure that students obtain sufficient experience in each of the basic disciplines to meet the objectives of the Hopkins curriculum. Interview days should not be considered the equivalent of PERSONAL days. Students should make every effort to leave as late as possible and return as early as possible when interviewing to minimize time lost from a required clinical course.

1. On 6-9 week clerkships, students will be allowed to miss 3 full days of responsibilities as excused absences for interviews.
2. On 4-4.5 week clerkships, students will be allowed to miss 2 full days of responsibilities as excused absences for interviews.
3. Students must inform course directors of any such absences in advance of the beginning of the clerkship when possible. If students do not contact the course director in advance of any absences, they will be considered unexcused and will impact on the student’s final grade.
4. All students who miss more than the allowed days above will be required to develop a plan for remediation of missed days with the clerkship director. Such remediation is a necessary requirement for successful graduation from the M.D. curriculum.

b. Comprehensive Clinical Skills Exam (CCSE)

The CCSE is a required educational activity for all graduating medical students. Students are encouraged not to schedule their CCSE during a required course, but this is not always possible. The student is to be excused from required clinical course duties for the duration of the exam (approximately...
7-9 hours, since the current 10-case version of the exam runs from about 7AM to 4PM. Students should expect to attend required basic clerkship educational activities after they have completed the exam.

c. Other Required Coursework
Certain required courses may occasionally be scheduled concurrently with a required clinical course. If this occurs, scheduled activities for these other courses take priority over all scheduled required clinical course activities. Nevertheless, if such a conflict arises for a particular student, remediation may be required (see below).

d. Elective Coursework
Under no circumstances will elective coursework supersede required clinical course activities. Students will not be excused from required clinical course duties to attend clinical elective courses (or similar activities, such as research electives or ACLS training), whether such electives are internal or external to Johns Hopkins. This includes elective experiences requiring complex or expensive travel arrangements, such as those conducted overseas. It is the responsibility of the student to ensure that no such conflicts arise. Students should consult the SOM calendar and the Registrar’s office for official start and end dates for each required clinical course.

e. Personal Reasons (including Religious Holidays)
Students must notify the clerkship director as early as possible before the start of the required clinical course regarding any scheduled absence other than those described above, and should expect that they will need to make up missed time. This includes (but is not limited to) any absence for religious holidays, academic events (e.g., national meetings and other presentations, including within Johns Hopkins), and civic responsibilities (e.g., election day, jury duty). Although each clerkship director has discretion to allow or disallow such absences (except for jury duty and religious holidays, see below*) based on their potential impact on the educational experience, the general rule is “a day for a day” (i.e., each missed day will generally result in one additional day made up at a later time).

Clarification for specific instances:
1. Since most family events (weddings, family reunions, etc.) are planned for weekends, most of these events could be attended with minimum time lost from the required clinical courses with advance planning. However, some personal events (e.g., graduations) typically occur on weekdays. Family events are excused only when the director has been notified at least six weeks prior to the start of the required clinical course, and when students will not miss more than 2 days (8-week clerkship)/1 day (4-week clerkship) or any required activities that would be difficult to remediate.

2. Attending JHU School of Medicine Graduation is excused only if a family member or spouse is graduating.

3. Attendance at a professional meeting for networking or professional development, or to accompany a family member, during a required clinical course is not excused. Students who are funded by the Office of Student Affairs or Office for Student Diversity to attend national student meetings should follow the 5-step process outlined by the Office for Student Diversity.

*University policy regarding religious holidays states, “Religious holidays are valid excuses to be excused from class. Students who must miss a class or an examination because of a religious holiday must inform the instructor as early as possible in order to be excused from class or to make up any work that is missed.”

f. Weather and Other Related Emergencies Within the Baltimore Area
Weather-related policies are stipulated by the Johns Hopkins University. Students in required clerkships and subinternships are not considered “Required Attendance Employees” and are excused from attendance at normally-required clinical activities if affected by circumstances (e.g., weather) related to University delays or closings. As necessary, remediation plans will be made on a case-by-case basis by the clerkship director.

Weather and Other Related Emergencies Outside the Baltimore Area
Students who travel during (e.g., on weekends) or in close temporal proximity to (e.g., just before) a required clinical course may be delayed in their return travel plans by inclement weather, flight cancellations, or other similar events outside their control. In such circumstances, safety is the first priority. Once the student’s safety is assured, they should immediately notify people related to the course, as appropriate (e.g., course or clerkship director or coordinator, clinical team or preceptor with whom they are rotating, etc.). Students will generally be required to remediate any time or activities upon safe return or at a later date. Students should be advised, however, that extended or repeated travel-related absences will be considered unprofessional behavior and will likely result in grade reductions, failure, or disciplinary action.
Illness or Injury (Personal or Family)
Illnesses or injuries are handled on a case-by-case basis by clerkship directors. In almost all cases, such events cannot be predicted in advance. When either occurs, the student’s first responsibility is to their own personal safety and the safety and well-being of those around them. Once the situation has stabilized sufficiently and it is safe to do so, a student should immediately notify people related to the course or clerkship, as appropriate (e.g., course or clerkship director or Coordinator, clinical team or preceptor with whom they are rotating, etc.). Family emergencies (including illness or death of a loved one) should be handled similarly. As necessary, remediation plans will be made on a case-by-case basis by the course or clerkship director.

Medical Student Employment Policy
In recognition of the primacy of the educational goals for students enrolled the full-time M.D. curriculum in the School of Medicine, the following policy was established to provide guidance to students, faculty, and administrators:

1. Students enrolled in the full-time M.D. curriculum may be employed by individuals, divisions, departments, or other entities within the University with limitations described below.

2. Students must be in good academic standing in order to be eligible for employment by the University. Documentation of this standing will be coordinated by the Office of Student Affairs. If there is evidence that the student’s academic performance is placing the student at-risk for failing, in addition to the usual supports offered in these situations, the student’s employment status will be reviewed by the Office of Student Affairs in collaboration with the student. This could result in termination of University employment.

3. Students must submit a Request for Authorization of Student Employment form to the Office of Student Affairs describing the proposed employment. This form also requires information from the proposed supervisor of the employment and an acknowledgement on their part of awareness of this policy.

4. Students enrolled in a full-time research elective are exempt from this rule as they have no other curricular responsibilities at that time. However, only six weeks of paid elective credit can count toward the cumulative elective credit required for graduation.

5. Violations of this policy will be reported to the Office of Student Affairs and could result in disciplinary action or referral to the appropriate Promotions Committee for review.

Alcohol Policy for Medical Students
Intoxication in the workplace is considered unprofessional behavior. Therefore, this policy shall regulate the use of alcohol at school sponsored/sanctioned medical student events on the premises of the Johns Hopkins University School of Medicine and Health System.

1. No funds provided directly by the SOM Administration will be used to purchase alcoholic beverages.

2. Appropriate measures must be taken to ensure that guests/participants under the age of 21 do not have access to alcoholic beverages.

3. At events where alcohol is served, the organizers must provide ample non-alcoholic beverage choices.

4. All events serving alcohol are required to contract bartenders to oversee the distribution of alcoholic beverages. Bartenders are expected to deny alcohol to anyone who appears to be impaired from alcohol.

5. The organizers of such events must complete a Event Alcohol Approval Request Form and meet with one of the Associate or Assistant Deans of Student Affairs to obtain approval for the event.

Financial Aid Satisfactory Academic Progress Review
Students who receive Federal Financial Aid must, in accordance with federal regulations, be in good standing and maintain Satisfactory Academic Progress (SAP) toward their degree. Under Federal Title IV law, the school’s SAP requirements must meet certain minimum requirements, and be at least as strict as the institution’s established standards for Good Academic Standing. This policy applies to students receiving Federal Financial Aid for semester/periods of enrollment that begin on or after July 1, 2011.

The standards used to evaluate academic progress are cumulative and, therefore, include all periods of the student’s enrollment, including periods during which the student did not receive federal financial aid funds.

In determining student’s academic progress, the Financial Aid Office will follow the
School of Medicine’s Student Promotion Committee academic review policy which is established for all students and meets the minimum Title IV academic policy requirements. (See Promotions Committee Process)

Student academic standing and satisfactory academic progress (SAP) will be reviewed annually by the Financial Aid Office. Students must demonstrate satisfactory progress toward their academic objectives for continued aid eligibility. Federal regulations require three measurements to determine financial aid progress; qualitative, quantitative and timeframe.

### Qualitative Review
The School of Medicine does not compute grade point averages using letter grades. Therefore, students must achieve the minimum grade of Pass (satisfactory completion of work) in all required courses, electives and core clerkships as means of progress. Student's basic courses in Years 1 and 2 are graded as Pass/Fail. Clerkships, clinical electives, advanced clerkships and clinical sub-internships are graded on the four tier system: Honors, High Pass, Pass, and Fail.

Upon the recommendation of the Student Promotion Committee, any student who is not progressing academically, and who has been determined to have received federal financial aid funding, will have their financial aid status reviewed by the Financial Aid Office and the Associate Dean of Student Affairs or designee to determine continued aid eligibility.

### Quantitative Review
Students must have academic standing consistent with the School of Medicine’s curriculum and graduation requirements to maintain continued financial aid assistance. To be making academic progress, students must have completed the first two years of curriculum by the end of the third year of their initial enrollment. This requires a 100% course completion rate in Years 1 and 2. Courses attempted and completed will be evaluated during the annual review to determine the student’s required course completion for progression to the next year.

### Time Frame
Maximum time frame is the maximum number of years after first enrollment that a student may complete School of Medicine courses in the full time pursuit of a degree. The Financial Aid Office will monitor the quantitative time frame and pace for completion of the student’s program.

The maximum time frame for completion of the M.D. program is one and one-half times the program normal length for Medicine/M.D. and the maximum timeframe for the M.D./Ph.D. program is twice the normal program length.

<table>
<thead>
<tr>
<th>Program</th>
<th>Normal Length</th>
<th>Maximum Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine/MD</td>
<td>4 years</td>
<td>6 years</td>
</tr>
<tr>
<td>MD/PhD</td>
<td>8 years</td>
<td>10 years</td>
</tr>
</tbody>
</table>

Because students are allowed to switch between programs, monitoring will be based on last date of matriculation in the specific program.

In the review of quantitative measurement of program completion, the Financial Aid Office will count all terms and academic years even if the student did not receive federal financial aid funding in one or more of the academic periods.

Approved leave of absences (LOA) for other than academic purposes will be excluded from the quantitative maximum time frame calculation for which the student is expected to complete their program.

Approved full-time non-credit research fellowships (SIR) for other than academic purposes shall be excluded from the quantitative maximum time frame calculation for which the student is expected to complete their program.

Students, who exceed the maximum time frame for completion of their program, will be denied any additional financial aid funding.

### Treatment of Repeat Coursework

#### Repeat Coursework
Students may receive financial aid funding for the repeat of a failing grade or withdrawal of any class or classes. Repeat of the same course may only be funded one additional time. Every attempt of a repeated course counts as attempted towards completion rate but it only counts once as completed.

#### Repeat of Entire Year Coursework
Under current financial aid guidelines, students who failed a course and are required to repeat an entire year of coursework (which would also include successfully completed courses), will be eligible for federal loans for the repeat of the required academic year. Funding will be provided only once for the repeat of the same academic year.

### Academic Dismissal or Withdrawal
Students who are academically dismissed or who withdraw from the school are not making academic progress and will no longer qualify for financial aid.

### Appeal Process
Students not making academic progress as determined by the Student Promotion Committee may petition for review and appeal of their status by following the school’s policy
for review by the appropriate standing committees as outlined in the SOM catalogue. Student's who successfully petition for reinstatement, may regain eligibility for financial aid funding. The Offices of Financial Aid and Student Affairs will review student progress before aid is reinstated.

Students not meeting financial aid SAP requirements (qualitative and/or time frame) may appeal to the Financial Aid Office for review. The appeal must state the reasons for failing to meet SAP requirements, such as special circumstances that contributed to the student’s failure to make satisfactory academic progress (e.g., the death of a relative, an injury or illness of the student, or other special circumstances)

Financial Aid Probation
Students who are not making academic progress as determined by the Student Promotion Committee and have appealed the decision to the committee, and the appeal approved; must also appeal to the financial aid office for reinstatement of aid eligibility. Once approved, the student will be placed on Financial aid Probation and will be allowed one additional payment of financial aid during the award period. Students must show improvement in coursework and progression in their program in order to continue receiving federal financial aid. Progress will be based upon the terms outlined by the Standing Committee’s requirements for continued academic progress. Students will remain on Financial aid Probation during the period of academic review.

Evaluation Periods
The Financial Aid Office will complete review of a student’s academic record at the end of each academic year.

The Registrar’s Office will provide a report which will identify those students who may be in academic difficulty.

The Financial Aid Office and the Associate Dean of Student Affairs or designee, will determine student’s continued eligibility for financial aid funding based on the Student Promotion Committee recommendations.

Involuntary Leave of Absence
Students may be asked to withdraw or be placed on an involuntary medical leave of absence when their health, or the behavioral manifestations of their health, render them unfit to continue the course of study. Prior notice and the opportunity to be heard will, under ordinary circumstances, be given before the imposition of an involuntary leave of absence. However, the School of Medicine reserves the right to conclude that, on certain occasions, conditions exist which warrant an immediate leave of absence in order to avert imminent harm to the student, or to other persons or property. In such an event, a student on an involuntary leave of absence will be apprised immediately of procedures for appeal and reinstatement by the Associate Dean for Student Affairs.

Academic Honesty
Students must show integrity and honesty at all times in carrying out classroom assignments, in taking course examinations, in discharging their patient obligations, and in their dealings with others. It is also the duty of students as well as faculty to report dishonest acts to the course director or other faculty member, the Dean, or an Associate Dean. Since nothing less than complete trustworthiness is acceptable in a physician, any act of dishonesty casts doubt upon a student’s suitability to be a physician and is viewed as unprofessional behavior. Such acts are dealt with in the manner prescribed under “Promotions”, and the possible penalties include expulsion.

Honor Code
The honor code, developed by the medical student body, introduced in September 1991, is as follows:

As a student at The Johns Hopkins School of Medicine, I pledge:

To do my own work and be honest in my interactions with peers, faculty, and staff. This applies to my work on examinations, assignments, and papers as well as work in the laboratory.

To uphold the high standard of conduct in patient care which has always been maintained by the Johns Hopkins medical community.

To base my interactions with other students on mutual respect and cooperation.

To act on infractions of the honor code, and to maintain the confidentiality of all parties involved.

To encourage my peers to uphold this honor code.

Upon matriculation every student is required to sign that they have read the Honor Code. It is the expectation that every student live by this Honor Code.
Special Students/Visiting Students

Under special circumstances a limited number of properly qualified persons may be admitted as special students to courses offered by the School of Medicine. Special students will not ordinarily be accepted for enrollment in the required courses leading to the M.D. degree. Exceptions to this policy require the approval of the Vice Dean for Education. Credit will not be given for such work toward the M.D. degree in this school.

Students enrolled in other medical schools who desire clinical clerkships in the School of Medicine are advised that the School reserves the right to strictly evaluate the pre-clinical and clinical education provided by the applicant’s own school. Moreover, since clerkship opportunities are necessarily limited, the School must give first consideration to placement of its own students. As a general rule, clerkships are limited to students in LCME approved schools. Visiting students are also accepted for research opportunities. Enrollment of visiting students is usually limited to one nine week period per academic year.

Information on application, fees and health insurance requirements may be obtained from the Office of the Registrar on the following website: http://www.hopkinsmedicine.org/som/students/policies/visitors.html

Enrollment

The School of Medicine enrolls full time students for the M.D., Ph.D., and Masters’ degrees. Part time students are not accepted for the M.D. degree. Under special circumstances part time students may be accepted for graduate study. Tuition is assessed in relation to period of enrollment as specified in the Tuition and Fees section of this circular.

Students may interrupt their course of study to enroll in a combined degree program. Leave of absence status may be requested if a student wishes to temporarily withdraw from the course of study.

Student in-residence is a category of full time enrollment that recognizes the student who interrupts the usual sequence of study to do an additional year (or years) of research or clinical work at Johns Hopkins or another approved site. Students in-residence are assessed a minimal registration fee. The Associate Dean for Student Affairs must approve all requests for leave of absence and student in-residence status.

Interdivisional Studies

Regularly matriculated students throughout the University are eligible to register for credit courses offered by the basic science departments and selected courses in clinical departments providing prerequisites are met and space is available. Admission to the required courses of the medical curriculum require approval of the course director and the Associate Dean/Registrar.

A tutorial program designed for junior and senior undergraduates offers over 100 tutorials in clinical and basic science departments. Divisional registrars can provide additional information.
The School of Medicine supports a number of programs of graduate study in the biomedical sciences and related fields. These programs provide opportunities for advanced course work and research training leading to advanced degrees.

Under the direction of the university-wide Doctor of Philosophy Board, opportunities for study for the degree of Doctor of Philosophy are available in the School of Medicine in biological chemistry, biomedical engineering, molecular biophysics, cell biology, cellular and molecular medicine, functional anatomy and human evolutionary studies, history of science, medicine and technology, human genetics, immunology, molecular biology and genetics, neuroscience, pharmacology and molecular sciences, physiology and pathobiology. A Master of Arts degree is offered in medical and biological illustration, history of science, medicine and technology, and health sciences informatics. The requirements for the various degrees are established by the Doctor of Philosophy Board of the University and by particular departments, committees, and schools.

A limited number of scholarships and grants are available for support of students in many of these programs.

**OFFICE OF GRADUATE STUDENT AFFAIRS**

The primary goal of the Office of Graduate Student Affairs (OGSA) is to address the concerns and needs of students enrolled in Doctor of Philosophy and Master of Arts programs in the School of Medicine. The Associate Dean for Graduate Student Affairs provides advice or counseling to students having personal or professional difficulties. The OGSA works with students to find whatever resources may be needed to deal with a broad range of problems that may arise during graduate training. The OGSA coordinates: disability services for Ph.D. students in the School of Medicine; recruitment efforts and summer programs aimed at recruiting underrepresented minority students, students from disadvantaged backgrounds, and students with disabilities into a basic research environment; the "Introduction to Research Ethics I and II" course designed specifically for research issues specific to PhD students.

**DEGREE REQUIREMENTS**

Requirements which must be met by all candidates:

For the Doctor of Philosophy degree:

1. A minimum of two consecutive semesters of registration as a full-time, resident graduate student.
2. A certification by a department or program committee that all departmental or committee requirements have been fulfilled.
3. A dissertation approved by at least two referees and certified by them to be a significant contribution to knowledge.
4. A Doctor of Philosophy Board Oral Examination.

Requirements for the various Master’s degrees are listed with the individual programs.

Application for Admission: Requests for information and application materials should be directed to the Office of Graduate Student Affairs. Completed applications must be accompanied by a non-refundable fee of $100 for on-line applications to one graduate program, $110 for applications to two-three programs, and $150 to apply to four or more programs. Paper applications are no longer accepted.

Dissertation Publication: An abstract is required for publication in Dissertation Abstracts.

**DEPARTMENTAL REQUIREMENTS**

Requirements of the individual graduate departments or programs are set forth in the following sections. Further information may be obtained by writing to the director of the department, The Johns Hopkins University School of Medicine, Baltimore, Maryland 21205.

**BIOCHEMISTRY, CELLULAR AND MOLECULAR BIOLOGY**

**Fields of Study and Research**

The Departments of Biological Chemistry, Biophysics and Biophysical Chemistry, Cell Biology, Molecular Biology and Genetics, Neuroscience, Pharmacology and Molecular Sciences, and Physiology jointly provide a program of study leading to the Ph.D. degree. No candidates are accepted for the M.A. degree.
The purpose of the program is to train highly qualified persons for careers in basic biomedical research. Strong emphasis is placed on molecular and cellular approaches to fundamental problems in research areas covered by the participating departments. Following completion of basic formal course work, original research leading to a dissertation is the major feature of the training program. Students may elect dissertation problems from a broad spectrum of options offered by the faculty of the seven departments.

The joint training program involves approximately 100 faculty members and 150 graduate students. The director of the training program in Biochemistry, Cellular and Molecular Biology is Professor Carolyn Machamer.

The Faculty
A list of the faculty members participating in this program and their fields of specialization may be found on the BCMB website, http://biochem.bs.jhmi.edu/bcmb.

Facilities
The lecture halls and the research laboratories are located in the Wood Basic Science Building and the adjoining Physiology, Biophysics, Hunterian, Preclinical Teaching, Ross Building, Broadway Research, and Rangos Buildings. Modern equipment for research is available to students. This includes electron microscopes, confocal microscopes, nuclear magnetic resonance spectrometers, mass spectrometers, HPLC and gas-liquid chromatographs, protein sequencers, peptide synthesizers, oligonucleotide synthesizers, X-ray diffraction equipment, and a molecular graphics display. Each department has a small library and all are located close to the Welch Medical Library.

Collaborative Facilities
All seven departments enjoy excellent working relationships with other departments in the medical school and with departments at the Homewood campus and the Bloomberg School of Public Health.

Requirements for Admission
Candidates for admission to graduate standing should present a bachelor’s degree with undergraduate training in organic, analytical, inorganic, and physical chemistry, general biology, physics and calculus. Inquiries for admission should be directed to: Chairperson of Admissions, Graduate Program in Biochemistry, Cellular and Molecular Biology, The Johns Hopkins University School of Medicine, 1830 E. Monument Street, Room 2-102, Baltimore, MD 21205, or email to sroot@jhmi.edu.

Requirements for the Ph.D. Degree
During the course of graduate study the student must successfully complete the “Foundations of Modern Biology” course comprised of eight modules: Macromolecular Structure and Analysis, Biochemical and Biophysical Principles, Molecular Biology and Genomics, Genetics, Cell Structure and Dynamics, Organic Mechanisms in Biology, Pathways and Regulation, and Bioinformatics. These are completed in the first three quarters of year one. Three electives and BCMB Ethics and Career Issues in Science are completed in the fourth quarter of the first year and Method and Logic in Biology is a required second year course. Qualified students can test out of required courses. In addition, four elective courses are required in the advanced years of study.

An oral examination, conducted as prescribed by the Doctor of Philosophy Board of the University, must be completed before the end of the second year. Subsequently, the student is required to present an acceptable doctoral dissertation based on research undertaken during residency as a graduate student and must present a public seminar on his/her dissertation work. Postdoctoral research training is encouraged.

Courses
The first year required core course modules are as follows: Macromolecular Structure and Analysis (100.709), Biochemical and Biophysical Principles (100.710), Cell Structure and Dynamics (110.728), Molecular Biology and Genomics (260.709), Genetics (260.708), Organic Mechanisms in Biology (330.709), Pathways and Regulation (360.728), BCMB Ethics and Career Issues in Science (800.713), Bioinformatics (800.707), along with Core Discussion (800.708). The required second year course is Method and Logic in Biology (800.705). Courses are detailed under the course descriptions listed in the entries of the Departments of Biological Chemistry, Biophysics and Biophysical Chemistry, Cell Biology, Molecular Biology and Genetics, Neuroscience, Pharmacology and Molecular Sciences, and Physiology.

Financial Support
Financial Support covering normal living costs, medical insurance, and tuition is available for accepted candidates.

BIOLOGICAL CHEMISTRY
Program Overview
The graduate program in Biological Chemis-
try focuses on teaching a rigorous scientific approach to biomedical research. Research projects in the program investigate the biomedical, genetic, and molecular basis of a variety of disorders and diseases while probing the fundamental properties of molecules and cells. The Biological Chemistry faculty members investigate the biochemical mechanisms underlying a great variety of normal biological processes. Our interests span neurobiology, immunology, cellular and developmental biology, glycochemistry, protein structure and folding, signal transduction, proteomics, and metabolism. We also study pathologies arising from abnormalities in these processes, such as cancer, neurodegeneration, infectious disease, diabetes, and obesity. The Biological Chemistry (BC) program offers a highly flexible and personalized training environment in which there is significant personal interaction with the faculty. The program is currently home to 28 outstanding students.

Plan of Study
A curriculum of formal courses and informal tutorials characterizes the first year. Current Topics in Biological Chemistry: First- and second- year students will participate in a literature-based discussion course involving the entire BC faculty and covering important concepts and recent developments in biological research. Due to the small size of the course, it is similar to a tutorial and provides the students with a great deal of personal exposure to our faculty. BC students participate in the weekly departmental journal club and seminar series. The first year BC course requirements are listed below:

- Foundations of Modern Biology Core Course: Students take all of the eight following modules: Macromolecular Structure and Analysis; Biochemical and Biophysical Principals; Molecular Biology and Genomics; Genetics; Cell Structure and Dynamics; Organic Mechanisms in Biology; Computational Biology and Bioinformatics.

First year elective courses: Students choose four of the following courses: Developmental Biology; Mechanisms in Bioorganic Chemistry; Neurobiology; Epigenetics; Transcription Mechanisms; Virology; Post Transcriptional Events in Gene Regulation; Structure and Chemistry of Lipid Bilayers; The Nucleus; Fundamentals of Membrane Physiology; Introductory Molecular Immunology; HIV Biology; Single Molecule Biophysics; Cytoskeleton.

Biomedical Ethics and Professional Development: This course consists of three sessions: Introduction to Ethics of Biomedical Education and Research, The Art and Science of a Research Proposal, and Scientific Writing and Reviewing.

Research in Biological Chemistry: A major part of the first year program will be 2-3 research-oriented rotations performed in BC laboratories of the student's choice. At the conclusion of these rotations the student will commit to a particular laboratory for pursing a research project leading to a Ph.D. thesis. An oral qualifying examination will be administered after completion of the first year course curriculum. Two elective courses should be taken subsequent to the first year. Certain courses that are particularly demanding could be substituted for two courses. The objective of the Ph.D. program is to prepare young scientists for independent careers in biomedical research.

Admissions Information
Students are usually admitted for the fall semester. Applicants should have an undergraduate degree in any area of biology, chemistry, or biochemistry. Scores on the Graduate Record Examinations are required (GRE 5316). The application deadline is January 10.

To Request an Application
Contact the Office of Graduate Student Affairs, 1830 E. Monument Street, Room 2-107, Baltimore, MD 21205-2186; Email: grad_study@jhmi.edu. The program contacts are: Michael J. Caterina (caterina@jhmi.edu), Director, and Judy Mahaffy (jma-haffy@jhmi.edu), Program Coordinator.

BIOMEDICAL ENGINEERING
Biomedical Engineering (BME) has emerged as one of the most exciting interdisciplinary research fields in modern science. Biomedical engineers apply modern approaches from the experimental life sciences in conjunction with theoretical and computational methods from the disciplines of engineering, mathematics and computer science to the solution of biomedical problems of fundamental importance. The Biomedical Engineering Graduate Program of the Johns Hopkins University is designed to train engineers to work at the cutting edge of this exciting discipline. There are two graduate programs in biomedical engineering. The masters program is supported by the Whiting School of Engineering and leads to a Masters of Science degree. The Ph.D. program is supported by the School of Medicine and leads to a Ph.D. in Biomedical Engineering.
Ph.D. in Biomedical Engineering

The cornerstone of the Program is our belief in the importance of in-depth training of students in both life sciences and modern engineering. In-depth training in life sciences is achieved in one of two ways. Typically, incoming PhD students enroll in the first year basic sciences curriculum of the Johns Hopkins University School of Medicine. That is, they learn human biology with the medical students. This is a unique and intensive curriculum covering a broad range of topics including molecules and cells, human anatomy, immunology, physiology and neuroscience. Students choosing this option typically devote their entire first academic year to these courses. This curriculum is an excellent way to build a broad and solid foundation in the life sciences. Alternatively, students may elect alternative life sciences curricula. These curricula have been carefully designed to provide training in areas of the life sciences that are appropriate to each of the program’s research areas. This option is of particular value to students who enter the program having a strong background in the life sciences. In-depth training in engineering, mathematics and computer science is achieved through elective courses that are taken in the second year.

All students are admitted with full fellowship. This covers tuition and provides a modest stipend for the duration of their PhD. Because the students are fully funded, they can choose to perform their dissertation in essentially any laboratory in the University (subject to the approval of the program directors). A special program with the NHLBI of the NIH allows students to also choose from research laboratories at the NIH.

Students typically do research rotations during the summer before start of the first academic semester, during the first year (typically as they are taking medical school courses), and during the following summer year. They are expected to choose a research laboratory before the start of the second academic year.

Emphasis is placed on original research leading to the doctoral dissertation. The research is usually experimental in nature, and students are expected to learn biological experimental techniques; nevertheless, experiment or theory can be emphasized in the research as desired by the student.

Program Directors

Professor Reza Shadmehr and Professor David Yue are the co-directors of the BME Ph.D. Program.

Requirements for Admission

The Program accepts applications for the PhD program until December 15 of each year. We typically recruit students in five areas: Computational Biology, Imaging, Tissue Engineering, Neural Engineering, and MNCP (molecular, neural, and cardiac physiology). The program is unique in that it offers the BME student the strengths of one of the best medical schools in the world. If you wish to combine engineering with cutting edge research in medicine, this may be the program for you.

In their first year, our students have the option of taking many of the same courses as the medical students, including human anatomy, molecules and cells, and genes to society. In their second year, our students take advanced engineering courses. Therefore, students that apply to our program need to not only have a strong background in engineering and mathematics, but also sufficient background in chemistry (including organic chemistry) and biology (at least two introductory courses).

The admission process is by committee. The applicant should specify which area they are interested in, and write about the kind of research they are considering. The faculty in each area vote and rank the applicants. The final pool of applicants is ranked and voted on by the entire faculty.

All accepted students receive a full fellowship. The fellowship covers tuition and provides for a monthly stipend. In this way, the students are free to choose from almost any research lab in the university. To facilitate this process, students do two or more rotations during their first year and typically choose a lab by the end of the summer of their first year.

About one third of our incoming students are international students. A short list of these students is formed by committee and the top candidates are interviewed by phone. Like all admitted students, international students receive full financial aid as well as a monthly stipend. They too have the freedom to choose from any lab.

Applications should be complete when submitted. In order to be considered a complete application we must have:

- A completed online application form.
- Official transcripts from every college or university attended. Sealed, official transcripts or certified records of all university
(undergraduate and graduate) study must be submitted. If you have attended more than one institution, transcripts from each must be included with your application.

- Official Graduate Record Examination scores (GRE) – MCAT scores will be acceptable. The GRE code for applying to graduate programs at the Johns Hopkins University School of Medicine is 5316.

The BME Ph.D. program does not rely heavily on the GRE exam in making admissions or financial aid decisions. Research experience, course grades, and recommendations carry more weight. However, because the GRE score is part of the application and does affect admissions decisions in some cases, foreign applicants who took the GRE in its electronic form in a country where the electronic test is no longer offered are advised to retake the exam in its paper form. Applications will be considered regardless of which form of the exam was taken.

- Three letters of recommendation – these letters should come directly from faculty members who are acquainted with you and your academic work. These letters should be sealed and comment on your aptitude and promise for independent research.

- Personal statement – a typewritten statement (one page maximum) indicating the basis of your interest in graduate study and your career objectives. Included should be a discussion of any research experience you have had.

Applicants for admission must fulfill the following course prerequisites:

- one year of college level biology (may include quantitative biology or physiology)
- one semester of organic chemistry
- differential equations

If you are interested in applying and do not have the prerequisite courses, you may want to submit your application with an explanatory note indicating you have made/will make arrangements to take the prerequisites before you would matriculate (if your application is accepted). In the past, applicants have taken the prerequisites at their present schools, local community colleges, etc. Courses taken at any accredited college or university are acceptable.

Each applicant must have received a BA or BS degree or its equivalent prior to matriculation. A Masters degree is not required for admission to our program. All written correspondence and supporting documents should be sent directly to The Johns Hopkins School of Medicine, 1830 E. Monument Street, Suite 2-107, Baltimore, MD 21205-2196. Phone: 410-614-3385; Fax: 410-614-3386; grad_study@jhmi.edu.

Processing: The Ph.D. Program admissions committee will not consider any application until it is complete. Once an application has been received the applicant will be notified if supporting materials are missing.

Interview: The admissions committee will review completed applications and invite applicants to come to Johns Hopkins for a personal interview with faculty. Applicants from North America must come for an interview to be considered for admission. In the case of overseas applicants, for whom such a trip is not possible, a small number of telephone interviews will be conducted. The final admissions decisions will be made from the pool of interviewed applicants. Interviews are generally conducted in March.

Acceptance: Applicants will be notified by end of March of the outcome of their application. An offer of admission from the program will include a yearly stipend, full tuition and paid medical and dental insurance. This applies to every accepted applicant, regardless of citizenship or national origin. Those offered admission will be asked to let us know their decision as soon as possible. In any case, we must have the applicant’s decision by April 15.

Financial Aid
Fellowships for tuition and support stipends (regardless of citizenship or national origin) are available from the general funds of the university. U.S. citizens and Permanent Residents are eligible for support from training grants from the National Institutes of Health (NIH). Students are encouraged to apply for individual fellowships from the National Science Foundation and for NRSA awards from the NIH. Only online applications for admission are accepted and must be received by December 15.

Requirements for the Degree of Doctor of Philosophy
The first two years are ordinarily devoted to advanced courses in engineering science and in biomedical science. Engineering, mathematics, and other physical science courses to be taken are arranged between students and their advisers. Each student is assigned a panel of three advisers during the first two years. Eighteen credit hours of course work in engineering, mathematics or physical sciences are required. In addition, students must complete eighteen credit hours of course work in the life sciences. Of these 36 credit hours, at least six must be at the graduate level. At least three credit hours
in a course with strong engineering or mathematical theory content at the 600-level must be taken. For a list of course offerings by the Department of Biomedical Engineering, see the departmental statement on page 126. For additional courses available to students, see the catalogue of the Schools of Arts and Sciences and Engineering.

Summers are spent working in a biomedical laboratory to gain experience and to seek out a suitable thesis research area. By the beginning of the third year, students should start original research leading to the dissertation. Students must fulfill a modest teaching requirement during one year of their program. The remaining time is spent in thesis research. The program typically takes five to six years to complete.

The student must pass a preliminary oral examination which will be a Doctor of Philosophy Board examination. This is taken in the first half of the third year. The student must then conduct original research, describe it in a dissertation and pass a final oral examination that is a defense of the dissertation. There is a minimum residency requirement of two consecutive academic years.

**Integrated M.D.-Ph.D. Program**

Candidates for the Ph.D. in biomedical engineering who wish to apply jointly for the M.D. degree must apply directly through the School of Medicine. Although the combined programs would normally require at least seven years to execute sequentially, the combined program can ordinarily be completed in six years, with appropriate planning. Good preparation in biology and chemistry as well as mathematics, engineering, and the physical sciences is essential. Life science graduate requirements are met by the first-year program of the School of Medicine. This program is more arduous than the Ph.D. program alone, but it may have marked advantage for students interested in clinical research and applications in hospital systems and in the delivery of health care. The catalog for the School of Medicine should be consulted for admissions requirements and procedures.

Information about applying to the combined M.D.-Ph.D. program can be found at [www.hopkinsmedicine.org/mdphd/admissions/Howtoapply.html](http://www.hopkinsmedicine.org/mdphd/admissions/Howtoapply.html). Applications submitted for consideration of the combined degree will be reviewed by the Medical School admissions committee. If the Medical School admissions committee accepts the application, it is then passed along to the Biomedical Engineering Ph.D. Program admissions committee for review. A student applying to the combined program who wishes to be considered for the straight Ph.D. program must submit a written request to have his/her application forwarded to the Biomedical Engineering Ph.D. Program office for admission consideration if his/her application is not accepted by the Medical School admissions committee.

**M.S.E. PROGRAM IN BIOMEDICAL ENGINEERING**

**Master's of Science in Engineering**  
The master's degree program is designed for students who wish to pursue careers in research and development, or as a step toward Ph.D. or M.D./Ph.D. education. The program, which is designed to be completed in two years, consists of core courses, elective courses, and a thesis project. The project may be basic research in a laboratory or practical engineering, related to patient monitoring or other clinical problems.

**Admission and Financial Aid**

Students with undergraduate degrees in engineering are eligible to apply. Exceptional students with degrees in basic sciences may also apply, but would normally have to take a number of courses to overcome deficiencies in their curriculum. All students have the potential to receive full tuition support by obtaining a position in a research laboratory. Research assistantships are usually advertised by various laboratories in the institution to carry out specific research and development projects. Students without a research assistantship are expected to pay full tuition independently. Fellowships are also awarded to the top students in the program. Applications for admission are due by the appointed deadline (usually in mid-January). For more information and to apply online, go to [www.bme.jhu.edu/academics/masters](http://www.bme.jhu.edu/academics/masters).

**Requirements for the M.S.E. Degree**

Each student will take a minimum of 24 credits of courses at the 400-level or higher and complete a thesis. Students fulfill the course requirement by taking two courses in the Systems Bioengineering sequence (580.421, 580.422 or 580.429) and other advanced engineering, math and science courses. (JHU undergraduates waive the SBE sequence and take 8 credits from advanced engineering, math or science.) Students will also fulfill a minor teaching requirement by providing support to one of three lab-based undergraduate courses and six core lecture courses each semester. Additionally, all students must complete a thesis based on a research problem requiring application of quantitative or applied engineering principles to biomedical engineering.
BIOPHYSICS AND BIOPHYSICAL CHEMISTRY

In addition to its participation in the Program in Biochemistry, Cellular and Molecular Biology (BCMB) described earlier, the Department of Biophysics and Biophysical Chemistry provides training for outstanding students with interests in such quantitative areas as crystallography, enzymology, kinetics, protein design, and mathematical computer modeling, which fall outside the scope of the BCMB Program. Two separate training programs are available. The Program in Molecular Biophysics (PMB) is a large training program involving about 45 faculty members from both campuses of the University. The Biophysics and Biophysical Chemistry Program is a small program tightly centered around the Department of Biophysics and Biophysical Chemistry, and is appropriate to applicants with varied interests and diverse training backgrounds. Requirements for these two programs are given below. Applicants should feel free to discuss with the department which program is most appropriate for them.

**Biophysics and Biophysical Chemistry Program**

**Requirements for Admission**
Candidates for admission to graduate standing should present a Bachelor’s degree or equivalent with some undergraduate training beyond the elementary level in at least two of the following areas: chemistry, biology, mathematics, physics and computer science. Undergraduate courses in physical chemistry, general college physics, differential and integral calculus, and computer science are particularly important. However, deficiencies in some of these subjects can be made up during graduate residency.

**Requirements for the Ph.D. Degree**
During the course of graduate study the student must satisfactorily complete the following program of courses in the University or their equivalent at the intermediate or advanced level.

This list does not constitute an inflexible program; exceptions and modifications may be made at the discretion of the department to fit individual backgrounds, needs and interests.

**Required Courses**
The following seven, short courses are required:

- **100.709 Macromolecular Structure and Analysis** (offered by the Department of Biophysics and Biophysical Chemistry)
- **260.708 Genetics** (offered by the Department of Molecular Biology and Genetics)
- **260.709 Molecular Biology and Genomics** (offered by the Department of Molecular Biology and Genetics)
- **340.703 Cell Structure and Dynamics** (offered by the Department of Cell Biology)
- **330.709 Organic Mechanisms In Biology** (offered by the Department of Pharmacology and Molecular Sciences)
- **360.728 Pathways and Regulation** (offered by the Department of Physiology)

Additional requirements for the Ph.D. degree are as follows:

**Examinations:** Applicants must pass a qualifying oral examination as prescribed by the Doctor of Philosophy Board of the University. This examination will normally take place during the second year of residency. After the completion of the thesis, the student must satisfactorily complete a comprehensive oral examination administered by the Department of Biophysics and Biophysical Chemistry.

**Dissertation:** Completion of an original investigation and presentation of a dissertation is required. The dissertation must be accepted by the department and must be considered worthy of publication by referees nominated by the department.

**Program in Molecular Biophysics**

**Overview**
The Program in Molecular Biophysics (PMB) was established in 1990 and has evolved continuously over the years to provide its student participants with training in both the fundamental principles of biophysics and contemporary advances in the field. Over 45 faculty, members of 14 departments throughout the University, offer opportunities for learning in diverse and changing areas of research. The carefully designed set of courses and intensive laboratory work integrate various aspects of molecular biophysics into a dynamic curriculum.

Johns Hopkins has long been a leading research institution of world renown. The Hopkins biophysics community is known for its collaborative and congenial atmosphere. Students are encouraged to forge innovative paths by seeking the advice of other biophysicists and forming collaborations that enhance their research. PMB is committed to making the resources of experiment, theory, and computation available to its scientists.

In keeping with an institution of its caliber, a large number of technology hubs and instru-
mentation facilities are available to Hopkins researchers.

The program offers training for outstanding students in such areas as X-ray crystallography, NMR and optical spectroscopies, statistical mechanics, thermodynamics, biophysical chemistry, molecular biology, and biochemistry. It emphasizes studies of macromolecules and their assemblies, for which combined approaches - molecular genetics and structural studies for example - may be necessary.

Major Research Areas
Protein Folding & Dynamics, Membranes & Membrane Proteins, DNA-Protein Interactions, Structural Biology & Prediction, RNA Biophysics, Enzymes & Metabolic Pathways, Computation & Theory, Protein Design & Evolution, Single Molecule Studies

Requirements for Admission
We encourage applications from students who have majored in biological sciences, biochemistry, chemistry, engineering, and physics; although more diverse backgrounds in related disciplines are welcomed as well.

The program derives its strength from participants with various interests and backgrounds. PMB students come from a range of undergraduate disciplines and, therefore, some may require additional courses or tutorials to round off their basic training. Individual needs can be interwoven into the required curriculum. Optimal background includes general chemistry, organic chemistry, physical chemistry, two semesters of college-level physics, biochemistry or molecular biology, and calculus or a high-level math course.

Financial Support
All PMB students who are U.S. citizens or permanent residents receive full financial support including tuition, health insurance, fees, and a 12-month stipend. Assuming satisfactory progress toward the Ph.D., students may expect continued support of tuition, health insurance, and stipend through six years of their graduate study.

Program in Molecular Biophysics graduate students are supported for the first two years by a training grant from the National Institutes of Health. However, this support is limited to U.S. citizens and U.S. permanent residents. International applicants will be required to demonstrate financial support for their studies and will be required to deposit funds covering the first two years of tuition and living expenses with the University prior to April 15. If the funds are not deposited in a timely manner, any offer of admission to the Program in Molecular Biophysics will be null and void.

Students are encouraged to apply for external sources of funding such as National Science Foundation Predoctoral Fellowships, NIH Predoctoral Fellowships to Promote Diversity in Health-Related Research, and the Association for Women in Science Predoctoral Awards. Students accepted in the PMB have an excellent record of success in pursuing these opportunities.

Requirements for the Ph.D.
Degree Students must satisfactorily complete required and elective coursework. In addition, students must pass a Doctor of Philosophy Board Oral, a qualifying exam required university-wide, administered at the end of the second year. Students must continue to make satisfactory progress toward completion of their thesis research and meet annually with a thesis review committee starting in their fifth semester. Once thesis research is complete, students must defend their thesis before a final exam committee and present a final thesis seminar.

Required Courses
The methods and tools of biophysics are drawn from physics, chemistry, biology, mathematics and computer science. Consequently, our curriculum is correspondingly broad and rigorous. Five required one-semester courses form the core of the PMB curriculum: Physical Chemistry of Biological Macromolecules, Proteins & Nucleic Acids, Methods in Molecular Biophysics, Computer Modeling of Biological Macromolecules, and Organic Mechanisms in Biology. These courses provide a conceptual framework for understanding energetics, dynamics, structure and interactions at the molecular level, practical experience in computational analysis, and exposure to the current frontiers of biophysical research.

Additional Academic Requirements:
In addition to coursework, students attend weekly seminars and present one of their own in the second year. Proficiency in biochemistry, cell biology, and molecular biology is tested formally with an oral evaluation at the end of the first year. Tutorials and self-directed study provide alternative avenues for preparing for this evaluation.

The program aims to involve students in research projects from the start. First-year students complete three 10-week rotations in laboratories of their choosing. At the end of each rotation period, students present 10-minute talks with their rotation advisors, other faculty and students present. By summer of the first year, a student will have joined a research group and embarked on thesis
Cell Biology Program

Prerequisites
The department will admit well-qualified students to the program for work leading to the degree of Doctor of Philosophy. Applicants should have thorough training in general biology, chemistry and physics, or to remove deficiencies in these areas by means of appropriate undergraduate courses during the first year in residence.

Requirements for the Ph.D. Degree
Requirements established by the Department of Cell Biology and the Doctor of Philosophy Board of the University which must be met by all candidates are as follows:

1. Complete a minimum of two consecutive semesters of registration as a full time, resident graduate student. Most candidates require five years.
2. Demonstrate evidence of achievement and promise in a comprehensive oral examination administered by the Doctor of Philosophy Board, usually at the end of the second year of residence.
3. Write a dissertation, embodying findings worthy of publication, and certified to be a significant contribution to knowledge by at least two referees.
4. Present a final departmental oral examination/seminar in the field of the dissertation research certified by from three to five examiners.
5. The department or program committee must certify in writing that all departmental or committee requirements have been fulfilled.

Core Courses
Students will generally fulfill the course requirements of the interdepartmental program in Biochemistry, Cellular and Molecular Biology, but alternative courses can be arranged to meet individual needs. Advanced courses are required according to the needs of individual students.

Elective Courses
At their discretion, faculty members reserve the right to require students to take elective courses.

Teaching
Training in teaching (Molecules and Cells and/or Organ Histology) is required for all graduate students.

CELLULAR AND MOLECULAR MEDICINE (CMM)
The Graduate Training Program in Cellular and Molecular Medicine prepares scientists...
for laboratory research at the cellular and molecular level with a direct impact on the understanding, diagnosis, treatment and prevention of human diseases. The Ph.D. graduates of the program obtain rigorous training in scientific research and develop a thorough knowledge of human biology and human diseases.

This program grew out of a need for graduate training at the interface between medicine and the traditional basic science disciplines. Rapid progress in cellular and molecular biology has strongly impacted clinical medicine, offering insights about the fundamental causes of many diseases. Thus, the goal of this program is to train scientists who will make discoveries in the laboratory that can be applied expeditiously to the diagnosis, treatment, and prevention of disease. New technology allows scientists to identify genetic and molecular defects causing or predisposing to disease. The trainees in this program are working precisely at this interface between science and medicine to contribute to the long term well being of society.

Facilities
Students will work in well equipped laboratories of approximately 125 program faculty located throughout the medical school campus. These researchers are supported by many shared facilities including microscopy, molecular biology and protein chemistry.

Requirements for Admission
Applicants should have a bachelor degree with undergraduate training in biology, inorganic chemistry, organic chemistry, physics and calculus. Cell biology and/or biochemistry are recommended. The Graduate Record Examination (GRE) is required. Inquiries regarding admissions should be referred to the Office of the Graduate Program in Cellular and Molecular Medicine, 1830 E. Monument Street, Room 2-103. Telephone: (410) 614-0391; Fax: (410) 614-7294; E-mail:cmm@jhmi.edu.

Requirements for the Ph.D. Degree
Students must complete successfully the following courses: Introduction to the Human Body: Anatomy, Histology & Physiology (800.702), Molecular Biology and Genomics (260.709), Genetics (260.708), Cell Structure and Dynamics (340.703), Pathways and Regulation (360.728), Topics in Cellular and Molecular Medicine (800.718), Cellular and Molecular Core Discussion (800.703), Cellular and Molecular Basis of Disease (800.709), Principles of Immunology I (260.611.01), Graduate Pharmacology (330.707), Fundamental Virology (260.804) or Biochemical/Biophysical Principles (100.710), and Research in Cellular and Molecular Medicine (800.801). Students are required to take four elective courses to further broaden their experience in cellular and molecular medicine, as well as an ethics course. Elective courses may include courses at the School of Public Health and Homewood Campus. Elective course topics include bioorganic chemistry, biophysical chemistry, human anatomy, immunology, pathobiology, pharmacology and neuroscience.

Each student will conduct research in at least three different laboratories of CMM faculty during the first year. All rotations must be performed in the laboratories of CMM faculty members. These laboratory rotations will be approximately ten weeks long. At the end of the first year, students will select a research advisor from one of three rotation laboratories and begin original research leading to their doctoral dissertation.

A University mandated Doctor of Philosophy Board Oral examination must be completed by the end of the second year of study. Between the end of year two and the beginning of year three, a thesis committee must be selected and a meeting must be convened. Annual meetings are held until such time as the thesis committee believes the student is ready to write their doctoral dissertation. The dissertation is based on the student’s novel research; a public seminar of thesis work is a graduation requirement.

Financial Aid
The program is supported by a combination of monies from the Lucille P. Markey Charitable Trust and an NIH training grant. Each student is provided a stipend, health and dental insurance and tuition throughout their years in the program. The program covers these benefits during the students’ first year; in subsequent years the research advisor is responsible.

FUNCTIONAL ANATOMY AND EVOLUTION PROGRAM
Prerequisites
The Functional Anatomy and Evolution (FAE) Program will admit well-qualified students to the program for work leading to the degree of Doctor of Philosophy. Applicants should have thorough training in organismic biology, chemistry, physics, and mathematics.

Requirements for the Ph.D. Degree
Requirements established by the FAE Program which must be met by all candidates are as follows:
1. Complete a minimum of four years of reg-
istration as a full time, resident graduate student. Most candidates require five years.

2. Demonstrate evidence of achievement and promise in a comprehensive oral examination administered by the Doctoral Board, usually at the end of the second year of residence.

3. Write a dissertation, embodying findings worthy of publication, and certified to be a significant contribution to knowledge by at least two referees from within the department and two referees from outside.

4. Present a final departmental seminar in the field of the dissertation research.

5. The department or program committee must certify in writing that all departmental or committee requirements have been fulfilled.

Core Courses
Students must achieve a B- or better in Human Anatomy, Organ Histology, Evolutionary Biology, Biomechanics of the Skeleton, Mammals: Diversity, Structure and Evolution, Primate Evolution, and Biostatistics.

Elective Courses
Students must also take at least four elective courses, to be determined through consultation with FAE faculty, chosen from among those offered by the FAE faculty (including Dinosaurs, Cladistics, Morphometrics, and Allometry), as well as elsewhere in the university (e.g., Sedimentary Environments, Climates of the Past, Paleoeocology, Behavioral Ecology, Animal Behavior, Geobiology, Isotope Geochemistry).

Rotations
Students must complete a formal research rotation with the faculty during their first year. The rotation consists of a written formal prospectus/proposal of the research work, a write-up of the research by the student, and an oral presentation to the FAE group. Students are required to undertake pre-dissertation research in the second year.

Teaching
Training in teaching medical school Human Anatomy and undergraduate anatomy is provided for all graduate students.

Fellowships
Predoctoral fellowships covering normal living costs and tuition are available.

HISTORY OF SCIENCE, MEDICINE, AND TECHNOLOGY
This program is jointly run by the Department of the History of Medicine (SOM) and the Department of the History of Science and Technology (A&S).

The work of this program extends over all phases and dimensions of the development of medicine and related sciences, the history of disease, and the historical analysis of related conceptual, cultural, and social problems. Students acquire facility in the methods of historical research and gain a wide acquaintance with the available literature in the history of medicine, science, and related fields of history. Departmental offerings are particularly strong in the history of medicine and science for early modern Europe; medicine, science and technology in the United States; 19th and 20th centuries; history of disease and public health; health and society in China and Africa; and Russian and Soviet science.

Students come to The Johns Hopkins University with diverse backgrounds including medicine, science, and history. The Ph.D. program prepares students for scholarly careers in teaching and research. For further information, see our website at: http://www.hopkinsmedicine.org/graduateprograms/history_of_science/. Students who wish to combine medical training with academic training in the history of medicine may inquire about the M.D.-Ph.D. program by writing The Director, M.D.-Ph.D. Program, School of Medicine, The Johns Hopkins University, 1830 E. Monument Street, Suite 2-300, Baltimore, MD 21205.

Requirements for Admission
Candidates must be at the post-baccalaureate level. Preference will be given to applicants with training in some aspect of the health field, sciences, or history. For further information applicants should write to Director of Graduate Studies, Program in the History of Science, Medicine, and Technology, 1900 East Monument Street, Baltimore, Maryland 21205.

Requirements for Degrees
The student must satisfy the requirements of the University, the School of Medicine, and the Program.

Doctor of Philosophy Degree: The principal requirement for the Ph.D. degree in the history of medicine or science is the writing of a dissertation based upon original research and of publishable quality. Prior to embarking on full-time dissertation research, candidates will prepare themselves by a variety of courses, seminars, and guided reading. During the first year of study, students receive a general introduction to historical research and complete a year-long survey in either the history of science or the history of medicine. In their second and third years, candidates prepare three fields of study: one in the Program of History of Science, Medicine, and Technology; one in the History Department; and a third
field to be determined by the student and the advisor. The specific requirements for such fields are set by the faculty member directing the field, in consultation with the student. These fields entail both broad and intensive reading, and the passing of a comprehensive examination and/or preparation of several historiographic essays. Candidates must also demonstrate a reading knowledge of two foreign languages before being admitted to formal candidacy for the degree. The final requirement for the Ph.D. degree is completion of a dissertation that is an original contribution to historical knowledge, and of a standard suitable for publication.

Master of Arts Degree: The department also admits students who wish to complete the requirements for this degree. These include the demonstration of competence in the general history of medicine by passing an examination at the end of the first year of study, completion of a satisfactory research essay, and demonstrated reading ability of one foreign language.

Financial Aid
The Owsei Temkin Fellowship, The Jerome J. Byleblyl Fellowship, The William Coleman Fellowship, The Harry Woolf Fellowship, and regular department fellowships are among those available. These awards include tuition, stipend, research allowance, and medical insurance.

HUMAN GENETICS AND MOLECULAR BIOLOGY

Ph.D. Program
The Institute of Genetic Medicine offers an interdivisional program based in the School of Medicine to train Ph.D. candidates for research careers in human genetics and molecular biology.

The Predoctoral Training Program in Human Genetics and Molecular Biology has been designed as an alternative to the combined M.D./Ph.D. program for those, primarily interested in research, who want knowledge of study of human biology along with in-depth research training within a period of five to six years. This program is predicated on the belief that research progress is enhanced by detailed knowledge of the experimental organism. Therefore, the program offers a solid background in human biology as well as rigorous training in research strategies and techniques of molecular biology and genetics. Required courses include cell biology, biochemistry, immunology, human pathology and pathophysiology, which provide insight into the human phenotype, as well as comprehensive courses in human genetics and molecular biology.

The cornerstone of the program is the thesis project. Research training is initiated as the student enters the program by a series of laboratory rotations. The faculty (listed below) come from clinical as well as basic science departments, have a wide range of research interests pertinent to human genetics, and carry out well-supported research programs. Students choose among a variety of projects, ranging from studies of molecular mechanisms of disease, genetic control of cell differentiation and molecular cytogenetics to investigations into the pathogenesis of inborn errors of metabolism and genetic factors that predispose to disease. A wide choice of elective courses in diverse areas of genetics and molecular biology provides the means to achieve individual career goals. Students gain valuable experience as teaching assistants in such undergraduate courses as genetics and molecular biology. Supporting activities include journal clubs, the short summer course in mammalian genetics at the Jackson Laboratory in Bar Harbor, Maine, faculty and student research conferences, and seminars by visiting scientists.

The combination of research training in molecular biology and genetics with knowledge of human biology uniquely qualifies graduates to carry out sophisticated genetic studies of important biological problems relevant to genetic disease and to teach human biology as well as human genetics and human genetic disease.

Combined M.D./Ph.D. Program
The faculty of the Human Genetics Program offers research training for medical students in the combined M.D./Ph.D. program. Students apply to the combined program at the time of application to the M.D. program. (See section entitled Medical Scientist Training Program).

The Faculty and Research Interests

DAN ARKING
Associate Professor of Medicine
Cardiovascular genomics and aging.

MARY ARMANIOS
Associate Professor of Oncology
Syndromes of telomere shortening which capture both the degenerative and cancer-prone phenotypes of aging.

DIMITRIOS AVRAMOPOULOS
Associate Professor of Psychiatry
Genetic basis of complex disorders, particularly psychiatric disorders.

JOEL BADER
Associate Professor of Biomedical Engineering,
School of Engineering
Computational biology and bioinformatics; statistical genetics.
STEPHEN B. BAYLIN  
Professor of Oncology  
Molecular determinants of endocrine differentiation in human cancer; DNA methylation changes in cancer; regulation of polyamine biosynthesis in human cells.

MICHAEL BEER  
Assistant Professor of Biomedical Engineering  
Computational molecular biology and genomics.

SETH BLACKSHAW  
Associate Professor of Neuroscience  
developmental neurobiology.

JEFF D. BOEKE  
Professor of Molecular Biology and Genetics  
Transposition mechanism; reverse transcription in genome evolution; yeast molecular genetics.

KATHLEEN BURNS  
Assistant Professor of Pathology  
Roles of transposable elements and other mobile DNAs in human disease.

ARAVINDA CHAKRAVARTI  
Professor of Medicine  
Genetics of common, multifactorial disease.

LINZHAO CHENG  
Associate Professor of Medicine  
Molecular genetics of human stem cells; stem cell-based genetic models for human diseases.

JANICE E. CLEMENTS  
Professor of Molecular and Comparative Pathobiology  
Molecular biology of the lentiviruses, visna virus and simian immunodeficiency virus.

GARRY R. CUTTING  
Professor of Pediatrics  
Molecular genetics of cystic fibrosis and ion channels; gene mapping by pulse field gel electrophoresis.

HARRY C. DIETZ  
Professor of Pediatrics  
Molecular biology of heart development and of heritable disorders affecting the heart; influence of premature termination codons on RNA splicing and processing.

ANDREW P. FEINBERG  
Professor of Medicine  
Genomic imprinting in normal development and diseases; genetics of childhood cancer; novel genomic technology.

LILIANA FLOREA  
Assistant Professor of Medicine  
Genome analysis; gene and alternative splicing annotation.

STEPHEN J. GOULD  
Professor of Biological Chemistry  
Identification of genetic basis of peroxisome assembly disorders.

CAROL GREIDER  
Professor of Molecular Biology and Genetics  
Mechanisms and regulation of telomere length and telomerase normal and cancer cells.

WILLIAM B. GUGGINO  
Professor of Physiology  
Molecular biology of transport proteins; cystic fibrosis; gene therapy.

RAFAEL IRIZARRY  
Professor of Biostatistics, School of Public Health  
Development of quantitative methods and software for genomics and epigenomics.

RACHEL KARCHIN  
Assistant Professor of Biomedical Engineering, School of Engineering  
Computational analysis of human genetic variation.

HAIG KAZAZIAN  
Professor of Pediatrics  
Study of LINE-1 retrotransposons in humans and mice.

SCOTT KERN  
Professor of Oncology  
Genetic alterations in pancreatic carcinoma and colorectal dysplasia.

GARY KETNER  
Professor of Molecular Microbiology and Immunology, School of Public Health  
Adenovirus biology and use of adenovirus as vaccines.

KENNETH KINZLER  
Professor of Oncology  
Genetic analysis of human cancers.

JOSH LAURING  
Assistant Professor of Oncology  
Breast cancer biology.

STEVEN LEACH  
Professor of Surgery  
Genetic regulation of pancreatic cancer.

SE-JIN LEE  
Professor of Molecular Biology and Genetics  
Growth and differentiation factors in mammalian development.

ANTHONY LEUNG  
Assistant Professor of Biochemistry and Molecular Biology, School of Public Health  
RNA-mediated gene regulation.

GUSTAVO MAEGAWA  
Assistant Professor of Pediatrics  
Lysosomal storage diseases.

NICHOLAS MARSH-ARMSTRONG  
Assistant Professor of Neuroscience  
Transgenic studies of CNS developmental gene regulation.

DEBRA MATHEWS  
Assistant Professor of Pediatrics  
Intersection of bench science, public policy, and society.

ANDREW MccALLION  
Associate Professor of Molecular and Comparative Pathobiology  
Functional genomics; complex disease; gene regulation; non-coding variation in disease.

SUSAN MICHAELIS  
Professor of Cell Biology
Molecular mechanisms of signal transduction; protein targeting and secretion; yeast molecular genetics.

BARBARA R. MIGEON
Professor of Pediatrics
Molecular basis of the X-chromosome inactivation and developmental regulation of X-linked genes; molecular cytogenetics; sex differentiation.

DUOJIA PAN
Professor of Molecular Biology and Genetics
Growth control in normal development and cancer.

AKHILESH PANDEY
Professor of Biological Chemistry
Identification of novel proteins involved in signal transduction; proteomics.

BEN HO PARK
Associate Professor of Oncology
Breast Cancer.

MICHAEL PARSONS
Assistant Professor of Surgery
Zebrafish as model system for endocrine pancreas development.

JONATHAN PEVSNER
Associate Professor of Neuroscience
Molecular neurobiology specializing in the area of synaptic vesicle function.

RANDALL REED
Professor of Molecular Biology and Genetics
Molecular genetics of olfaction.

ROGER H. REEVES
Professor of Physiology
Recombination, physical and somatic cell genetic mapping; developmental consequences of aneuploidy; manipulation and modification of yeast artificial chromosomes.

STEWART SALZBERG
Professor of Medicine
Analysis of genomic data to cure human disease.

ALAN F. SCOTT
Associate Professor of Medicine
Molecular genetics of cellular transformation and metastasis; studies of a human transposon-like sequences; genome organization and evolution.

GREGG L. SEMENZA
Professor of Pediatrics
Identification of cis-acting DNA sequence elements and trans-acting proteins that regulate hypoxia-inducible expression of the human erythropoietic gene through analysis of transgenic mice, transfected tissue culture cells, and in vitro DNA-protein interactions.

Geraldine Seydoux
Professor of Molecular Biology and Genetics
Molecular genetics of germ cell development.

Kirby D. Smith
Professor of Pediatrics
Chromosome DNA organization; genomic evolution; regulation of gene function during development.

Hongjun Song
Professor of Neurology
Biology of neural stem cells and neurogenesis in the adult CNS.

Forrest Spencer
Associate Professor of Medicine
Centromere function and cell cycle control in yeast; molecular genetics of chromosome segregation; yeast artificial chromosomes.

Sara Sukumar
Professor of Oncology
Breast cancer.

Sean Tavares
Assistant Professor of Pharmacology
Histone modifications and epigenetics.

David L. Valle
Professor of Pediatrics
Clinical, biochemical and molecular studies of human inborn errors.

Victor Velculescu
Professor of Oncology
Molecular genetics of human cancer.

Bert Vogelstein
Professor of Oncology
Molecular genetics of human cancer.

Tao Wang
Assistant Professor of Pediatrics
X-linked mental retardation.

Don Zack
Professor of Ophthalmology
Molecular approaches to the study of retinal development and function.

Research Facilities
Research laboratories are well equipped to carry out sophisticated research in all areas of genetics. The proximity to renowned clinical facilities of the Johns Hopkins Hospital, including the Institute of Genetic Medicine, and Oncology Center provides faculty and students with access to a wealth of material for study. Computer and library facilities are excellent. Because the program in human genetics is a university-wide activity, supporting facilities are extensive.

Financial Aid
The program is supported by a limited number of teaching assistantships and predoctoral training funds from the National Institutes of Health. These fellowships, which are restricted to United States citizens and permanent United States residents, cover tuition and provide monthly stipends and are awarded to essentially all students in the program. Students are encouraged, however, to apply for fellowships from outside sources (e.g., the National Science Foundation, Howard Hughes Medical Institute) before entering the program.

Courses
The courses include the required core
courses: Molecular Biology and Genomics, Fundamentals of Genetics, Cell Structure Pathways and Regulation, Human Genetics, Bioinformatics, Evolution of the Concept of a Gene, Basic Mechanisms of Disease, Molecular Mechanisms of Disease and Statistics for Lab Scientists I & II listed in the entries of the departments of Cell Biology, Anatomy, Molecular Biology and Genetics, Biological Chemistry, Pathology, Medicine and Biology. Numerous elective courses are available and are listed under sponsoring departments.

The courses offered by the faculty of the program are listed below. All courses are open to graduate students from any university program as well as selected undergraduates. Prerequisite: Introductory course in genetics.

710.700 Human Genetics. R. Reeves and staff. Third quarter.
The course is a research oriented introduction to principles of human genetics with emphasis on research papers, techniques and strategies. Topics for discussion will include chromosome structure and function, gene mapping, mutation and karyotypic aberrations, sex determination, inborn errors of metabolism, genetical heterogeneity, genotype-environment interaction in health and disease, including cancer.

Weekly meetings will be held to explore in depth the current biochemical knowledge of diseases such as diabetes, gout, megaloblastic anemias, inherited enzymopathies and disorders of blood clotting, lysosomal function and connective tissue.

Readings on the seminal papers and major contributions in the history of genetics.

710.723 Molecular Genetic Dissection of Complex Diseases. A. Chakravarti
Discuss molecular and computational technologies that allow the large scale studies of genome variation in patients and their families.

710.724 Developmental Genetics. G. Semenza.
Roles of specific growth factors, transcription factors and intermediary signal transduction pathways in mammalian development.

710.730 High Performance Computing for the Biological Sciences.
This course covers the theory and usage of the three major methods of conducting high performance computing: queue based systems, message passing interfaces, and parallel virtual machines. Current programs and algorithms for all systems types will be given including examples of how to restructure problems in order to utilize grid computing methods. All examples are geared towards the biological sciences. Unix knowledge and some programming experience (perl, python, shell) recommended.

710.731 Advanced Perl for the Biological Sciences.
This course covers advanced topics in Perl such as complex regular expressions and parsing methods, intermediate data structures and algorithms, modules and packages including their creation. All examples are geared towards the biological sciences. Basic perl programming experience required.

710.733 Epigenetics Seminar for Graduate Students. Drs. Migeon, Feinberg, Mendell, Baylin, and Taverna.
Nine weekly discussions of papers about the nature of epigenetic factors in mammalian cells and their roles in conferring cell memory, imprinting in embryonic development, and regulating gene function. Also discussed are the chromatic diseases (somatic and germline.)

710.736 Introduction to Programming for DNA Sequence Analysis. M. Pertea.
This course will teach participants the basic concepts of bioinformatics programming and introduce them to computational tools that deal with large amounts of data. The goals of the class is to enable students to write basic programs in Perl; basic R will be covered also.

This course will provide practical training on the use of computers to analyze large-scale genetic data, including both family and population-based study designs. Topics will include data cleaning, imputation, common and rare variant analytical methods and power calculations/simulations.

IMMUNOLOGY
The Graduate Program in Immunology under the aegis of the Department of Molecular Biology and Genetics offers a program of study leading to the Ph.D. degree. Within this program, the faculty offer didactic training and research experiences with a strong emphasis on fundamental problems in immune responses and immunological reactions.

The Faculty and Research Interests
MARIO AMZEL
Professor of Biophysics and Biophysical Chemistry
Recognition of flexible peptide; mimicry of antigen by antidiotypic antibodies; affinity maturation.

LINZHAO CHENG
Associate Professor of Oncology
Stem cell models for human blood/immune development and disease.

ANDREA COX
Associate Professor of Medicine
Virus; protective immunity; hepatitis C virus; T cell; vaccine; immunotherapy

STEPHEN V. DESIDERIO
Professor of Molecular Biology and Genetics
Molecular mechanisms of lymphocyte differentiation and activation; immunoglobulin and T cell receptor gene assembly.
CHARLES DRAKE
Associate Professor of Oncology
Using a unique murine model to investigate the basic mechanisms involved in immune tolerance to prostate cancer and using these data to design innovative immunotherapy approaches

MICHAEL A. EDIDIN
Professor of Biology, School of Arts and Sciences
Cell-surface organization and function of H-2 and HLA gene products.

EPHARAIM FUCHS
Associate Professor of Oncology
Cancer immunotherapy; bone marrow transplantation; T lymphocyte danger model; cryoablation; adoptive immunotherapy.

PATRICIA J. GEARHART
Adjunct Professor of Medicine
Molecular mechanism of somatic mutation in antibody variable genes.

DIANE GRIFFIN
Professor of Molecular Microbiology and Immunology, School of Public Health
The role of the immune response in the pathogenesis of viral diseases.

ABDEL HAMAD
Assistant Professor of Pathology
T cell development; tolerance; Fas pathway; immunoregulation; type 1 diabetes; lymphoproliferation

ALLAN D. HESS
Professor of Oncology
Immunology of bone marrow transplantation and graft vs. host disease.

ELIZABETH M. JAFFEE
Professor of Oncology
Analysis of antitumor immune responses against human tumors; identification of the targets of tumor-specific cytotoxic T cells.

ABRAHAM KUPFER
Professor of Cell Biology
Lymphocyte activation; signaling; cell-cell interaction; intercellular communication; multi-dimensional live cell imaging; recombinant biosensors.

HYAM I. LEVITSKY
Professor of Oncology
Vaccine development; mechanisms of antigen-specific tolerance; identification of tumor antigens.

DREW M. PARDOLL
Professor of Oncology
Function of alpha-beta and gamma-delta T-cells in the immune response; T cell development; mechanisms of antitumor immunity.

JOEL POMERANTZ
Associate Professor of Biological Chemistry
Functional specificity and design of signal transduction pathways in the immune response.

STUART RAY
Professor of Medicine
Immune response to hepatitis C virus (HCV);
HCV sequence variation; mechanisms of HCV persistence; rational vaccine design; biomarkers.

NOEL ROSE
Professor of Pathology
Self/non-self discrimination; autoimmune; autoimmune disease.

ANTONY ROSEN
Professor of Medicine,
Cellular and molecular mechanisms of apoptosis; relevance to autoimmunity.

SCHERERAZADE SADEGH-NASSERI
Associate Professor of Pathology
Molecular mechanisms of antigen presentation; structure and function of MHC proteins; regulation of T-cell function.

JONATHAN SCHNECK
Professor of Pathology
Design of novel compounds that regulate T-cell responses and structural analysis of proteins central in the generation of immune response.

JYOTI SEN
Adjunct Assistant Professor of Medicine
T cell development; T cell function; T cell aging; signal transduction; gene expression.

RANJAN SEN
Adjunct Professor of Medicine
Transcription; recombination; chromatin structure; NFkB; T and B cells.

ROBERT F. SILICIANO
Professor of Medicine
Mechanisms of antigen recognition by human T lymphocytes; pathogenic mechanisms in HIV infection and AIDS vaccine development.

MARK J. SOLOSKI
Professor of Medicine
Structure and function of lymphocyte membrane proteins; growth and development of T lymphocytes; molecular biology of MHC genes.

TZYY-CHOOU WU
Professor of Pathology

ZHOU ZHU
Associate Professor of Medicine
Stem cell models for human blood/immune development and disease.

Requirements for Admission
Candidates for admission should hold a Bachelor’s degree with undergraduate training in organic and inorganic chemistry, general biology, physics and calculus. Courses in immunology, biochemistry and molecular biology are recommended but not required. Candidates should take the GRE (including subjects in biology, chemistry, or biochemistry and molecular biology).
Requirements for the Ph.D.

Students in the Immunology program are asked to successfully complete the following courses: 1) Biochemical and Biophysical Principles; 2) Macromolecular Structure and Analysis; 3) Immunology Core Course; 4) Molecular Biology and Genomics; 5) Genetics; 6) Computational Biology and Bio-informatics; 7) Pathways and Regulation; 8) Cell Structure and Dynamics; 9) Graduate Immunology; and 10) Special Studies and Research. Students also take advanced elective courses selected from those offered by this program. Students are normally concerned with course work during their first year and will initiate dissertation research during the second year, while completing more specialized courses relevant to their developing interests.

During the second year of study, subsequent to the satisfactory completion of a substantial amount of required courses, candidates will be required to take the Doctor of Philosophy Oral Examination. The candidate is also required to present a written dissertation based on original research undertaken during residency as a graduate student. Upon completion of the dissertation work, he/she is required to present a thesis seminar.

Courses

The programs of instruction and training in the Graduate Program in Immunology are designed to meet the needs of: a) students of medicine, b) candidates for doctoral degrees, and c) post-doctoral students wishing to prepare for careers in teaching and research.

250.603 Principles of Immunology. Dr. Schneck. October - November. Offered for first year medical students. The general content is similar to Graduate Immunology, but is oriented more toward human diseases involving the immune system. Lectures, small discussion groups, clinical correlation, and laboratory exercises involving PCR and flow cytometry are included. Some graduate students with special permission are allowed to take this course.

250.702 Advanced Topics in Viral Immunology. Drs. Siliciano and Ray. Sept-Dec. This course is offered as an advanced course dealing with a selected topic in molecular immunology immunity and will combine student run presentations and guest lectures. The course will focus on a specific topic related to immune recognition, development, activation, and effector function. The topic will change annually.

250.703 Graduate Immunology. Dr. Sadegh-Nasseri. Jan-May. This course is offered as the major course for graduate students in the third and fourth quarter to provide a comprehensive survey of modern cellular and molecular immunology. It consists predominately of lectures given by faculty from the Hopkins community, but also includes some guest lecturers from outside Hopkins. This course is open to all graduate students and postdoctoral fellows.

250.708 Three Unsolved Problems. Drs. Desiderio and Sadegh-Nasseri. Jan - May. A graduate seminar that will examine three unsolved problems in immunology: Discussion of each topic, to be led by individual students, will center on two to three critical papers suggested by the instructors and read in advance by the group. Performance will be evaluated on the basis of individual presentations, participation in class discussion, and a four to five page paper in the form of a research proposal addressing an unresolved issue in the field.

250.712 Introductory Molecular Immunology. Dr. Soloski. April-May. A brief overview of the molecular and biochemical principles of immune recognition. This course does not replace the more in depth Graduate Immunology (ME250.703) which will be given concurrently.

250.709 Immunology Core Course. Dr. Ray. This is a year long course that meets on a weekly basis. It is intended to provide a small group setting that will allow first year students a deeper understanding of their didactic lectures. The course largely uses student lead discussions of relevant journal articles but problem sets and demonstrations are also incorporated. Each session is moderated by an Immunology faculty member. Enrollment is open only to students enrolled in the Immunology Graduate Program.

250.713 Tumor Tolerance and Transplantation. Dr. Pardoll. Mar-Apr. Immune tolerance is central to the pathobiology of cancer and is a critical element in transplantation medicine. As basic mechanisms of immune tolerance become elucidated, it is now possible to determine which of these are operative for specific cancer types and for transplantation of specific organs. In addition, bone marrow transplantation, a critical approach in the therapy of cancer immune deficiencies and potentially autoimmune diseases, has its own set of associated tolerance mechanisms. Novel therapeutic approaches designed to manipulate immune tolerance are being developed and clinically tested. This course will review both classic and recent cutting edge papers relevant to these subjects. The goal will be to integrate basic mechanistic discoveries with disease pathobiology in a fashion that elucidates translational pathways to the therapy of immune mediated diseases.

250.719 Tumor Immunology. Dr. Levitsky. This graduate level seminar focuses on the dynamic relationship between neoplastic transformation, cancer progression, and the host immune response. Course combine faculty lectures with a student led journal club covering one or more landmark papers relevant to that week's topic.

250.717 Control of Lymphocyte Apoptosis. Dr. Sen. Through a combination of lectures, discussions of published papers and student presentations we shall explore the current understanding of the mechanisms that regulate the choice between cell
life and cell death. We will use examples from B and T lymphocytes, and attempt to discern common principles as well as cell-specific effects. Most of the course will focus on peripheral differentiation and immune responses.

250.804 Innate Immunity. Dr. Soloski.
A graduate level advanced course which covers in-depth the genes, proteins and cells that play role in the innate immune response. Topics include invertebrate immunity, pathogen recognition receptors, the microbiome and the role innate immunity plays in shaping the adaptive immune response.

250.718 7 Pillars of Immunology. Dr. Drake.
An advanced graduate course covering seminal papers that helped shape current concepts of immune function. Course involves student presentation and small group discussion.

Fellowships
Everyone admitted to the program is offered full tuition, stipend, and health insurance. A modest travel award is also given to attend one scientific meeting per year.

MEDICAL AND BIOLOGICAL ILLUSTRATION
A graduate program leading to the degree of Master of Arts in Medical and Biological Illustration is offered to students preparing for a career in medical communications. The program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) in cooperation with the Accreditation Review Committee for the Medical Illustrator (ARC-MI) which is sponsored by the Association of Medical Illustrators.

Current Accreditation: 2011-2018
Applicants must hold a bachelor degree with courses in premedical sciences and be able to demonstrate art skills and experience which they obtained through instruction in the fine and applied arts. Basic medical science courses will be offered by the School of Medicine. Illustration and communications curriculum will be provided by the Department of Art as Applied to Medicine. Students may individualize their study depending on previous training, professional interests, and career objectives. All degree candidates must satisfy the requirements of the University, the School of Medicine, and the Department of Art as Applied to Medicine.

Art as Applied to Medicine
GARY P. LEES
Associate Professor of Art as Applied to Medicine, Director of the Department of Art as Applied to Medicine
NORMAN J. BARKER
Associate Professor of Pathology, Associate Professor of Art as Applied to Medicine

HOWARD C. BARTNER
Associate Professor Emeritus of Art as Applied to Medicine (from 09/01/2011), Associate Professor of Art as Applied to Medicine (to 08/31/2011)

TIMOTHY H. PHELPS, Associate Professor

SARAH LOUISE POYNTON
Associate Professor of Molecular and Comparative Pathobiology, Associate Professor of Art as Applied to Medicine

DAVID A. RINI, Associate Professor

CORINNE SANDONE, Associate Professor

IAN SUK
Associate Professor of Neurological Surgery, Associate Professor of Art as Applied to Medicine

ANNE REED ALTEMUS, Assistant Professor

OSCAR RENATO BAEZA, Assistant Professor

DONALD FRANK BLISS, II, Assistant Professor

JENNIFER ELIZABETH FAIRMAN, Assistant Professor

SANDRA BEATRIZ GABELLI
Assistant Professor of Medicine, Assistant Professor of Art as Applied to Medicine, Assistant Professor of Biophysics and Biophysical Chemistry, Assistant Professor of Oncology

JUAN RAMON GARCIA, Assistant Professor

KENNETH M. HEYMAN, Adjunct Assistant Professor

DALE R. LEVITZ, Adjunct Assistant Professor

MICHAEL SCOTT LINKINHOKER, Adjunct Assistant Professor

MIGUEL ANTONIO SCHOEN, Assistant Professor

BRENT R. WHITAKER, Assistant Professor

BANG THOAI WONG, Adjunct Assistant Professor

VIRGINIA MACVEAGH FERRANTE, Instructor

JOAN AUDREY FREEDMAN, Instructor

CAROLYN V. JONES, Instructor

JOSEPH M. DIETER, JR., Lecturer

CATHERINE E. KIEFE, Lecturer

Requirements for Admission
The applicant must have a bachelor degree demonstrating a high level of scholarship. Courses in chemistry, anatomy and physiology; molecular biology, cell biology, embryology, or histology; and one course in writing at the college level are required. A portfolio of non-scientific art, including still life drawing and painting (watercolor preferred), figure studies, graphic design, and digital media is submitted for review.

Equipment and Fees
Each student is required to own a digital camera, a USB flash memory stick and an external portable hard drive.

A separate deposit fee of $50.00 is required for first year students.
Requirements for Master of Arts Degree

1. Each candidate must successfully complete all courses offered, and must submit a thesis on a subject approved by the department director. The completed thesis must be approved by a university qualified preceptor as worthy of acceptance in partial fulfillment of requirements for the M.A. degree. The candidate’s standing will be reviewed by the Committee on M.A. and Ph.D. Programs before he or she is recommended for degree. Students who receive three unsatisfactory grades may be dropped from the program.

   Students who receive more than six credits with grades of C or lower are placed on academic probation.

2. The student must satisfactorily complete courses in Human Anatomy offered by Functional Anatomy and Evolution; audit of Cell Physiology and Macromolecules offered in the Scientific Foundations of Medicine curriculum; and Principles of Animal Pathology offered in the Department of Molecular and Comparative Pathobiology. Students may elect additional science courses with approval of the director.

3. Students must outline their thesis research and consult with their preceptor by the first quarter of the second year. The thesis will include original investigation with expository illustrations or sculpture (3D modeling, animation, web interface or equivalents).

4. A candidate’s period of attendance in the program will be no less than 18 months. Transfer graduate students must register a minimum of two consecutive semesters as full time residents.

Departmental Courses

Courses are directly related to technical, biological, or medical subject matter. Student assignments require problem solving and individual research topics. Complete understanding of the topic is required. Expertise in all media communication utilized by clinicians, research scientists, health science personnel, students, patients, and the public is stressed.

Students may be assigned in-house illustrating for experience, when appropriate. The director must be notified of and approve all such assignments.

First Year

The academic calendar for first year students begins the first weekday in August.

120.703 Color Illustration. Rendering of scientific subject matter with emphasis on form, texture, and tissue color matching methods. Rini and Sandone. One quarter.

120.708 Media Reproduction. Introduction to reproduction methodology, specifications for copy, and art preparation for print and non-print media. Lees and Dieter.

120.709 Continuous Tone Illustration. Continuous tone rendering of medical and biological subjects. Assignments in a variety of media with individually researched topics. Rini and faculty. One quarter.

120.710 Pen and Ink Illustration. Pen and ink rendering developed by sequential exercises and projects. Phelps and Suk. One quarter.

120.711 Illustration for Visual Presentations. Standards, techniques, and color media used for preparing effective digital presentation visuals. Lees and Weaver. One quarter.

120.714 Editorial and Conceptual Illustration. Conceptual approach to illustration utilizing brainstorming and problem solving skills to effectively interpret and illustrate manuscripts and clinical or anatomical concepts. Phelps. One quarter.

120.715 Biological Illustration. Application of illustration techniques to biological, botanical, and natural science topics. Phelps and Whitaker. One quarter.

120.716 Medical Sculpture. Materials and techniques used in producing instructive three-dimensional medical sculpture and rehabilitative facial prostheses. Garcia. One quarter.


120.719 Illustrating Anatomy. Sketching from the cadaver and application of illustration techniques, coordinated with gross anatomy dissection schedule. Emphasis on relationships and accuracy in surgical and radiological approaches. Augmented by autopsy, specimens, and text references. Lees. One quarter.

120.720 Digital Imaging I. Technical aspects of digital art production using both vector and raster-based digital imaging applications. Fairman. Two quarters.

120.721 Digital Imaging II. Creating digital artwork for print and projection media: two-dimensional color still images. Fairman and Suk. One quarter.

120.722 Digital Imaging III. Theory and techniques for creating 3D models and animations for distribution as electronic files and videos. Bliss and Blum. One quarter.

120.723 Digital Imaging IV. Theory and techniques for creation of dynamic animation optimized
for electronic presentation media. Fairman. One quarter.

120.807 Design of Instructional Programs. Instructional design process, project planning and development. Hands-on experience as instructional designer, project manager, programmer, illustrator, animator, user-interface designer and end user. Altemus, Freedman. One quarter.

Second Year


120.750 Surgical Illustration. Illustration of surgical procedures from operating room sketches for medical education. Lees, Phelps, Rini, Sandone. One semester.


120.754 Research and Thesis. Original investigation under preceptor and department advisor. Lees, Phelps, Rini, Sandone. One semester.


120.756 Operating Room Sketching. Introduction to operating room protocol, observation and recording of surgical procedures. Lees, Phelps, Rini, and Sandone. One quarter.

120.757 Scientific Communication. Principles of effective oral and written presentation. Exercises include a grant proposal, oral presentations and review of publications. Poynton and Kane. Six sessions.

120.758 Portfolio. Professional portfolio and exhibition preparation and presentation, includes effective negotiation in a professional environment. Sandone, Fairman and guest faculty. One quarter.

Elective Studies

Students may select from the following courses with the approval of the director. Hours and course content to be arranged with the instructor.


120.707 Medical Video. Production methods for a medical video. Levitz. One quarter.

120.712 Visual Concepts. Conceptualization of scientific information and application to problem solving assignments. Lees. One quarter.

120.752 Illustrating with Digital Images. Team-based approach to producing teaching visuals using medical imaging science and visualization techniques. Department faculty and staff. One quarter.

120.801 Advanced Projects in Illustration. Special projects in editorial and conceptual illustration. Department faculty.

120.813 Independent Studies. Students may arrange independent study with a faculty member with the approval of the Director. Scheduled during any quarter of the second year as an overload.

Seminars are offered throughout the year introducing topics pertinent to the profession. Sample topics: illustration ethics, electronic publishing, web-based learning, e-commerce, intellectual property, artist rights, art pricing, and virtual reality. Department faculty and guest lecturers. Rini coordinator.

Scholarships

The W. B. Saunders Company Fellowship in Art as Applied to Medicine This fellowship was established in 1964 in honor of Lawrence Saunders upon his retirement after 50 years of distinguished leadership in medical publishing.

The William P. Didusch Scholarship and Loan Fund An endowment for student tuition support in the Department of Art as Applied to Medicine was established in 1973 with a generous gift from Mr. Didusch. A significant contribution was added to this Fund from the estate of Bertha M. Trott whose death in 1973 ended a life filled with dedication and service to urologists at Johns Hopkins and elsewhere. Memorial contributions from friends and colleagues have been added to this Fund since the death of William P. Didusch in 1981.

The Kathleen Mackay Powell Memorial Fund An endowment to assist and benefit students in the field of medical illustration given in memory of Kathleen Mackay Powell who studied in the department (1930-31) under Max Brödel.

The Leon Schlossberg Scholarship Fund This scholarship was established in 1999 in memory of Leon Schlossberg's lifetime association as a medical illustrator for the Department of Surgery and faculty member in Art as Applied to Medicine.

The Elinor Widmont Bodian Scholarship in Medical Art This scholarship fund was established in 2000 by Mrs. Bodian and her family to provide financial assistance to students in Medical Illustration.

The Chester Reather Scholarship in Art as Applied to Medicine An endowment established in Art as Applied to Medicine in honor of Chester Reather's distinguished career as a medical photographer and research associate at The Johns Hopkins University School
of Medicine. This fund is used to reward a graduate student with a scholarship for innovative research and creative use of new imaging technology. 2011 recipient: Wenjing Wu.

The Frank H. Netter, M.D. Memorial Scholarship in Medical Art

Frank. H. Netter, M.D. is known world-wide as a medical illustrator who could distill complex medical subject matter into clear, effective teaching images. Dr. Netter was not only a skilled draftsman, but knowledgeable in anatomy, physiology, and pathology through his medical training. Family and friends established this scholarship to recognize a student in Art as Applied to Medicine who displays a similar balance of medical and scientific knowledge with the artistic skills that he exhibited throughout his career. Winners of this award have excelled in their academic courses; displayed exceptional art expression; and most importantly utilized both resources to create well designed and effective didactic illustrations. 2011 recipient: Elizabeth Cook.

The Gwynne M. Gloege Scholarship Fund in Medical Art

This scholarship fund was established in 2004 by Gwynne Gloege (JHU '56) to provide financial assistance to medical art students.

The Ranice W. Crosby Scholarship Fund

An endowment for student tuition support in the Department of Art as Applied to Medicine was established in 2008 with a generous gift from the estate of Mrs. Crosby. Memorial contributions from friends and colleagues have been added to this Fund since her death in 2007.

Financial aid and scholarships are awarded to students within the program based on financial need and academic performance.

Awards, Lectureship, and Support

The Annette S. Burgess Award

The alumni of the Department of Art as Applied to Medicine contribute funds each year which provide for an annual award given to the student whose ophthalmological illustration is outstanding.

The Ranice W. Crosby Distinguished Achievement Award

Through the generosity of alumni, colleagues, and friends, a medalion honoring Ranice W. Crosby, Director of Art as Applied to Medicine from 1943 to 1983, is awarded for scholarly contributions to the advancement of art as applied to the medical sciences. The recipient is selected by a committee at intervals of from one to three years.

The Samson Feldman Visiting Scholar in Art as Applied to Medicine

Rossetta A. and Sadie B. Feldman, sisters of Samson Feldman, established a visiting lectureship to honor his life as an artist and lifelong patron of the arts. Lecturers are selected from distinguished scholars in visual communications with the purpose of presenting contemporary views pertaining to medical art. The selection of lecturers are made by a committee representing the Department of Art as Applied to Medicine.

The James M. and Carolyn H. Phelps Fund

Support for the preservation and care of the Max Brödel Archives. This fund was established in memory of their parents by the Phelps family.

MOLECULAR GENETICS

The Department of Molecular Biology and Genetics offers programs of study in molecular genetics of bacteria and eukaryotic cells, leading to the Ph.D. degree, as part of the School of Medicine's interdepartmental program in Biochemistry, Cellular and Molecular Biology, which is described in detail on page 37. Candidates must meet the course requirements of the interdepartmental program, including elective courses in their special area of interest, and must carry out original research under a departmental preceptor. Inquiries should be directed to the Director of Admissions of the Graduate Program in Biochemistry, Cellular and Molecular Biology.

The Faculty

A list of the members of the Molecular Biology and Genetics staff and their research interests may be found in the departmental statement on page 206.

Postdoctoral Training

Students who have already been awarded the Ph.D. or M.D. degree may be accepted for postdoctoral research work with members of the faculty.

NEUROSCIENCE

The Department of Neuroscience offers an interdisciplinary program designed to train doctoral students for independent research and teaching in neuroscience. It is the goal of the program to ensure that candidates for the Ph.D. and M.D./Ph.D. degrees obtain a background covering molecular, cellular, systems and cognitive approaches to neuroscience, as well as receive training that brings them to the forefront of research in their particular area of interest. A series of core courses in neuroscience, along with advanced electives, seminar series, laboratory rotations and original independent dissertation research, form the Neuroscience Graduate Training Program.
Students enter the program from different backgrounds and the laboratories in which they elect to work cover different disciplines; therefore the program is tailored to fit the needs of individual students. The academic year at the Johns Hopkins University School of Medicine is divided into four quarters plus a summer semester. Courses are designed so that students have ample time to become involved in laboratory rotations. These laboratory rotations expose the student to a variety of current research techniques in neuroscience and provide an opportunity for the student to select a laboratory in which to conduct dissertation research. Scheduling of the three rotations is adjusted to make the most convenient schedule for each student. The rotations are usually completed by the end of the first full year in the program. Most students begin their thesis research at the beginning of their second year.

Courses

A year long core course provides an integrated overview of molecular and cellular neuroscience, neuroanatomy and systems and cognitive neuroscience. This course is aimed at providing Neuroscience graduate students with a foundation for posing meaningful questions in their area of interest. In addition to the core course, each student selects advanced electives offered by members of the Neuroscience Training Program or other departments at the Medical School. A list of Neuroscience courses can be found in the department statement on page 216.

Seminar Program

The Neuroscience Training Program conducts several seminar series to ensure that students are exposed to recent work by researchers from across the country and the world as well as by Hopkins faculty and fellows. Graduate trainees participate actively in these series throughout their training, including inviting and hosting three speakers each year. A weekly lecture is given by an outstanding researcher in some field of neuroscience. Seminars are selected so that an overall balance of subject matter is covered yearly. Students are given an opportunity to meet with each speaker for questions and discussion. Weekly lunchtime talks are presented on current literature by graduate students, and postdoctoral fellows. Since an ability to communicate scientific work clearly is essential, graduate students receive close guidance in preparing and evaluating their journal club presentations. Once a month the faculty, postdoctoral fellows and students from one laboratory present and discuss the ongoing research in that laboratory. This provides an informal setting to discuss research being conducted in the laboratories of the Neuroscience Training Program and gives advanced graduate students and postdoctoral fellows a forum for presenting their work.

The Faculty

The Neuroscience Training Program at the Johns Hopkins University School of Medicine includes over ninety faculty members in the Departments of Neuroscience, Molecular Biology and Genetics, Biology, Behavioral Biology, Biological Chemistry, Physiology, Biomedical Engineering, Pharmacology and Molecular Sciences, Ophthalmology, Neurology, Neurological Surgery, Orthopaedic Surgery, Psychiatry and Behavioral Sciences, Medicine, Otolaryngology, Pathology, Psychology and Cognitive Science. The faculty of the Neuroscience Training Program has trained about 300 Ph.D. and M.D./Ph.D. students and 550 postdoctoral fellows over the past ten years. A list of members of the staff and their fields of specialization may be found in the department statement on page 216.

Requirements for the PhD Degree

A minimum residency of two academic years is required. During the course of graduate study, the student must successfully complete the required course requirements. An oral examination, conducted as prescribed by the Doctor of Philosophy Board, must be completed by the end of the second year. The student must then conduct original research and describe this research in a written thesis dissertation, which must be approved by the students Thesis Committee and the Doctor of Philosophy Board.

Training Facilities

The Training Program is centered in the Department of Neuroscience. The Training Program utilizes laboratory facilities located in the Department of Neuroscience plus several other basic and clinical departments closely associated with the Neuroscience Department. All of these laboratories are within a short distance of each other. Modern state of the art facilities for research in molecular biology, neurophysiology, pharmacology, biochemistry, cell biology, and morphology are available. The Mind/Brain Institute, located on the Homewood Campus of the University, is a group of laboratories devoted to the investigation of the neural mechanisms of higher mental function and particularly to the mechanisms of perception. All of the disciplines required to address these questions are represented in the institute. These include neurophysiology, psychology, theoretical neurobiology, neuroanatomy, and cog-
nitive science. All of the faculty in the Mind/Brain Institute are members of the Neuroscience Graduate Program.

**Application and Admissions**

Applicants should have a B.S. or B.A. with a major in any of the biological or physical sciences. Recommended course requirements for entry into the program are mathematics through calculus, general physics, general biology, general chemistry, and organic chemistry; laboratory research experience is desirable but not required. Students with deficiencies in one or more of these areas may be admitted provided they remedy the deficiency within their first year of graduate training.

Applications for admission are available online at [http://www.neuroscience.jhu.edu](http://www.neuroscience.jhu.edu). Applicants are required to take the Graduate Record Examination or Medical College Admission Test, and are encouraged to take the examinations in November or earlier. Two letters of recommendation, transcripts of undergraduate grades, and a statement on interest are required. December 8 is the deadline for receipt of the application form and all application materials.

**Combined M.D./Ph.D. Program**

About one quarter of the current predoctoral trainees in the Neuroscience Program are candidates for both Ph.D. and M.D. degrees. Applications for admission to the combined program are considered by the M.D./Ph.D. Committee of the School of Medicine. Application forms for the School of Medicine contain a section requesting information relevant to graduate study. Applicants interested in the combined M.D./Ph.D. program should complete this section also and indicate specifically their interest in the “Neuroscience Training Program”. If application to the combined M.D./Ph.D. program proves unsuccessful and the applicant wishes to be considered for graduate studies, they must notify the Admissions Office of the Neuroscience Training Program by separate letter.

**Financial Aid**

The program provides tuition remission plus a stipend at or above the National Institutes of Health Predoctoral level for all students. All entering and first-year students are encouraged to apply for individual fellowships such as those sponsored by the National Science Foundation and the Howard Hughes Medical Institute.

**PATHOBIOLOGY**

**Fields of Study and Research**

The Graduate Program in Pathobiology provides students with opportunities to probe the mechanisms and origins of human disease through an integrative approach emphasizing systemic processes and their molecular and cellular pathologic underpinnings. Students are prepared for academic research, teaching, and biotechnology careers in one of seven programmatic areas: Cellular & Molecular Pathology; Immunopathology; Microbiology & Infectious Disease; Neoplasia; Neuropathology; and Cardiovascular Disease.

**The Faculty**

Faculty of the program have diverse interests united by a focus upon human disease.

- **RICHARD AMBinder**
  Professor of Oncology
  Lymphoma; viral carcinogenesis.

- **ROBERT ANDERS**
  Associate Professor of Pathology
  Liver Biology; growth control and immunology.

- **DAVID BERMAN**
  Associate Professor of Pathology
  Stem cells, cancer, and developmental biology.

- **WILLIAM BISHAI**
  Professor of Medicine
  Microbiology; mycobacteria.

- **SHYAM BISWAL**
  Professor of Environmental Health Sciences, School of Public Health
  Nrf2-Keap1 stress response pathway in lung cancer and COPD; host immune response

- **KATHLEEN BURNS**
  Assistant Professor of Pathology
  Human genetic variation; mobile DNA; cancer predispositions and progression.

- **CAROL L. BUREK**
  Associate Professor Emerita of Pathology
  Clinical immunology and autoimmunity.

- **PATRIZIO CATUREGLI**
  Associate Professor of Pathology
  Immunopathology; autoimmunity; thyroiditis.

- **DOUGLAS CLARK**
  Professor of Pathology
  Biotechnology; Cancer.

- **JANICE CLEMENTS**
  Professor of Molecular and Comparative Pathobiology
  Virology; SIV/HIV.

- **ISABELLE COPPENS**
  Associate Professor of Molecular Microbiology and Immunology, School of Public Health
  Intracellular parasitism; apicomplexa-mammalian cell interactions.

- **ANGELO DE MARZO**
  Professor of Pathology
  Cancer biology; prostate cancer.

- **STEPHEN DESIDERIO**
  Professor of Molecular Biology and Genetics
  Immune development; DNA recombination and repair; lymphoid malignancies.
STEPHEN DUMLER
Professor of Pathology
Microbiology; rickettsial diseases

CHARLES EBERHART
Associate Professor of Pathology
Neuropathology; ophthalmic pathology cancer

LEISHA EMENS
Associate Professor of Oncology
Breast cancer/immunology and cancer vaccines; clinical trials

JAMES ESHLEMAN
Professor of Pathology
Pancreatic cancer; early detection; familial predisposition; novel molecular tools.

SUSAN ESHLEMAN
Professor of Pathology
Virology; HIV

ALAN FRIEDMAN
Professor of Oncology
Transcriptional control of hematopoiesis; stem cells; leukemic transformation.

EDWARD GABRIELSON
Professor of Pathology
Cancer biology; genomics.

KATHLEEN GABRIELSON
Associate Professor of Molecular and Comparative Pathobiology
Cancer therapy; signal transduction.

ROBERT GETZENBERG
Professor of Urology
Cancer biomarkers; cancer microenvironment; nanotechnology

MICHAEL GOGGINS
Professor of Pathology
Biological and genetics of pancreatic cancer.

MARC HALUSHKA
Associate Professor of Pathology
Diabetic vascular disease.

ABDEL RAHIM HAMAD
Assistant Professor of Pathology
Immunology; T cell activation.

GARY HAYWARD
Professor of Oncology
Virology; CMV; herpes viruses.

JAMES HERMAN
Professor of Oncology
Cancer epigenetics.

CHRISTINE IACOBUZIO-DONAHUE
Associate Professor of Pathology
Cancer metastasis

J. BROOKS JACKSON
Professor of Pathology
Virology; HIV.

SANJAY JAIN
Associate Professor of Pediatrics
TB pathogenesis; molecular imaging for infectious diseases; childhood TB

RICHARD JONES
Professor of Oncology
pstyle:Faculty 3>Cancer lymphoma; bone marrow transplantation.

PETROS KARAKOUSIS
Assistant Professor of Medicine
Mycobacterium tuberculosis latency and reactivation; TB diagnostics; TB chemotherapy.

DAVID KASS
Professor of Medicine
Molecular pathophysiology of heart failure; new treatment modalities; cardiac muscle mechanics.

SCOTT KERN
Professor of Oncology
Cancer; pancreatic cancer genetics.

KWANG SIK KIM
Professor of Pediatrics
Microbiology; genetics of bacterial pathogenesis blood-brain barrier.

VASSILIS KOLIATSOS
Professor of Pathology
Neuropathology; neurodegenerative disease; stroke.

ABRAHAM KUFER
Professor of Cell Biology
Immunology; CD4 T Cell activation and tolerance; imaging cellular immune interactions.

MARIKII LAIHO
Professor of Radiation Oncology
DNA damage response; cancer biology

JOHN LATERRA
Professor of Neurology
Brain malignancy; cancer stem cells; oncogenic signaling.

HYAM LEVITSKY
Professor of Oncology
Immunology; cancer vaccines; tolerance.

VICTOR LEVITSKY
Associate Professor of Oncology
Immune response to Epstein-Barr virus; biology of cytotoxic T-lymphocytes.

ANIRBAN MAITRA
Professor of Pathology
Pancreatic cancer.

JOSEPH MANKOWSKI
Associate Professor of Molecular and Comparative Pathobiology
Virology; HIV; pathogenesis of CNS lesions.

LEE MARTIN
Professor of Pathology
Cell death; motor neuron diseases; Parkinson’s disease.

WILLIAM MATSUI
Associate Professor of Oncology
Stem cells; leukemia; lymphoma.

JOHN WOOD MCDONALD III
Associate Professor of Neurology
Spinal cord injury (SCI) research; clinical trials and rehabilitation-stem cell; neural regeneration; activity-based restorative therapies (ABRT); functional recovery.

ALAN MEEKER
Assistant Professor of Pathology
Cancer biology; telomeres.
JOSHUA MENDELL
Associate Professor of Pediatrics
MicroRNAs in normal biology and disease.
Thrombosis and vascular inflammation.

AVINDRA NATH
Adjunct Professor of Neurology
Neuroscience; multiple sclerosis.

BEN HO PARK
Associate Professor of Oncology
Breast cancer genetics.

JONATHAN PEVSNER
Associate Professor of Neuroscience
Bioinformatics; neuropathology.

JEFFREY RADE
Adjunct Associate Professor of Medicine
Cardiology; vascular biology; thrombosis; neo-intimal hyperplasia.

LINDA RESAR
Associate Professor of Medicine
Cancer biology; leukemia, and lymphoid malignancy.

GREGORY RIGGINS
Professor of Neurological Surgery
Neuro-oncology; molecular targets; genomics.

RICHARD RODEN
Professor of Pathology
Cancer/virology; HPV in cervical cancer.

NOEL ROSE
Professor of Pathology
Immunology; autoimmune disease; immunotoxicology.

SCHEHEREZADE SADEGH-NASSERI
Associate Professor of Pathology
Immunology.

JONATHAN SCHNECK
Professor of Pathology
Immunology; T cell activation.

CYNTHIA SEARS
Professor of Medicine
Enteric pathogens; colon cancer; bacteroides fragilis.

IE MING SHIH
Professor of Pathology
Ovarian cancer.

CHARLES STEENBERGEN
Professor of Pathology
Cardiac pathology; ischemia reperfusion injury; cardioprotective signaling mechanisms

SARASWATI SUKUMAR
Professor of Oncology
Breast cancer; Hox genes; methylated genes as biomarkers and targets of therapy; genome-wide analysis; intraductal therapy of early lesions.

CHARLOTTE SUMNER
Associate Professor of Neurology
Inherited motor neuron and peripheral nerve diseases; genetic characterization, cellular mechanisms and novel therapies.

JUAN TRONCOSO
Professor of Pathology
Neuropathology; stroke.

CHRISTOPHER UMBRICH
Assistant Professor of Surgery
Breast cancer; thyroid cancer; early cancer progression; genome-wide analyses; bioinformatics.

RAPHAEL VISICIDI
Professor of Pediatrics
Virology.

TIAN-LI WANG
Associate Professor of Gynecology and Obstetrics
Cancer genetics; female reproductive cancer notch signaling; early detection of cancer.

BARBARA WASOWSKA
Assistant Professor of Pathology
Immunopathology; transplantation pathobiology.

PHILIP WONG
Professor of Pathology
Neuropathology; neurodegenerative disease

TZYY-CHOOU WU
Professor of Pathology
Immunology of cancer; cervical cancer vaccines; HPV

SRINVASAN YEGNASUBRAMANIAN
Assistant Professor of Oncology
Cancer genetics/epigenetics; AR signaling; genomic instability

M. CHRISTINE ZINK
Professor of Molecular and Comparative Pathobiology
Virology; SIV/HIV

Facilities
Classroom instruction is conducted in the lecture, seminar, and conference rooms of the School of Medicine. Student research is conducted in the state-of-the-art research facilities of program faculty. These fully equipped laboratories support studies ranging from molecular, cellular and physicochemical analyses through whole animal and informatics-based techniques. The program takes special advantage of its clinical service laboratories and clinical activities to familiarize students with and provide resources for translational research.

Requirements for Admission
Students normally matriculate in June or August. The program requires: [1] a bachelor’s degree from a qualified college or university; [2] coursework with laboratory in inorganic & organic chemistry, general biology, and calculus; [3] scores from the Graduate Record Examination; [4] official transcripts of undergraduate grades; [5] a minimum of two letters of recommendation; and [6] a one-to-two page description of any prior research experience (not required if no prior research experi-
ence); and [7] a one-to-two page description of personal career goals. Underrepresented minority students are strongly encouraged to apply and to contact the program directors for guidance. Personal interviews at Johns Hopkins are normally required. Inquiries should be directed to: Ms. Wilhelmena Braswell, Program Coordinator, Graduate Program in Pathobiology, 720 Rutland Avenue, Ross 660, Baltimore, MD 21205. Tel: (443) 287-3163, Fax: (410) 614-3548, E-mail: pathobio@jhmi.edu, http://pathology.jhu.edu/pathobio

Coursework and Requirements for the Ph.D. Degree

Students must successfully complete formal coursework in the first year of the program including courses in cell structure and dynamics, molecular biology, genetics, informatics, immunology, macromolecular structures and analysis, molecular biology and genomics, genetics, pathways and regulation, and pathology for graduate students. Starting at the beginning of the first year, students undertake a minimum of three three-month research rotations with program faculty before selecting a thesis mentor. At the end of the first year, students must pass a comprehensive oral examination given by the Doctoral Board of the Johns Hopkins University School of Medicine. Under supervision of their thesis mentor and committee, students then select dissertation topics in the broad range of areas that relate to the pathobiology of disease. Beginning in the first year and continuing throughout the program, students attend journal clubs and seminars by distinguished speakers from Johns Hopkins and from other institutions. All students must complete a course in the responsible conduct of research, and two translation research rotations.

Student research is supervised by the mentor with oversight by a thesis committee comprised of University faculty with relevant expertise. The thesis committee evaluates and guides student progress; it also decides when writing of the dissertation may commence. Upon completion of research, students must write a dissertation acceptable to two faculty readers and give a public seminar. Students are expected to complete their studies in five years. Before graduation it is expected that students will publish at least one article where the student is first author.

Financial Aid

Candidates accepted into the program are normally offered support that provides payment of tuition, medical insurance, and a stipend.

PHARMACOLOGY AND MOLECULAR SCIENCES

The Department of Pharmacology and Molecular Sciences hosts the Pharmacology Graduate Program, which offers a program of study and research leading to the Ph.D. degree. Research training opportunities within the program cover a broad spectrum of biomedical sciences including chemical biology, immunology, virology, cancer, and neuroscience. The mission of departmental research is to understand the molecular processes underlying physiology and pathology, and to apply this knowledge to discovering new drug targets and developing novel therapeutics. Within the program, students may choose to focus their efforts in any of a large number of specific research areas including signal transduction, structural biology and drug design, NMR spectroscopy, molecular genetics, cancer chemoprevention, viral immunosuppression, cancer immunology, cell-mediated immunity, mechanisms of HIV infection, vaccine development, glycolobiology, biomedical mass spectrometry, clinical pharmacology, drug delivery, anti-parasite drug development, histone acetylation and gene regulation, melatonin and circadian rhythm, drug metabolism, Vitamin D pharmacology, natural product biosynthesis, telomerase and chromosome stability, T cell activation and tolerance, DNA repair, DNA topoisomerases, molecular imaging, and the clinical pharmacology of cardiovascular agents. The department is also pleased to host students and award doctoral degrees to M.D./Ph.D. degree candidates and students in other Ph.D. graduate programs in which Pharmacology faculty participate (Biochemistry, Cellular and Molecular Biology, Cellular and Molecular Medicine, Immunology, Neuroscience, and Pathobiology)

The Faculty

A list of the members of the staff and their fields of specialization may be found in the departmental statement on page 267.

Requirements for Admission

Applicants should have a B.A. or B.S. degree with a major in any of the biological or physical sciences. Entering students are expected to have completed college-level courses in chemistry (inorganic, organic, and physical), calculus, and physics; a strong background in biochemistry is particularly desirable. A completed application form, scores on the Graduate Record Examination (although the GRE subject test is not required, applicants are encouraged to submit scores), at least three letters of recommendation, undergraduate
transcripts and a statement of interest must be received by January 10.

Requirements for the Ph.D.
Students in the Pharmacology program are able to select a course of studies uniquely suited to their own career goals. It is usually required that students successfully complete the following courses: Foundations of Modern Biology (including modules on Macromolecular Structure and Analysis, Biochemical and Biophysical Principles, Molecular Biology and Genomics, Cell Structure and Dynamics, Organic Mechanisms in Biology, Pathways and Regulation, and Bioinformatics), Mechanisms in Bioorganic Chemistry, and Graduate Pharmacology. Students must also take three advanced elective courses selected from those offered by this or other departments.

During their first year of study, students will complete 2-3 three-month research rotations in addition to their coursework. They will initiate dissertation research by the end of their first year and complete elective courses relevant to their developing interests in subsequent years of training.

During the second year of study, candidates will be required to pass a qualifying examination conducted as prescribed by the Doctor of Philosophy Board of the University. This examination will probe the depth and breadth of the student’s knowledge of the biomedical subjects taught in the core courses.

The candidate is required to present a written dissertation based on original research undertaken while in residence as a graduate student and to present a departmental seminar describing the thesis research.

Combined M.D.-Ph.D. Degrees
Students seeking admission to or who are already participating in the M.D. program in the School of Medicine may participate in a program leading to both the M.D. and the Ph.D. degrees.

Financial Support
Financial support covering normal living costs, individual medical insurance, and tuition is usually provided.

PHYSIOLOGY
Physiology is an integrative science, bringing together diverse disciplines in an effort to understand the functioning of living organisms. It seeks to identify the mechanisms by which an organism maintains the processes we regard as characteristic of life. Physiological investigations of these mechanisms range from the molecular level to studies of intact animals and human subjects. More and more, departments of physiology are using the latest tools of cellular and molecular biology to study these problems. Our own department is particularly interested in seeking answers to questions in certain broad categories:

- What are the functions of cell membranes, and how are these functions controlled?
- How are messages sent from the outside to the interior of a cell, from one cell to another?
- How do groups of different cells coordinate their separate activities to develop and function as an integrated tissue organ?
- How is a process as complicated as the development of the mammalian embryo regulated and integrated?

The Department of Physiology accepts students for graduate study leading to the degree of Doctor of Philosophy. Applicants must satisfy the requirements of the department before admission. Candidates for the degree of Master of Arts in Physiology are not accepted.

Requirements for Admission
At the time of entry into the program, you must have completed a bachelor’s or higher degree. Ordinarily this degree will be in biology, physics, chemistry, mathematics, or engineering, or some combination of these, but exceptions will be made. Scientific research experience is not required but is now common among applicants to our program. Such experience is to your advantage and is widely available to undergraduates willing to take the initiative. If you are planning ahead, consider searching out an experience of this kind.

Regardless of the degree major, the following are entrance requirements: Physics: one year college level course is required; two years of study are recommended. Chemistry: two years are required, and three recommended, of college level courses with laboratory, including inorganic, organic, and physical chemistry. Biology: two years of college level courses, with laboratory. Mathematics: through differential and integral calculus.

Examinations: Students are required to take the Aptitude (general) section of the Graduate Record Exam. The Advanced (subject) test is not required, but is encouraged and viewed favorably by the Admissions Committee. Foreign applicants must take the Test of English as a Foreign Language Exam (TOEFL).

In addition to the above, official transcripts or certified records from all university (undergraduate and graduate) study and three letters of recommendation from at least two faculty members who are acquainted with the applicants academic work are required.
to complete the application for admission. While these requirements will apply for the large majority of applicants, exceptions will be made for unusually well-qualified candidates.

Applications are due by January 10 for September admission. This is the main application deadline and we encourage all applicants to meet this date. Most or all students will be selected from those meeting this deadline. A full application should be completed online. ETS Institutional code: 5316 for GRE/TOEFL scores.

Course Requirements for the Ph.D. Degree in Physiology

In general, students must complete successfully the following basic science courses, given by the School of Medicine:

First Year: Courses: Biochemical and Biophysical Principles, Macromolecular Structure and Analysis, Current Physiology, Molecular Biology and Genomics, Genetics, Bioinformatics, Pathways and Regulation, Cell Structure and Dynamics, Physiology, Research, Primary Source Readings and Analysis.

Rotations: Three laboratory rotations of ten weeks each (on average)

Second Year: In the second academic year, the only required course is Research. In addition, students have the opportunity to begin taking elective courses. Students must complete four credits of elective courses other than "Research". These additional courses are selected in accordance with the student's particular needs. However, we strongly encourage one or more of the following electives: Bio-organic Mechanisms (Second Quarter), Immunology and Microbiology (Second Quarter), Neuroscience (Third Quarter), and Organ Histology (Fourth Quarter).

Examinations

Aside from regular course examinations, candidates are required to take and pass the following:

Doctor of Philosophy Board Oral Examination: Given by a committee appointed by the University, this examination will aim at testing the candidate's knowledge of physiology and related sciences, critical sense, and ability to formulate an original, interesting, and appropriate research problem.

Final Examination and Defense of Thesis: This examination will be given by faculty inside and outside the department, appointed by the director of the graduate program of the department. Following this exam, students will be invited to present their thesis work at an open seminar.

The Faculty

A list of the members of the staff and their fields of specialization may be found in the departmental statement on page 269.

Postdoctoral Training

Students who have already been awarded the Ph.D. or M.D. degree may be accepted for postdoctoral research work with members of the faculty.

THE JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH

Courses in the Johns Hopkins Bloomberg School of Public Health are open to students of the School of Medicine without payment of additional fees if consent is obtained from the course instructor and the administrative officers of the School of Medicine. Interdivisional registration forms must be used to enroll in Bloomberg School courses.

Medical students may elect to pursue the Master of Public Health (MPH) program in the Bloomberg School in conjunction with the medical curriculum. The program will consist of eleven months of required and elective courses in the Bloomberg School. This is exactly the same program followed by other individuals pursuing the MPH degree, as described in the catalog of that School. The specific elective course program will vary according to the special interests of the individual student.

Medical students integrate this special program into their medical curriculum by taking a year’s leave of absence on completion of the second or third year. During that year the student is enrolled full time in the MPH program in the Bloomberg School. Upon completion of the MPH degree program, the student will return to the School of Medicine. The MPH degree is awarded independently upon completion of all MPH degree requirements.

Tuition support for this program may be applied for through the Bloomberg School. All applications are subject to the approval of the Admissions Committee of the MPH program in the Bloomberg School. School of Medicine approval for all programs must be obtained from the Associate Dean for Student Affairs. Comparable study arrangements are possible also for medical students in other U.S. medical schools.

Opportunities are available for further training within the departments of the School and in numerous graduate degree programs. For those interested, information concerning these programs may be obtained from Admissions Services in the Bloomberg School.
INTERDIVISIONAL PROGRAM: Ph.D./Sc.M./M.H.S. IN CLINICAL INVESTIGATION

An interdivisional program leading to a Doctor of Philosophy, Master of Health Science, or Master of Science in Clinical Investigation has been developed jointly by the Schools of Public Health and Medicine. A special Clinical Investigator track is an option within existing clinical post-doctoral fellowship programs in the School of Medicine. Other potential students may also be considered for this program. Following one year of clinical fellowship, an instructional year composed of courses from the Schools of Medicine and Public Health are undertaken. Subsequently, the final two or three years of fellowship are undertaken in conjunction with a faculty mentor from the home clinical department or division. Upon successful completion of didactic instruction and demonstration of substantial achievement in clinical investigation in the form of an acceptable thesis, the degree of Doctor of Philosophy, Master of Health Science, or Master of Science from the Bloomberg School of Public Health is awarded, depending on the course of study undertaken by the student. The program is jointly administered by the Schools of Public Health and Medicine.

Courses

PH 390.631 Principles of Drug Development. (2 units) First term. Dr. Flexner. Jointly offered with the School of Public Health. 
Prerequisite: Consent of instructor.
Provides principles underlying preclinical and clinical development of new therapeutic drugs and procedures. Describes and evaluates specific examples, and discusses legal and ethical regulations that apply to drug development. Student evaluation based on homework assignments.

Prerequisite: Consent of instructor.
Explores ethical issues central to clinical research, reviews clinical investigation regulations and their application to common clinical research scenarios, examines the role of IRBs and the impact of good clinical practices for clinical trials. Student evaluation based on homework assignments.

PH 390.675 Outcomes and Effectiveness Research. Dr. John Robinson. Fourth term evening course.
Prerequisite: Epidemiology and statistics from the science of clinical investigation.
Students will explore the applications of methods for assessing patient outcomes of care in inpatient and managed care settings, and the methods used to assess the contributions of treatment, patient characteristics, access arrangements, and other factors on disease outcomes. The range of outcomes to be examined includes clinical/disease outcomes, functional status, quality of life, satisfaction, and cost outcomes. The course will explore conceptual modeling of treatment/outcomes relationships including decision analysis, the range of data sources, data collection strategies, statistical modeling, and application of the information including the use of systematic reviews. The course will be graded based on class participation in discussions, a discussion on an article, and a final project where students will develop an outcomes or effectiveness proposal.

PH 390.701-702 Research Planning and Grant Preparation I and II. (2 units third term/4 units fourth term) Third and fourth terms. Drs. Adkinson and Levine. These courses must be taken in sequence.
Prerequisite: Restricted to thesis students in Graduate Training Program in Clinical Investigation.
Students consider the principles of research strategy, the requirements of funding agencies, and choosing a research area of interest together with a suitable mentor. With mutual review and criticism, each student develops a research plan in the format of an NIH RO1 application, which forms the basis for clinical research activity in the subsequent two years. Student evaluation is based on written assignments and the final research plan.

PH 390.703 Presentation Skills. (1 unit) Fourth term. Dr. Adkinson
Prerequisite: Restricted to students in Graduate Training Program in Clinical Investigation enrolled in 390.701-702.
Prepares students to organize and deliver an effective scientific presentation. Focuses on designing a scientific talk, including preparing effective visual aids. Complements 390.701-702, at the end of which students are required to present their work. Student evaluation based on presentation.

PH 390.710-711 Biomedical Writing I and II. (2 units each for first and second term) First and second terms. Dr. Poynton. Enrollment maximum of 12. Students must register for both courses.
Prerequisite: Restricted to students in the Graduate Training Program in Clinical Investigation.
Concentrates on writing the research paper and on the effective presentation of scientific information in text, tables, and figures. It emphasizes a reader-oriented approach to writing tables, abstracts, introductions, methods, results, and discussions. Students learn about the writing process by drafting and revising a manuscript based on their own research. Each section of the manuscript-in-progress is also read and discussed by the instructor and the other members of the class. Student evaluations based on written material.

PH 390.721-722 Planning and Funding Clinical Research I and II. Dr. Punjabi. (2 units each for third and fourth terms).
Considers the principles of successful clinical research strategies and the requirements of fund-
ing agencies. Students identify a defined research project together with a suitable team of mentors and collaborators. With mutual review and criticism, each student develops a written research proposal in the format of a grant application which integrates the scientific principles of the GTPCI curriculum. Designed as a capstone project for GTPCI MHS candidates. Student evaluation is based on the final written grant application and associated materials.

PH 390.751 Seminars in Clinical Investigation I and II. (2 units per term) Second term. Drs. Flexner and Adkinson.
Prerequisite: Restricted to students in the Graduate Training Program in Clinical Investigation.
Presentes issues in clinical research, exemplified by readings from classical papers and contemporary literature. Student evaluation is based on a presentation.

PH 390.801 Professional Goals and Objectives. (1 unit) Second term. Drs. Flexner and Adkinson. Pass/fail only.
Prerequisite: Restricted to students in the Graduate Training Program in Clinical Investigation.
Consists of didactic sessions focused on career development and mentoring, meetings between students and their academic advisors and/or potential research mentors to identify a single area or research focus, and discussing short- and long-term career goals. Student evaluation based on a precis of proposed research plans.

A monthly research forum, lasting 90 minutes, in which advanced fellows will present interim research findings and plans for discussion with colleagues and faculty. Pass/fail based on attendance and presentation participation.

GRADUATE STUDENT HONOR CODE
The graduate students have written an honor code to reinforce the existing honor system among students and to underscore the importance of ethics in their development as scientists. The honor code outlines the School of Medicine’s expectations regarding the manner in which students should conduct themselves and requires that each student acknowledge these expectations in a formal declaration of personal honor. The code is as follows:

As a student at the Johns Hopkins University School of Medicine, I pledge to be honest in:
• course work including examinations and all assignments;
• the reporting and presentation of research data with proper attribution and citation;
• professional interactions with all members of the scientific community.

Upon matriculation every student is required to sign that they have read the honor code. It is the expectation that every student live by this honor code.

GRADUATE STUDENT POLICY STATEMENTS

Student Outside Employment
Although the institution does not encourage it, students may work for compensation outside of the laboratory on a limited, part-time basis. Permission must be obtained from the program director and faculty mentor. This work must be apart from or beyond the normal research training activities. Under no circumstances may the conditions of stipend supplementation or the services provided for compensation interfere with, detract from, or prolong the trainee’s approved training program.

Vacation Policy
Beyond the official University holidays and breaks, students may take two weeks of vacation during the first year and three weeks vacation during years two through seven. Additional time off may be granted by mentor.

Leave of Absence
Students may take 15 calendar days of sick leave per year which can be applied to pregnancy/childbirth. Under special circumstances, this period may be extended by the training program director or the sponsor. Sick leave is not accrued. For medical leave of absence, health insurance will be paid for by the program or sponsor for up to one year, if requested by the student.

Parental leave of 30 calendar days per year can be used for the adoption or birth of a child. Parental leave is not accrued. A period of terminal leave is not permitted and payment may not be made from grant funds for leave not taken.

School of Medicine Criteria for Awarding a Terminal Master’s Degree
1. Student must successfully complete the required courses of the program.
2. Pass a preliminary Doctoral Board Examination (formerly the Graduate Board Oral Examination) or present an essay that satisfies a faculty member in the program.
3. Meet a two consecutive semester resident requirement as a full time student.

These school-wide requirements may be supplemented by additional department/program requirements.
The Johns Hopkins School of Medicine offers a variety of opportunities for the training of medical scientists. A combined curriculum leading to both MD and PhD degrees enables students who aspire to careers in academic medicine to obtain intensive training in specialized areas of the medical sciences while completing their medical studies. The traditional diversity and flexibility of the educational opportunities at Johns Hopkins permit the design of individualized programs to meet the needs of students with a variety of interests, educational backgrounds and career goals.

The curricula for students in the combined MD-PhD Program vary widely depending on the individual's previous education, on the area of scientific study, and personal interests. Course work leading to one degree is usually acceptable as partial credit toward the formal requirements of the other degree. A properly coordinated joint program may afford a significant economy of time in completing studies toward both MD and PhD degrees.

The MD-PhD Program sponsors special seminars and lectures and maintains the Paul Talalay MD-PhD Library to enrich the educational opportunities of all MD-PhD students. Efforts are made to acquaint MD-PhD candidates with the major advances and problems in contemporary medicine, to expose them to specialized techniques and aspects of medical science, and to promote a more intimate personal contact with successful medical scientists in this institution.

Students admitted to the combined degree program after four years of college take, on average, seven-to-eight years to satisfy the requirements of both degrees. Students complete two years of the basic science aspect of the medical curriculum before becoming fully involved with the research component of their studies, which may then be coordinated with clinical work in a number of ways.

Formal graduate programs in the School of Medicine encompass the following areas: Biochemistry; Cellular and Molecular Biology; Biological Chemistry; Biomedical Engineering; Molecular Biophysics; Functional Anatomy and Human Evolutionary Studies; Cell Biology; Cellular and Molecular Medicine; History of Medicine; Human Genetics; Immunology; Neuroscience; Pathobiology; Pharmacology, and Physiology. A combined MD-PhD Program is also available in the 11 graduate programs at the Bloomberg School of Public Health as well as the graduate programs supervised by the School of Arts and Sciences.

Admission Procedures. All individuals requesting applications for admission to the medical program of the School of Medicine through AMCAS will automatically receive an additional form on which they may indicate their desire to pursue joint studies leading to the MD and PhD degrees. A separate application to the graduate programs is not required. These applications will be reviewed by the directors of individual graduate programs and by the MD-PhD Committee. In general, an applicant invited to interview for the combined MD-PhD Program is not considered for the traditional MD Program. Under certain circumstances, MD-PhD applicants will be advised to interview for the traditional MD Program only.

A number of our medical students do not develop a clearly defined interest in the MD-PhD Program until some time after they have begun their medical school studies. A candidate for the MD degree may apply at any time for admission to a PhD program. A candidate for the PhD degree is also eligible to apply to the MD-PhD Committee for admission to the program during the first or second year of medical school. It should be noted that all applicants are evaluated in competition with the total pool of those seeking entry into each program.

Financial Support. The Johns Hopkins School of Medicine Medical Scientist Training Program (MSTP) is supported by a training grant from the National Institutes of Health. A number of exceptional students with unusual accomplishments and commitment to a career in the medical sciences will be selected for traineeships under this program. Such fellowships provide stipend and tuition support for combined medical and graduate study. All students who are admitted to the MD-PhD Program will be considered for these awards. Properly qualified students who do not receive such awards are eligible.
for fellowship support from the graduate programs during the PhD phase of the joint MD-PhD Program, and for financial support for their medical studies on the basis of financial need. Minority students accepted into the MD-PhD Program, who do not receive MSTP funding, are eligible to apply for an Individual National Research Service Award (NRSA).

The MSTP is supervised by the MD-PhD Committee which is made up of faculty from the School of Medicine.

Graduates of The Johns Hopkins University School of Medicine MD-PhD Program have gone on to become leaders in many areas of academic medicine.

Advice on the scope and opportunities offered by these programs may be obtained from the Director of the MD-PhD Program.
Most doctoral recipients spend three to six years following receipt of degree in postdoctoral training. The Johns Hopkins University School of Medicine has an active program of postdoctoral study. Currently there are 2425 postdoctoral students enrolled, of whom 244 are in the basic medical science departments, 1306 in clinical science departments, 758 are house officers of the Johns Hopkins Hospital and 117 are house officers of hospitals whose programs are affiliated. By actions of the Advisory Board of the Medical Faculty and of the Medical Board of the Hospital, primary responsibility for postdoctoral medical education is placed upon the Medical Faculty. Postdoctoral students, including house officers of the Johns Hopkins Hospital and affiliated hospitals, must register in the School of Medicine and are designated by the title of Fellow of the School of Medicine.

The following sections outline briefly some of the opportunities for postdoctoral education in the Johns Hopkins University School of Medicine.

For specific information, applicants should communicate with the director of the department in which they desire to study, the Associate Dean for Postdoctoral Programs, or the Associate Dean for Graduate Medical Education, The Johns Hopkins University School of Medicine, 733 N. Broadway, Room 147, Baltimore, MD 21205.

POSTGRADUATE STUDY AND FELLOWSHIPS

The School of Medicine offers opportunities for study to a limited number of individuals holding the M.D., Ph.D., or other equivalent doctoral degrees from accredited institutions. All departments and divisions have facilities for postdoctoral students. Candidates desiring to avail themselves of these opportunities for instruction and study must be acceptable to the head of the department in which they wish to work.

It is the policy of the Johns Hopkins University School of Medicine to require criminal background investigations on accepted students in any professional or graduate program at the School of Medicine, interns, residents, and clinical fellows in any Graduate Medical Education program sponsored by Johns Hopkins, and other clinical and research postdoctoral fellows at the School of Medicine.

Residency and fellowship programs are approved by the Maryland Higher Education Commission for veterans’ educational benefits.

Postdoctoral/GME Offices

The Offices of Graduate Medical Education and Postdoctoral Programs, within the Dean’s Office of the School of Medicine, are directed by Associate Deans. The offices deal with all house staff of the Johns Hopkins Hospital and all postdoctoral fellows in the School of Medicine. The offices recommend and implement institutional policies covering house staff, in conjunction with the Office of the Vice President for Medical Affairs of the Johns Hopkins Hospital, and for non-house staff postdoctoral fellows. In addition, the Associate Deans and staff are available to all house officers and postdoctoral fellows for personal and career counseling. Additional information regarding the Postdoctoral/GME offices can be found at www.hopkinsmedicine.org/som/gme.

Health and Dental Insurance

All postdoctoral students, their spouses, and dependent children must be covered by health insurance. It is required that postdoctoral students subscribe to the School of Medicine Student Health Program (SHP). Spouses and dependent children may be covered under an alternative insurance plan, subject to review and approval by the School of Medicine Registrar’s Office. Foreign or travelers insurance is not accepted.

The dental plan for postdoctoral students covers only the student. The dental plan for the house officer also covers dependents. The house staff health insurance plans are fully subsidized by the Hospital and School of Medicine. The cost of individual health and dental insurance is provided for all non-house staff postdoctoral fellows.

For a complete description of benefit plans, house staff should go to http://www.hopkinsmedicine.org/som/gme/residents/index.html. Fellows should go to http://www.hopkinsmedicine.org/som/gme/fellows/index.html.

Other Benefits

All house staff and fellows with full time, primary appointments in the School of Medicine are covered under a long-term disability
insurance program and a $100,000 term life insurance policy. These benefits are provided without cost to the trainees. A 403(b) retirement plan allows house staff and fellows to voluntarily tax-shelter a portion of their taxable income received as compensation for services. Income received in the form of fellowships (stipends) is excluded from 403(b) eligibility.

The University Health Service (UHS) provides adult ambulatory care to housestaff and postdoctoral students and spouses (if enrolled in the SHP). The fee for this service is provided by the preceptor.

Fellowships and Fees
Postdoctoral students are usually supported by stipends which accompany the awarding of fellowships. Some sources of the stipend offered to holders of these fellowships lie in the School of Medicine, others in agencies outside the school. Fellowship awards are usually made for one academic year and can be extended for those who wish additional training. Preceptors are expected to abide by the NIH minimum stipend guidelines for years of relevant experience for non-housestaff fellows paid through the Johns Hopkins University payroll system. Postdoctoral students who are not members of the house staff will be assessed tuition at the rate established by the University Board of Trustees for non-M.D. candidates, pro-rated in relation to period of enrollment (see Tuition Policies, page 105).

INTERNSHIPS AND RESIDENCIES
Graduate physicians who are applicants for internship and residency positions at the Johns Hopkins Hospital may direct their inquiries to the director of the department in which they desire to serve, care of the Johns Hopkins Hospital, 600 N. Wolfe St., Baltimore, MD 21287.

POSTDOCTORAL COURSES—CONTINUING MEDICAL EDUCATION
Intensive brief courses are offered annually by various clinical departments. During the 2011-2012 academic year, the following courses will be offered:

ANESTHESIOLOGY AND CRITICAL CARE MEDICINE

Fourth Annual Neurocritical Care for the General and Surgical Intensivist. (Ritz-Carlton, Tysons Corner, VA) March 16-18, 2012.

Perioperative Management— in its 28th Year. (Marco Island Marriott Hotel, Marco Island, FL) March 18-21, 2012.

MEDICINE


Johns Hopkins Symposium: An Integrative Medicine Approach to Inflammatory Bowel Disease (Tremont Grand and Plaza Hotel, Baltimore, MD) September 24, 2011.


Sixth Infectious Diseases Update for the Primary Care Practitioner. October 27-28, 2011.

37th Annual Topics in Gastroenterology and Hepato-Biliary Update. November 1-5, 2011.


Primary Care for Adults with Sickle Cell Disease. (Various Locations in Baltimore, MD) January 30, 2012; May 29, 2012.


Nicholas Fortuin Cardiovascular Topics at Johns Hopkins. February 16-18, 2012.


Eighth Annual Advances in the Diagnosis and Treatment of Rheumatic Diseases. (Four Seasons Baltimore, Baltimore, MD) April 27-28, 2012.


22nd Annual Clinical Care of the Patient with HIV Infection. (Renaissance Harborside Hotel, Baltimore, MD) May 14-15, 2012.

NEUROLOGY/NEUROSURGERY


22nd Annual Practical Update in Outpatient
Neurology.  (Asthma & Allergy Center, Bayview Medical Center, Baltimore, MD) October 21, 2011.


Third Annual Spinal Disorders: Updates in Diagnosis and Management.  April 21, 2012.

ONCOLOGY


OPHTHALMOLOGY


PATHOLOGY


PEDIATRICS


Tenth Anniversary Advances in Pediatric Nutrition.  (Baltimore Marriott Inner Harbor Hotel, Baltimore, MD) October 10-11, 2011.


PSYCHIATRY

The Road to Recovery.  September 26, 2011.


18th Annual Update on the Treatment of Alzheimer’s Disease and other Related Disorders.  March 31, 2012.


RADIOLOGY


28th Annual Computed Body Tomography: The Cutting Edge.  (Disney Yacht and Beach Club Hotel, Orlando, FL) February 16-19, 2012.


SURGERY


GENERAL

REWards-Research Ethics Workshop about Responsibilities and Duties of Scientists.  July 6, 2011; October 3, 2011; January 24, 2012; March 5, 2012; May 29, 2012.

The Business of Medicine Executive Graduate Certificate Program.  Sessions begin in Fall and Spring.

Cardiac CT Practicum.  Various dates from July 1, 2011-June 30, 2012.


Johns Hopkins Faculty Development Program: Longitudinal Program in Teaching Skills Parts 1 and 2.  September 8 –December 22, 2011; February 9-April 12, 2012.


Celebrating 100 Years: Teaching Excellence in Medical Illustration. July 20, 2011.

Regularly Scheduled Conferences. (Johns Hopkins, Johns Hopkins Bayview Medical Center, and Good Samaritan Hospital).

For additional information on Continuing Medical Education activities for 2011-2012 write to: Office of Continuing Medical Education, Johns Hopkins Medicine, Turner 20, 720 Rutland Avenue, Baltimore, Maryland 21205-2195. Telephone: 410-502-9634; Fax: 866-510-7088; cmenet@jhmi.edu; www.hopkinscme.edu.
**STUDENT ADVISING**

The College Advisory Program (CAP) is a student-faculty learning community that serves the following functions: career advising, foundational clinical skills training, assisting students as they form their professional identities, and embedding these efforts in a social matrix offering meaningful and longitudinal relationships with faculty and between students across class years. CAP offers students a unique opportunity to learn the fundamental skills of medicine and lessons in professionalism and humanism with a trusted advisor and small group of peers, as well as build valued student-faculty connections.

The program goals are as follows:

- To foster a welcoming learning community for students honoring diversity and unique interests
- To promote faculty advising and mentoring relationships with all students throughout medical school
- To foster social and supportive connections between students, particularly across levels of training, and promote students’ personal well-being.
- To foster scientific inquiry, innovation, and leadership among students
- To assist students in building networks of connections within the Hopkins medical community to meet their emerging goals
- To provide clinician role models to foster excellence in humanism, professionalism, and the clinical skills of medicine

Students and faculty are organized into four colleges, named after legendary Johns Hopkins faculty: Sabin, Nathans, Thomas, and Taussing. Each college is currently populated by 120 students (30 from each class) and 6 core faculty. Incoming students meet their core faculty advisors at Orientation. Advisors help students become familiar with the Baltimore community, and pro-active academic counseling will be offered over the four years of medical school to assist students in learning “the roadmap” of medical education.

At the onset of medical school, the CAP advisors serve a dual role as the students’ small group preceptor for the Clinical Foundations of Medicine course, and see them on a weekly basis for 16 weeks. In subsequent years, CAP advisors serve as periodic clinical skills teachers and longitudinal career counselors, helping each student develop professionally, helping identify specialty mentors to satisfy emerging interests, and facilitating meaningful dialog in small groups on professionalism and defining experiences on the path to becoming a physician.

Each college, under student leadership, organizes social and community service activities for its students to enhance vertical integration across classes and create a sense of home for each student. The second floor of the Armstrong Education Building is dedicated to this learning communities concept, and each College has a dedicated multi-purpose suite for its students on this floor.

**OFFICE OF STUDENT AFFAIRS**

The principal objective of the Office of Student Affairs is to serve the needs of the students in the many aspects of life in the School of Medicine. A student who has a question about the experience here and who is uncertain as to an appropriate resource for an answer should check at the office. Anyone needing assistance in adapting to this environment, or advice about personal or professional matters, should visit the Associate or Assistant Deans for Student Affairs. The range of issues that may be addressed is broad, and additional resources will be found when needed.

The Office plays a major role in the application process for research experiences, extramural rotations, additional courses of study and residency positions. It also assists in arrangements for special funding of student projects and works in liaison with the Johns Hopkins Medical Student Society and other student groups and services. Notices containing new or more current information on a variety of topics are sent to each student at frequent intervals.

**POLICY STATEMENTS**

For a more comprehensive list of Johns Hopkins University policies see [http://webapps.jhu.edu/jhuniverse/administration/minutes_policies_reports/policies/](http://webapps.jhu.edu/jhuniverse/administration/minutes_policies_reports/policies/).

The University does not guarantee the award of a degree or a certificate of satisfactory completion of any course of study or training program to students enrolled in any
instructional or training program. The award of degrees and certificates of satisfactory completion is conditioned upon satisfaction of all current degree and instructional requirements at the time of such award, compliance with the University and divisional regulations, as well as performance and conduct meeting bona fide expectations of faculty. No member of the faculty is obliged to provide students or graduates with an evaluation or letter of recommendation which does not accurately reflect that faculty member's true opinion and evaluation of academic performance and conduct.

Equal Opportunity Policy
The Johns Hopkins University admits students of any race, color, gender, religion, age, national or ethnic origin, disability, marital status or veteran status to all of the rights, privileges, programs, benefits and activities generally accorded or made available to students at the University. It does not discriminate on the basis of race, color, gender, marital status, pregnancy, ethnicity, national origin, age, disability, religion, sexual orientation, gender identity or expression, veteran status, or other legally protected characteristic in any student program or activity administered by the University, including the administration of its educational policies, admission policies, scholarship and loan programs, and athletic or other University-administered programs or in employment.
Questions regarding Title VI, Title IX, and Section 504 should be referred to the Office of Institutional Equity 130 Garland hall, Homewood Campus, 410-516-8075, TTY 410-516-6225.

Statement Regarding the Privacy Rights of Students
Notice is hereby given that the School of Medicine of the Johns Hopkins University complies with the provisions of the Family Educational Rights and Privacy Act of 1974 (P.L. 93-380), as amended, and regulations promulgated thereunder. Eligible students, as defined in the regulations, have the right 1) to inspect and review their education records, as defined in the regulations; 2) to request the amendment of their education records if they are inaccurate, misleading or otherwise in violation of the student's rights; 3) to consent to the disclosures of personally identifiable information in their education records except to the extent permitted by law, regulation or University policy; 4) to file a complaint with the United States Department of Education if the University allegedly fails to comply with the requirements of law or regulation. The University's policy on Family Educational Rights and Privacy can be found on the internet at www.jhu.edu/news_info/policy/ferpa.html and copies of the policy are available from the School of Medicine Registrar's Office.

Students with Disabilities
The School is prepared to furnish reasonable accommodations to students with disabilities. Students in need of reasonable accommodations should bring their circumstances to the attention of the Associate Dean for Student Affairs with responsibilities for the program in which the student is enrolled. The University’s Disability Services Coordinator also is available for consultation and assistance and may be reached at 410-516-8075. The School retains the right to refer a student for an independent evaluation of disability.

Annual Security Report
In accordance with the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics (20 USC 1092) as amended, and the regulations promulgated thereunder, the University issues its Annual Security Report which describes the security services at each of the University’s divisions and reports crime statistics for each of the campuses. The report is published in the University Gazette, and copies of the report are available from the University’s Security Department, 14 Shriver Hall, 3400 North Charles Street, Baltimore, Maryland 21218-2689 Tel. (410) 516-4600.

University Alcohol and Drug Policy for Students
The University, in keeping with its basic mission, recognizes that its primary response to issues of alcohol and drug abuse must be through educational programs, as well as through intervention and treatment efforts. In addition to providing appropriate educational programs throughout the year, each division of the University will include such programs as part of its orientation for new students.

The University further recognizes that alcoholism and drug addiction are illnesses that are not easily resolvable by personal effort and may require professional assistance and/or treatment.

Participation in such programs may be required of a student as a “condition of continued enrollment.”

The University will adhere to strict policies of confidentiality for all participants in drug/alcohol abuse rehabilitation programs as described in University and Federal Regu-
lations covering confidentiality of student health records. Maryland and the District of Columbia laws prohibit the possession or consumption of alcoholic beverages by persons under the age of 21. The possession, use, or distribution of illegal drugs and controlled substances, as defined by federal, state, and local statutes, is prohibited.

Students are expected to obey the law. Individuals who violate the law, in addition to being subject to criminal penalties, may be subject to University disciplinary measures. The distribution, possession and unprescribed use of narcotics and other controlled dangerous substances by students is unlawful and strictly forbidden on University premises. When information reaches the University indicating that a student has been engaged in the distribution of controlled dangerous substances, whether on or off University premises, disciplinary proceedings which may lead to expulsion will be commenced immediately. Students are also advised that the University may decline to furnish and may withdraw letters of recommendation for those who have engaged in the illegal distribution, possession and use of controlled dangerous substances.

The University will not excuse acts of misconduct committed by students whose judgment is impaired due to alcohol or drug abuse.

Anti-Harassment Policy

Preamble
The Johns Hopkins University is committed to providing its staff, faculty and students the opportunity to pursue excellence in their academic and professional endeavors. This opportunity can exist only when each member of our community is assured an atmosphere of mutual respect. The free and open exchange of ideas is fundamental to the University's purpose. It is not the University's intent in promulgating this policy to inhibit free speech or the free communication of ideas by members of the academic community.

General Anti-Harassment Policy
1) The University is committed to maintaining learning and working environments that are free from all forms of harassment and discrimination. Accordingly, harassment based on sex, gender, marital status, pregnancy, race, color, ethnicity, national origin, age, disability, religion, sexual orientation, gender identity or expression,1 veteran status, or other legally protected characteristic is prohibited. The University will not tolerate harassment, sexual harassment (including sexual violence) or retaliation in the workplace or educational environment whether committed by faculty, staff, or students, or by visitors to Hopkins while they are on campus. Each member of the community is responsible for fostering civility, for being familiar with this policy, and for refraining from conduct that violates this policy.

2) For purposes of this policy, harassment is defined as:
a) any type of behavior which is based on sex, gender, marital status, pregnancy, race, color, ethnicity, national origin, age, disability, religion, sexual orientation, gender identity or expression, veteran status, that
b) is so severe or pervasive that it interferes with an individual's work or academic performance or creates an intimidating, hostile or offensive working or academic environment.

3) Harassment when directed at an individual because of sex, gender, marital status, pregnancy, race, color, ethnicity, national origin, age, disability, religion, sexual orientation, gender identity or expression, personal appearance, veteran status, or any other legally protected characteristic may include, but is not limited to: unwanted physical contact; use of epithets, inappropriate jokes, comments or innuendos; obscene or harassing telephone calls, e-mails, letters, notes or other forms of communication; and, any conduct that may create a hostile working or academic environment.

4) Sexual harassment, whether between people of different sexes or the same sex, is defined to include, but is not limited to, unwelcome sexual advances, requests for sexual favors, sexual violence and other behavior of a sexual nature when:
a) submission to such conduct is made implicitly or explicitly a term or condition of an individual's employment or participation in an education program;
b) submission to or rejection of such conduct by an individual is used as the basis for personnel decisions or for academic evaluation or advancement; or

c) such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creates an intimidating, hostile or offensive working or educational environment.

Sexual harassment may include, but is not limited to: unwelcome sexual advances; demands/threats for sexual favors or actions; posting, distributing, or displaying sexual pictures or objects; suggestive gestures, sounds
or stares; unwelcome physical contact; sending/forwarding inappropriate e-mails of a sexual or offensive nature; inappropriate jokes, comments or innuendos of a sexual nature; obscene or harassing telephone calls, e-mails, letters, notes or other forms of communication; and any conduct of a sexual nature that may create a hostile working or educational environment.

5) Retaliation against an individual who complains of discriminatory harassment under this policy, is strictly prohibited. Intentionally making a false accusation of harassment is also prohibited.

Responsibilities Under this Policy
The University is committed to enforcement of this policy. Individuals who are found to have violated this policy will be subject to the full range of sanctions, up to and including termination of his/her University affiliation.

1) All individuals are expected to conduct themselves in a manner consistent with this Policy.

2) Staff, faculty and/or students who believe that they have been subject to discriminatory harassment are encouraged to report, as soon as possible, their concerns to the Office of Institutional Equity, their supervisors, divisional human resources or the Office of the Dean of their School.

3) Individuals who witness what they believe may be discriminatory harassment of another are encouraged to report their concerns as soon as possible to the Office of Institutional Equity, their supervisors, divisional human resources or the Office of the Dean of their School.

4) Complainants are assured that reports of harassment will be treated in a confidential manner, within the bounds of the University’s legal obligation to respond appropriately to any and all allegations of harassment.

5) Managers, including faculty managers, who receive reports of harassment should contact human resources or the Office of Institutional Equity for assistance in investigating and resolving the issue.

6) Managers, including faculty managers, are required to implement corrective action where, after completing the investigation, it is determined corrective action is indicated.

7) The University administration is responsible for ensuring the consistent application of this policy. Procedures for Discrimination Complaints Brought Within Hopkins

Inquiries regarding procedures on discrimination complaints may be directed to the Vice Provost for Institutional Equity, or the Director for Equity Compliance & Education, Garland Hall, 130, Homewood Campus, 410-516-8075, (TTY dial 711).

Sexual Violence Policy
The Johns Hopkins University is committed to providing a safe educational and working environment for its faculty, staff, and students. The University is particularly concerned about the increase in reports of sexual offenses occurring on the nation’s campuses. The University has adopted this policy addressing sexual violence (includes sexual assault) in order to inform faculty, staff, and students of their rights in the event they are involved in an incident of sexual violence, and of the services available to victims of sexual violence. Members of the University community who are the victims of, or who have knowledge of, an incident of sexual violence occurring on University property, or occurring in the course of a University sponsored activity (including academic, educational, extracurricular, athletic or other programs), or perpetrated by or against a member of the University community, are urged to promptly report the incident to campus authorities identified in this policy.

This policy applies to all members of the University community, including, but not limited to students, faculty and staff, and also applies in certain instances, to certain third parties (e.g., visitors, volunteers, vendors, and contractors while on University property, participating in a University sponsored activity, or providing services to the University, applicants for admission to or employment with the University, and former employees of the University). All academic and administrative units of the University (including all schools, divisions, departments and centers) must comply with, and ensure that their policies and procedures comply with, this policy.

“Sexual violence” encompasses sexual assault (see examples below) and is a form of sexual harassment. Sexual harassment, which is a form of discrimination, violates federal and state law and University policy (see the University’s Policy Against Sexual Harassment).

Sexual violence includes physical sexual acts that are performed against a person’s will or where a person cannot give consent. A person may be unable to give consent to a sexual act for a number of reasons, including, but not limited to: if he or she is physically or psychologically pressured, forced, threatened, intimidated, unconscious, drunk, or drugged; due an intellectual or other disability or health condition; or by operation of
laws governing the age of consent. Physical resistance need not occur to fulfill the definition of sexual violence. Examples of sexual violence include, but are not limited to:

- Sexual intercourse or other sexual acts that one party says “no” to;
- Rape (including “date rape”) or attempted rape;
- Someone touching, fondling, kissing, or making any unwanted contact with your body;
- Someone forcing you to perform oral sex or forcing you to receive oral sex; or
- Sexual assault, sexual battery, or sexual coercion.

Persons who are the victims of sexual violence may pursue internal University disciplinary action against the perpetrator in accordance with the University’s Procedures on Discrimination, Harassment, Sexual Harassment and Sexual Violence Complaints. The University’s disciplinary process may be initiated by bringing a complaint of sexual violence to the attention of a Dean, department chairman or director, supervisor, divisional personnel office, security officer, administrative officer, or the University’s Title IX Coordinator.

A victim of sexual violence should also immediately notify campus security.

Campus security will arrange for transportation to the nearest hospital. Victims in Baltimore City will be taken to Baltimore City’s designated rape treatment center: Mercy Hospital, 301 St. Paul Place (410.332.9000). Mercy Hospital is equipped with the State Police Sexual Assault Evidence Collection Kit. Victims in other cities will be taken to a local hospital designated as a rape treatment center. Persons who are victims of sexual violence will also be advised by campus security of their option to file criminal charges with local police of the jurisdiction where the offense occurred. Campus security and the University’s Title IX Coordinator will provide assistance to a complainant wishing to reach law enforcement authorities. Information on local and state law enforcement units and databases maintained by them is available on the Homewood Campus Safety and Security website.

The University will provide counseling to any member of the Hopkins community who is a victim of a sexual violence, and also will provide information about other victim services. Students can seek the assistance of counseling through their divisional counseling offices, and members of the faculty and staff can seek assistance through the Faculty and Staff Assistance Program (FASAP).

A student who is a victim of sexual violence may request a transfer to alternative classes or housing if necessary to allay concerns about security. The University will try to accommodate the request if such classes and housing are reasonably available.

The University reserves the right to independently discipline any member of the student body, staff or faculty who has committed an offense of sexual violence or other assault whether or not the victim is a member of the University community and whether or not criminal charges are pending. Disciplinary actions against students accused of sexual violence will be processed by the appropriate student affairs office of the School or campus attended by the accused student in accordance with the University’s Procedures on Discrimination, Harassment, Sexual Harassment and Sexual Violence Complaints and established disciplinary procedures pertaining to the School in which the student is enrolled. Disciplinary actions against staff members will be governed by the University Procedures and procedures set out in the University’s personnel policies. Disciplinary actions against members of the faculty will be processed by the offices of Dean of the appropriate academic division according to the University Procedures and procedures established by that division.

Both a complainant and the person accused of a sexual violence will be afforded the same opportunity to have others present during a University disciplinary proceeding. Attorneys, however, will not be permitted to personally participate in University disciplinary proceedings. In cases alleging a sex offense, both the complainant and the accused will be informed of the disciplinary board or panel’s final determination with respect to the alleged sex offense and any sanctions imposed against the accused. The University will, upon written request, disclose to the alleged victim of any crime of violence or a non-forcible sex offense, The disciplinary measures which may be imposed for a sexual violence offense will vary according to the severity of the conduct, and may include expulsion of a student from the University and termination of the employment of a member of the staff or faculty. The report on the results of any disciplinary proceeding conducted by the University against a complainant who is the alleged perpetrator of such crime or offense with respect to such crime or offense.

Policy Against Sexual Harassment

A. Preamble
The Johns Hopkins University is committed
to providing its staff, faculty and students the opportunity to pursue excellence in their academic and professional endeavors. This can only exist when each member of our community is assured an atmosphere of mutual respect, one in which they are judged solely on criteria related to academic or job performance. The university is committed to providing such an environment, free from all forms of harassment and discrimination. Each member of the community is responsible for fostering mutual respect, for being familiar with this policy and for refraining from conduct that violates this policy.

Sexual harassment, whether between people of different sexes or the same sex, is defined to include, but is not limited to, unwelcome sexual advances, requests for sexual favors, sexual violence and other behavior of a sexual nature when:

1) submission to such conduct is made implicitly or explicitly a term or condition of an individual's employment or participation in an educational program;
2) submission to or rejection of such conduct by an individual is used as the basis for personnel decisions or for academic evaluation or advancement;
3) such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creates an intimidating, hostile or offensive working or educational environment.

Fundamental to the University's purpose is the free and open exchange of ideas. It is not, therefore, the University's purpose, in promulgating this policy to inhibit free speech or the free communication of ideas by members of the academic community.

B. Policy

The University will not tolerate sexual harassment, a form of discrimination, a violation of federal and state law and a serious violation of university policy. In accordance with its educational mission, the university works to educate its community regarding sexual harassment.

The University encourages reporting of all perceived incidents of sexual harassment, regardless of who the alleged offender may be. Individuals who either believe they have become the victim of sexual harassment or have witnessed sexual harassment should discuss their concerns with the university's equity compliance director. Complainants are assured that problems of this nature will be treated in a confidential manner, subject to the University's legal obligation to respond appropriately to any and all allegations of sexual harassment.

The University prohibits acts of reprisal against anyone involved in lodging a complaint of sexual harassment. Conversely, the university considers filing intentionally false reports of sexual harassment a violation of this policy.

The University will promptly respond to all complaints of sexual harassment. When necessary, the university will institute disciplinary proceedings against the offending individual, which may result in a range of sanctions, up to and including termination of university affiliation.

Complaints of sexual harassment may be brought to the Vice Provost for Institutional Equity for the university or the Director for Equity Compliance & Education, Garland Hall 130, Telephone: 410-516-8075, (TTY: Dial 711).

Procedures on Discrimination, Harrassment, Sexual Harassment and Sexual Violence Complaints

These University Procedures on Discrimination, Harrassment, Sexual Harassment and Sexual Violence Complaints apply to complaints of discrimination and harassment filed under the University's Non-Discrimination Policy, Anti-Harassment Policy, Policy Against Sexual Harassment and Sexual Violence Policy. All academic and administrative units of the University (including all schools, divisions, departments and centers) must comply with, and ensure that their policies and procedures comply with, these procedures.

I. Discrimination and Harassment Complaints Brought Within the University

The University is prepared to receive and resolve complaints of discrimination and harassment under the policies listed above that are brought to the attention of any University administrative officer by members of the University community. The University encourages any individual who has a complaint of discrimination or harassment where the following protected class categories are implicated: race, color, national origin/ethnicity, age, disability, religion/creed, sex/gender, pregnancy, veteran status, marital status, sexual orientation, gender identity/expression, and/or genetic information, to bring the matter to the immediate attention of the Vice Provost for Institutional Equity (the Vice Provost), or her designee, the Director for Equity Compliance & Education, who also services as the University's Title IX Coordinator (the Director/Title IX Coordinator). Supervisors, department heads, directors, deans, or Human Resources personnel or others who receive complaints of discrimina-
tion or harassment should refer the matter to the Vice Provost or the Director immediately. Additionally, inquiries regarding procedures on discrimination or harassment complaints may be directed to the Vice Provost or the Director. Questions, concerns, or complaints related to Title IX may be directed to the Director/Title IX Coordinator.

In cases involving potential criminal conduct, including in cases of sexual violence, a complainant may also file a complaint with campus security.

In addition to filing a complaint internally, with the University, members of the University community may also file a complaint with the appropriate local, state or federal governmental agency (described below) and if applicable, may file a criminal complaint with applicable law enforcement units, as in cases of sexual violence (including sexual assault). Information on local and state law enforcement units and databases maintained by them is available on the website of Homewood Campus Safety and Security. The University’s Director/Title IX Coordinator and campus security will provide assistance to a complainant wishing to reach law enforcement authorities.

In receiving and resolving complaints of discrimination and harassment, the University will strive to protect, to the greatest extent possible, the confidentiality of persons reporting or accused of discrimination or harassment, and related information, by being as discrete as possible in its investigations; and minimizing, to the extent practicable, the number of individuals involved in the resolution process. The University, however, cannot guarantee complete confidentiality where it would conflict with the University’s legal obligation investigate a complaint or take steps to deter further discrimination or harassment, or with its duty to comply with other legal obligations (e.g., responding to a subpoena). These legal obligations extend to complaints received anonymously as well. Individuals may wish to discuss possible claims of discrimination or harassment and whether to proceed with a complaint with a counselor, therapist or member of the clergy, who may, in certain circumstances, be permitted by law to assure greater confidentiality. Complainants should also note that a confidentiality request may limit the University’s ability to respond to the complaint.

II. Discrimination Complaints Filed With Government Agencies

Present or former University faculty members, staff members, students, or applicants to University education programs or employment who believe that they have been discriminated against or harassed may file a charge of discrimination or harassment with various local, state and federal U.S. government agencies. Agencies receiving such complaints notify the University that a charge has been filed and commence an investigation. The most likely agencies from which such complaints may emanate include the Equal Employment Opportunity Commission, the Office of Federal Contract Compliance Programs of the Department of Labor, the Maryland Commission on Human Relations, the Baltimore Community Relations Commission, the D.C. Department of Human Rights, and the Office for Civil Rights of the Department of Education (OCR). OCR is the division of the federal government charged with enforcing compliance with Title IX, and questions, concerns or complaints related to Title IX may be directed to OCR. These complaints may allege that the University has violated laws prohibiting discrimination or harassment on the basis of gender, marital status, pregnancy, race, color, ethnicity, national origin, age, disability, religion, sex, sexual orientation, veteran status or other legally protected characteristics. The prompt investigation of complaints of discrimination must be given priority, as they place the University, its officers, agents, employees and students at considerable legal risk.

Notification of a discrimination complaint may be mailed by a government agency to any University department; accordingly, it is imperative that department heads and directors be aware of their responsibility to contact immediately the Vice Provost for Institutional Equity, or the Director for Equity Compliance & Education, Garland Hall 130, Homewood Campus, 410.516. 8075, or the Office of the General Counsel, Garland Hall 113, 410.516-8128 if a discrimination complaint is received.

III. Procedures Applicable to Complaints of Discrimination and Harassment Brought Within the University

Inherent in the University’s Non-Discrimination Policy, Anti-Harassment Policy, Policy Against Sexual Harassment and Sexual Violence Policy is the obligation to make every effort to achieve a prompt, equitable and impartial resolution of complaints brought under these policies using a preponderance of the evidence standard (i.e., it is more likely than not that prohibited discrimination or harassment occurred). Complaint resolution is the shared responsibility of the Office of Institutional Equity, the offices of Human Resources and the department or program within which the charge arose, and in cases of sexual violence (including sexual assault), the campus law enforcement officers. In this
effort, cooperation is required of all persons responsible. Importantly, there should be no oral or written response to the complaint or to inquiries from the media without coordination with the Office of the General Counsel and the appropriate office of communications/media relations.

A complaint may be resolved informally or formally. If mediation or other informal mechanisms of resolution are used to resolve complaints of discrimination or harassment, these informal mechanisms may be used only on a voluntary basis, and for complaints of sexual harassment, in the presence of a trained counselor, trained mediator, or other appropriate administrative or staff member. Mediation and other informal mechanisms may not be used to resolve complaints of sexual violence (including sexual assault), regardless of whether participation is voluntary. A complainant may end an informal process at any time for any reason and begin the formal stage of the complaint process.

If formal proceedings other than those conducted by the Office of Institutional Equity are initiated against a respondent (e.g., a conduct board hearing), those proceedings are conducted by the relevant academic or administrative unit; however, the investigation of the complaint is coordinated by the Director/Title IX Coordinator who works with appropriate unit representatives during the investigation. An investigation conducted by the Office of Institutional Equity generally consists of two main phases: (a) a preliminary assessment of the complaint; and (b) the issuance of factual findings and a recommendation. The first phase, which usually takes up to sixty (60) days from the date of filing the complaint, involves extensive interviews with the complainant, respondent, witnesses and other relevant parties, in addition to gathering relevant documentation, if any. After this preliminary assessment phase of the investigation, the Director/Title IX Coordinator or a designee conducts a thorough assessment of the facts and, usually within ninety (90) days of the date of filing the complaint, issues the factual findings and a recommendation for resolution of the complaint to the appropriate administrative official at the school, division or department. If an individual school's conduct board hearing is involved, then board members will also receive a copy of the factual findings and recommendation(s). While every effort is made to adhere to these general time frames, these may vary depending on the complexity of the investigation and the severity and extent of the alleged discrimination or harassment.

For complaints of sexual violence (including sexual assault), investigations are generally conducted by the relevant campus security officials in consultation with the Director/Title IX Coordinator, with input from the relevant academic or administrative unit. The Director/Title IX Coordinator remains involved, receives regular updates, and offers guidance throughout the entire investigation, including during the drafting and issuance of the factual findings and recommendations.

Both the complainant and the respondent are afforded equal procedural rights during the investigation and any hearing that may follow, including an equal opportunity to present relevant witnesses and evidence during the investigation (whether conducted by the Office of Institutional Equity or an individual school). In cases where an individual school's academic or administrative unit holds a hearing, both the complainant and the respondent will be afforded similar and timely access to any information used in connection with that hearing, consistent with the University's obligations under FERPA (Family Educational Rights and Privacy Act) and other laws protecting privileged and confidential information. If an individual school's academic or administrative unit's procedures afford an opportunity to bring parents or other individuals to a hearing to provide personal support, such right shall be afforded equally to both the complainant and the respondent. Similarly, if unit procedures allow an appeal with respect to findings and/or sanctions, such right to appeal shall be available equally to the complainant and the respondent. In cases of sexual harassment (including sexual violence and sexual assault), subject to the University's obligations under FERPA, both the complainant and the respondent will be notified in writing of the outcome of the complaint and the outcome of the appeal (if one is provided by the relevant unit's procedures), where "outcome" means whether sexual harassment was found to have occurred; provided, that in cases alleging a sex offense, the final determination with respect to the alleged sex offense and any sanctions imposed against the respondent will be shared with the complainant. This notice will be provided to the complainant and the respondent in the same manner and in the same time frame. The University will, upon written request, disclose to the alleged victim of any crime of violence or a non-forcible sex offense, the report on the results of any disciplinary proceeding conducted by the University against a student who is the alleged perpetrator of such crime or offense with respect to such crime or offense. If the alleged victim of such crime or offense is deceased as a result of such crime or offense, the next of kin of such victim shall be treated as the alleged victim...
for purposes of the preceding sentence. The University will take steps to prevent the recurrence of any discrimination or harassment, including sexual harassment and sexual violence, and to correct its discriminatory effects on the complainant and others, as necessary. Note that local, state, and federal law and University policy prohibit any form of retaliation against a person who files or bears witness to a discrimination or harassment complaint. These procedures apply to complaints and investigations of retaliation. Complainants are urged to contact the Office of Institutional Equity promptly, with any concerns or claims regarding retaliation and the University will take steps to address such retaliation.

Policy Addressing Campus Violence

The Johns Hopkins University is committed to providing a learning and working environment that is safe to all members of the University community. The University will not tolerate violent acts on its campuses, at off-campus locations administered by the University, or in its programs. This policy of “zero tolerance” extends not only to actual violent conduct but also to verbal threats and intimidation, whether by students, faculty, staff, or visitors to the University.

The University urges individuals who have experienced or witnessed incidents of violence to report them to Campus Security. Alternatively, students are urged to report concerns about violence to the divisional office responsible for student matters, faculty to the divisional office responsible for faculty matters, and staff to the applicable human resources offices. The University will not permit retaliation against anyone who, in good faith, brings a complaint of campus violence or serves as a witness in the investigation of a complaint of campus violence.

Enforcement

Information regarding incidents of violent conduct and threats of violence will be investigated, and, if warranted, disciplinary action will be taken in accordance with applicable procedures. The University will notify law enforcement authorities of criminal conduct. In addition, the University may refer individuals accused of violations of this policy for an assessment of the likelihood that they will carry out violent acts. If the continued presence of an individual on campus threatens or disrupts the conduct of University business, the individual may be suspended from participation in University programs or activities pending the outcome of the assessment.

When advised of circumstances warranting intervention, the University will render assistance by contacting local or federal law enforcement agencies as appropriate. Individual members of the University community who receive threats of bodily harm or who are the targets of harassing or stalking behaviors are urged to contact Campus Security and to avail themselves of the services offered by student counseling offices and the Faculty and Staff Assistance Program.

Every effort will be made to respect the privacy of all individuals involved in the matter. However, the necessity to investigate the matter and to cooperate with law enforcement authorities may require the disclosure of otherwise confidential information.

Individuals accused of engaging in incidents of campus violence may seek legal counsel at their own expense. Individuals and their attorneys are reminded that attorneys do not participate in any internal University hearing.

Campus vendors are reminded that their employees who conduct business on University premises must conform their conduct to the requirements of this policy. The University reserves the right to remove from campus vendor employees who engage in acts prohibited by this policy.

Photography and Film Rights Policy

The Johns Hopkins University reserves the right from time to time to film or take photographs of faculty, staff, and students engaged in teaching, research, clinical practices, and other activities, as well as casual and portrait photography or film. These photographs and films will be used in such publications as catalogs, posters, advertisements, recruitment and development materials, as well as on the university’s Web site, for various videos, or for distribution to local, state, or national media for promotional purposes. Classes will be photographed only with the permission of the faculty member.

Such photographs and film—including digital media—which will be kept in the files and archive of the Johns Hopkins University, will remain available for use by the university without time limitations or restrictions. Faculty, students, and staff are made aware by virtue of this policy that the university reserves the right to alter photography and film for creative purposes. Faculty, students, and staff who do not want their photographs used in the manner(s) described in this policy statement should contact the Office of Communications.

Faculty and students are advised that per-
sons in public places are deemed by law to have no expectation of privacy and are subject to being photographed by third parties. The University campus and those areas of University buildings generally accessible to faculty, students, and staff are considered public places for the purpose of this policy. The Johns Hopkins University has no control over the use of photographs or film taken by third parties, including without limitation the news media covering university activities.

Use of Animals in Required Medical Student Teaching
All animal use at the University, including use in training, must be reviewed and approved by the Institutional Animal Care and Use Committee. The use of animals in teaching is appropriate, however, students will not be required to participate in the use of animals in teaching exercises against their will. When possible, alternatives to the use of live animals will be explored.

Policy on Firearms
The possession, wearing, carrying, transporting, or use of a firearm or pellet weapon is strictly forbidden on University premises. This prohibition also extends to any person who may have acquired a government issued permit or license. Violation of this regulation will result in a disciplinary action and sanctions up to and including expulsion, in the case of students, or termination of employment, in the case of faculty and staff. Disciplinary action for violations of this regulation will be the responsibility of the divisional student affairs officer, Dean or Director, or the Vice President of Human Resources, as may be appropriate, in accordance with applicable procedures. Any questions regarding this policy, including the granting of exceptions for law enforcement officers and for persons acting under the supervision of authorized University personnel, should be addressed to the appropriate chief campus security office.

WOMEN’S ADVISORY COMMITTEE
The Women’s Advisory Committee is available for consultation by women medical students. The purpose and composition of this Committee are presented in the appendix to this catalogue in connection with information on the important gift to the University by Miss Mary Elizabeth Garrett.

MEDICAL CARE FOR STUDENTS
Comprehensive medical care is available to students and dependents through the University Health Center. Adult primary care services are provided by internists and nurse practitioners for students and dependents enrolled in the Student Health Program. The Center also provides specialty care including gynecological services and referrals to other specialties. Mental health services are provided by faculty and staff of the Department of Psychiatry. Pediatric care is provided by a pediatrician of your choice. The University Health Service Center is located at 933 N. Wolfe Street. Information concerning clinic hours, referrals to specialty clinics and other arrangements is contained in a brochure distributed at the time of registration. Additional information is available at www.hopkinsmedicine.org/uhhs.

STUDENT SERVICES AND LIVING ACCOMMODATIONS
The Housing Office is situated on the Johns Hopkins Medical Campus to assist students, housestaff, postdoctoral fellows, staff, and faculty for the School of Medicine, School of Public Health, School of Nursing, Johns Hopkins Hospital, and Johns Hopkins Health System with their off-campus accommodations as they move or relocate to the Baltimore area.
To better assist you with your search in finding the perfect home, the JHMI Housing website was created to help you find affordable and safe housing in the Baltimore area as well as answer many other questions you may have about Baltimore, student life, entertainment, shopping, daycare, school systems in the city and surrounding counties, and other useful resources. The website can be found at: www.hopkinsmedicine.org/som/students/life/housing/index.html

The Office of Cultural Affairs
The JHMI Office of Cultural Affairs (OCA) exists to cultivate and raise awareness of the rich humanistic tradition of the Johns Hopkins Medical Institutions. Programs and events sponsored by the OCA provide a basis for student/faculty interaction in non-academic areas and serve as a reminder of our humanistic roots.
The OCA is part of the Institute of the History of Medicine and is co-chaired by Randall Packard, Ph.D.
Seminars, lectures, panel discussions, and films are offered throughout the academic year. Local artists, students, faculty and staff offer professional-quality presentations to inform, encourage and inspire members of the JHMI community. In addition to performance presentations, OCA sponsors several
groups, including the Choral Society, Chamber Music Society, and the student literary magazine, Seam.

All of these events are free and open to the student body, faculty, and employees. Student representation on the governing committee is welcome.

The Office of Cultural Affairs is located at 2024 E. Monument Street, Ste. 1-100, Baltimore, MD 21205. Call 410-955-3363 or visit www.JHOCA.org for information and current schedules of events.

**International Services**

International students may receive assistance with visas and other documents in the Office of International Student and Faculty Services located in the Lowell J. Reed Medical Residence Hall. The International Society, open to all members of the medical community, plans trips and social events during the year of particular interest to international students.

**STUDENT ORGANIZATIONS**

**The Johns Hopkins Medical Student Senate.** Membership is composed of all students actively seeking the M.D. degree. Each medical school class annually elects four representatives to the Senate’s Executive Council. The 2011-2012 Senate Officers are: Craig Monsen (President) and John Zampella (Vice-President of Finances/Student Groups) from the Class of 2012; and Richa Gupta (Vice-President of Administration) from the Class of 2013;

The Senate strives through its numerous committees and activities to further the common interests of medical students, to contribute the students’ perspective toward the improvement of medical education, and to promote communication between students and administration. There is student representation on several working committees of the School, including the Education Policy Curriculum Committee, the Alumni Association and the Medical School Council. All students are urged to participate actively in the work of the Senate.

**Student National Medical Association - Johns Hopkins Chapter.** Jesse Yang (President). As the oldest organization of minority students in the United States, the Student National Medical Association (SNMA) serves the needs of African-American, Latino, and Native American students through monthly meetings, faculty forums, community activities, and recruitment of prospective students.

**The Johns Hopkins Graduate Student Association.** The Graduate Student Association (GS consists of all students seeking a Doctor of Philosophy or Master of Arts degree at JHSOM. The GSA Council consists of five officers (a president, two vice presidents, a treasurer and a secretary), representatives from each graduate program, and students who serve on various committees. The GSA is the major graduate student organization of The Johns Hopkins University School of Medicine (JHSOM). The primary purpose of the GSA is to act as a liaison between the graduate student body and the JHSOM administration. We communicate the desires and needs of the student body to the faculty and administration while representing institutional ideals and standards to the student body. Currently, we have representatives for the M.A./Ph.D. committee, the Student Assistance Program committee, graduation meetings, and meetings concerning health care. In addition, we organize many social events and lectures throughout the year and fund travel awards and recognized student groups. Our goal is to educate and unite the graduate student body between and within each individual program

**American Medical Student Association, Johns Hopkins Chapter.** The American Medical Student Association, known as AMSA, is a nationwide organization, run autonomously by and for medical students. AMSA offers a wide variety of services: it publishes The New Physician, a monthly magazine with articles relevant to the medical student; it sponsors several externship programs for students interested in community medicine and family practice; and it plays an active political role in recommending changes in the course of medical education and the delivery of health care before the AMA and Congressional subcommittees.

At Johns Hopkins, membership is available to medical students from all four classes. Two students are elected from the second year class to serve as representatives at the AMSA national convention and to coordinate activities at Johns Hopkins. Such activities include the publicizing of AMSA’s summer programs and the organization of seminars focusing on national issues in medical education and health care.

**Alpha Omega Alpha** (honor medical society). Peter Dans, M.D., Faculty Councillor. The Alpha Chapter of Maryland was established at the Johns Hopkins University School of Medicine in 1906. Medical students with exceptional records of clinical and preclinical academic performance as well as outstanding humanistic qualities are elected to membership in their senior year. The chapter can also elect three housestaff members, two faculty members, and two alumni annually. Activities
include seminars, lectureships, and Visiting Professorships.

**RECREATIONAL AND CULTURAL OPPORTUNITIES**

Baltimore is the largest city in Maryland and the center of a metropolitan area of 1.5 million people. Located on the Chesapeake Bay, the city is a melting pot of cultures and neighborhoods ranging from metal and glass skyscrapers to brick row houses to the famous Inner Harbor.

Baltimore offers cultural opportunities, professional sports, outdoor activities and much more. If you enjoy the surf and sand, Baltimore is within driving distance of beaches and ocean resorts. Or if you’d prefer, head to the mountains. Washington, D.C., Philadelphia and New York are also an easy drive or train ride away.

The nationally acclaimed Inner Harbor is the centerpiece of Baltimore City’s renaissance. Surrounded by such landmarks as the National Aquarium, the Maryland Science Center, and the Baltimore Maritime Museum, the Inner Harbor is a waterfront showcase featuring shops, restaurants, harbor cruises and a variety of activities year-round.

Fort McHenry, birthplace of “The Star Spangled Banner”, offers a glimpse of Baltimore’s past, as does the B&O Museum which celebrates the inception of the railroad. Visits to the homes of Edgar Allen Poe, Babe Ruth, and H.L. Mencken provide a look into the lives of some of Baltimore’s most famous citizens.

Baltimore’s cultural scene is as diverse and lively as the city itself. The Meyerhoff Symphony Hall is the home of the Baltimore Symphony Orchestra. The elegant Lyric Opera House, the Peabody Conservatory of Music and the outdoor stages of Pier Six and Oregon Ridge play host to every musical taste from classical and jazz to country music and rock. Theater-goers will find the bright lights of Broadway at the Hippodrome Theater. Numerous other theaters including the Morris Mechanic Theater and Center Stage offer a wide variety of entertaining productions from classic and contemporary to modern dance and experimental performance works.

For lovers of the visual arts, the renowned Cone Collection of the early Twentieth Century works by Matisse and Picasso is housed at the Baltimore Museum of Art. The Walters Art Gallery holds a magnificent collection of Oriental, Egyptian and European art and artifacts. Exhibitions at the Maryland Institute College of Art and numerous private galleries around town make for a lively contemporary art scene.

Sports fans can enjoy Orioles baseball at Camden Yards. The Baltimore Ravens play right down the street from the Orioles at M&T Bank Stadium. The Preakness, second jewel in the Triple Crown of horse racing is run each year at Pimlico Race Course. First Mariner Arena is home to the Baltimore Blast indoor soccer team and the venue for several concerts and other events.

For your living accommodations, the choice is varied. On the East Baltimore Campus students can enter into a short-term housing lease at the 929 Building. 929 Apartments is a new luxury apartment building with many amenities including a fitness center, a garden terrace, and WiFi as well as controlled access entry. Adjacent to the Homewood Campus is Charles Village where apartments and townhomes can be leased. The Baltimore Suburbs offer numerous options for apartment rentals or if you prefer the downtown atmosphere you have many great Baltimore neighborhoods to choose from including Hamden, Fells Point, Canton and Locust Point.

**THE DENTON A. COOLEY CENTER**

A recreational center is adjacent to Reed Medical Residence Hall. Membership to the Denton A. Cooley Center is free to all full-time medical students and medical graduate students. Registration is required.

A satellite center is also located on the ninth floor of the School of Public Health. The use of the secondary facility is included with registration.

Faculty, staff, housestaff, fellows, and part-time students of the medical institutions may join for an annual membership fee.

The recreation complex includes a full size gymnasium, indoor track, racquetball courts, weight room, exercise areas and locker rooms. An outdoor swimming pool is also available during the summer months, with a paid pool membership.

Programs and activities offered through the Cooley Center include intramurals, tournaments, and fitness challenges. Group exercise classes and personal training are offered at an additional cost.

**LIBRARIES**

Reference has already been made to the William H. Welch Library of the School of Medicine. The University collections of over 2 million volumes are housed in the Milton S. Eisenhower Library on the Homewood campus. This library acquires in excess of 9,000 current journals and is a depository for United
States Government documents as well as for United Nations, Atomic Energy Commission and other official publications. Students have direct access to all library reading rooms and stack areas.

The library of the Medical and Chirurgical Faculty of Maryland, 1211 Cathedral Street, contains 94,500 volumes and is operated in affiliation with the University facilities. Other libraries of Baltimore are the Peabody and the Enoch Pratt, with 250,000 and 1,700,000 volumes, respectively. These libraries are open to students of the School of Medicine without charge.

Washington, D.C. is so near that its libraries and museums may be easily utilized. Among the chief institutions of interest to students are the Smithsonian Institution and National Museum, the Library of Congress, the National Library of Medicine, and the libraries of the various departments and bureaus.

**MEDICAL SOCIETIES**

**Journal Clubs:** Regular meetings of journal clubs are held by members of each department to survey current medical and scientific literature.

**The Johns Hopkins Medical and Surgical Association:** Eileen P.G. Vining, President; Ralph H. Hruban, First Vice-President; Clair A. Francomano, Second Vice-President, David R. Shortle, Secretary-Treasurer; Diane J. Orlinksy, Associate Secretary-Treasurer. The association is composed of graduates of the School of Medicine, past and present members of the School faculty, and past and present members of the housestaff of the Johns Hopkins Hospital. Scientific papers by staff members and alumni are presented at the biennial meetings.

**The Johns Hopkins Women’s Medical Alumnae Association:** Carol M. Ziminski, President. A women’s organization in various forms has existed at the Medical School since 1904. The present association was incorporated in 1957 to provide professional support for women students and physicians. It maintains the Mary Elizabeth Garrett Room on the first floor of the hospital near the Doctor’s Lounge.

The activities of the association include seminars with guest speakers, informal lunches in the Garrett Room, potluck dinners at faculty homes, and a fall reception to introduce students to house staff, postdoctoral fellows and faculty.

A calendar of events is mailed to women students and physicians in the early fall.

**The Medical and Chirurgical Faculty:** The Medical and Chirurgical Faculty of the State of Maryland is located at 1211 Cathedral Street, Baltimore. This organization constitutes the state medical society. It conducts a scientific session each year in April and maintains a library.

**The Baltimore City Medical Society:** The Baltimore City Medical Society is an independent society of Baltimore physicians. Located at 1211 Cathedral Street, Baltimore. Their meetings are open to medical students.

**PUBLICATIONS OF THE MEDICAL INSTITUTIONS**

**The Bulletin of the History of Medicine:** Gert H. Brieger and Mary E. Fissel, Editors; Randall Packard Emeritus Editor. The Bulletin is published quarterly by the Institute of the History of Medicine. It is the organ of the Institute and of the American Association for the History of Medicine.

**The Johns Hopkins Magazine:** Catherine Pierre, Editor. The Magazine serves the Medical Institutions, as it does other divisions of the University, by informing friends of the University concerning current developments within its branches.

**The Dome:** Patrick Gilbert, Editor. The Dome is the monthly house organ for all students, faculty members and other employees of the Johns Hopkins Hospital, the School of Medicine and the School of Public Health. It contains feature stories on people and activities in the Medical Institutions. News about significant research, promotions, honors and award presentations also is included.

**Hopkins Medicine:** Sue DePasquale, Editor. Published three times a year, this flagship publication (and alumni magazine) for The Johns Hopkins Hospital and school of medicine demonstrates that life at an academic medical center can be as absorbing as, say, the world of politics or show business. It offers news about medicine, research and campus issues and highlights Hopkins’ rich history.

**TEACHING AWARDS**

**The W. Barry Wood Award for Excellence in Teaching** is awarded annually to the teachers voted by the students in the preclinical years to have been most inspirational and/or effective. The recipients of the 2011 award were Dr. Jay M. Baraban of the Departments of Neuroscience and Psychiatry and Behavioral Sciences and Dr. Michael James Choi from the Department of Medicine.

**The Housestaff Teaching Award**, established by the Johns Hopkins Medical Student Society, is awarded annually for excellence.
FACULTY TRAVELING FELLOWSHIP AND VISITING SCHOLAR FELLOWSHIP

The Tilghman Traveling Fellowship: In 1976 Dr. and Mrs. R. Carmichael Tilghman established the Tilghman Traveling Fellowship in the Johns Hopkins University School of Medicine. The Tilghman Traveling Fellowship will be awarded periodically to young members of the medical faculty, who are native-born citizens of the United States, to assist them during a sabbatical leave of up to one year to travel outside the Baltimore area to pursue new theories, methods and techniques in their chosen discipline.

The recipients are to be selected by a committee composed of the Dean of the Medical Faculty, the Vice Dean for Faculty, the Vice Dean for Research, the Vice Dean for Clinical Investigation, the Associate Dean for Research Administration, and the Directors of the Departments of Medicine and Pediatrics. Both full and part-time members of all departments in the School of Medicine shall be eligible for consideration. Those whose proposed work during the sabbatical year looks toward clinical application will be given the strongest consideration.

Guidelines are available at http://www.hopkinsmedicine.org/research/funding/tilghman.html. Applications may be submitted at any time, but should be submitted at least 60 days prior to the proposed travel.

The Shing Yuk Yau Memorial Fund: The fund was established in 1984 in memory of Shing Yuk Yau by his family and friends. Its purpose is to help defray traveling expenses for visiting Chinese scholars studying medicine at Hopkins. Preference is given to students and faculty studying subjects relating to the brain. The Fund fosters continuing exchanges between the School of Medicine and the Chinese Academy of Sciences.

NAMED PROFESSORSHIPS

The creation of a Professorship in the School of Medicine indicates that a sum of money has been added to the University endowment to generate income which supports a professor in a particular department.

John Jacob Abel Distinguished Service Professor of Pharmacology and Experimental Therapeutics [1962]: Paul Talalay, M.D. Funded by a bequest in the will of Mrs. Ann Hamilton of Columbus, OH. Dr. Abel was the first Professor of Pharmacology (1893-1937) and a member of the original faculty of the School of Medicine.

Martin D. Abeloff Professorship [2007]:
Drew M. Pardoll, M.D., Ph.D.
Funding provided by the Seraph Foundation (Henry and Linda Spires, Trustees) for a professorship in the Department of Oncology for the purpose of advancing outstanding cancer research and treatment. The Director of the Department of Oncology, Dean of the School of Medicine, and Seraph Trustees have the discretion of appointment over current and future faculty to this professorship.

Leonard & Madlyn Abramson Professorship in Neurodegenerative Diseases [2004]: Ted M. Dawson, M.D., Ph.D.
Funding provided by Abramson Family Foundation.

Aegon Professorship in Prostate Cancer Research [2009]: Michael Carducci, M.D.
The income from the principal will be used for prostate cancer research and held in the Sidney Kimmel Comprehensive Cancer Center, Department of Oncology.

Aetna U.S. Health Care Professorship in Medicine Genetics [1996]: Garry Cutting, M.D.
Funding provided by U.S. Healthcare Corporation.

Elizabeth Plank Althouse Professor for Alzheimer’s Research in Psychiatry and Behavioral Sciences [2006]: Constantine Lyketsos, M.D., M.H.S.
Funding provided for researching the cause, prevention, treatment, and cure of Alzheimer’s Disease.

Andelot Professor of Laryngology and Otology [1962]: David W. Eisele, M.D.
This Professorship was funded by a grant from Mr. Lamont DuPont Copeland of Wilmington, DE, a grateful patient of Dr. John Bordley. The Andelot name was selected by Mr. Copeland. Previous occupants: Drs. John E. Bordley, George Nager, Michael M. E. Johns, and Charles W. Cummings.

E. Cowles Andrus Distinguished Professorship in Cardiology [2001]: Edward K. Kasper, M.D.
Funding provided by Miriam Andrus, in memory of her husband, E. Cowles Andrus, M.D.

C. Michael Armstrong Professorship [2000]: Gregg L. Semenza, M.D., Ph.D.
Funding provided by Trustee, C. Michael Armstrong, to support medical research, with initial focus on stem cell research.

Dr. Frances Watt Baker and Dr. Lenox D. Baker, Jr. Deanship of the School of Medicine [1997]: Edward D. Miller, M.D.
Dr. Frances Watt Baker and Dr. Lenox D. Baker, Jr. are 1966 graduates of the Johns Hopkins School of Medicine. Dr. Frances Baker is a pediatrician and Dr. Lenox Baker is a cardiothoracic surgeon and a member of the Johns Hopkins University Board of Trustees and the Board of Johns Hopkins Medicine.

Edmund F. and Virginia Ball Professorship in Ophthalmology [2005]: Unoccupied.
Funding provided by Mr. Edmund F. Ball. This gift will be used to support research in macular degeneration and other disorders.

Freida Derdeyn Bambus Professorship in Ophthalmology [2005]: Hendrick P.N. Scholl, M.D.
Funding provided by Dr. Freida Derdeyn, a retired teacher who became acquainted with the work of the Wilmer Institute through a local group focusing on macular degeneration.

Theodore and Ingrid Baramki Professorship in Reproductive Endocrinology [1994]: Howard A. Zacur, M.D., Ph.D.
Funding provided by Dr. Theodore Baramki, a member of the faculty of the Department of Gynecology and Obstetrics and the estate of Clarice Reiss. This gift will be used to fund a professorship in reproductive endocrinology.

Philip Bard Directorship in the Department of Physiology [1999]: Unoccupied.
Established through commitments made in 1999 by Roger Greif, Philip Davies, Elizabeth B. O’Connor, Vernon Mountcastle, Timothy Harrison, and various donors in honor of Philip Bard, Professor of Physiology, 1933 to 1964.

Baxley Professor of Pathology [1901]: J. Brooks Jackson, M.D.
A bequest in the will of Dr. Henry Willis Baxley (1824-1876) provided funding for the first endowed chair in the School of Medicine. Dr. Baxley was a graduate of the University of Maryland in 1859, was a southern sympathizer during the Civil War, and following the war practiced his profession in Baltimore and later in Virginia. Previous occupants: Drs. Arnold Rice Rich, Ivan L. Bennett, Robert H. Heptinstall, and John H. Yardley.

Stanhope Bayne-Jones Professorship in Medicine [1974]: David L. Thomas, M.D.
Mrs. Stanhope Bayne-Jones provided the funding for this Professorship. Stanhope Bayne-Jones received his M.D. degree from Johns Hopkins in 1914. As an expert in infectious diseases, he served on the faculty of the University of Rochester and Yale Medical Schools, and he also served as Dean at Yale. In 1942 he was made a brigadier general in the Army Medical Corps and served in many government posts during and following World War II.

Bendann-Iliff Professorship in Ophthalmology [1995]: Nicholas T. Iliff, M.D.
Funding provided by Constance, Maurice, and Violet Bendann.
Dr. Bertram M. Bernheim Research Professorship in Surgery [1968]: James Black, M.D.
Funding for this Professorship was provided by members of the Bernheim family to honor Bertram M. Bernheim, a 1905 graduate of the Johns Hopkins Medical School. As a member of the faculty of the Department of Surgery, he was responsible for pioneering research which resulted in significant advancements in vascular surgery and blood transfusion.

Alfred Blalock Chair in Surgery [1992]: John L. Cameron, M.D.
Funding for this Chair was by contributions from Dr. Blalock’s residents. Dr. Alfred Blalock was Director of the Department of Surgery (1941-1964) and is credited with establishing the field of cardiac surgery. He is best known for the creation of the Blalock-Taussig operation for the treatment of cyanotic congenital heart disease.

John E. Bordley Chair in Otolaryngology/Head and Neck Surgery [1990]: Paul Fuchs, M.D.
Funding for this Chair was provided by the McCarthy-Cooper Estate, patients, and residents of Dr. John E. Bordley, who was Director of the Department of Otolaryngology for 17 years (1952-1969). Previous occupant: Dr. William J. Richtsmeier.

Boury Professorship in Molecular Biology and Genetics [1962]: Unoccupied.
This Professorship was funded by a bequest in the will of Mr. Louis J. Boury. Mr. Boury was a native of Baltimore who moved to New York where he became a successful grain merchant. Previous occupants: Drs. W. Barry Wood and Daniel Nathans.

Breast Cancer Research Professorship in Oncology [1992]: Occupied by Vered Stearns, M.D.
Funds were provided by Mr. and Mrs. Jeffrey Legum, Mrs. Naomi Legum, grateful patients and friends.

Dana and Albert “Cubby” Broccoli Professorship in Oncology [2001]: Elizabeth M. Jaffee, M.D.
Funded by a gift from the Dana and Albert “Cubby” Broccoli Charitable Foundation to be endowed a Professorship in Oncology, having an initial focus on research and treatment of breast cancer.

William R. Brody Professorship in Radiology [1992]: Martin G. Pomper, M.D.
Funding for this Professorship was provided by Dr. William R. Brody who was the Director of the Department of Radiology from 1987-1994. In 1996 Dr. Brody was appointed President of the Johns Hopkins University.

Thomas M. Brashart, M.D. Professorship in the Division of Hand Surgery [2000]: Thomas M. Brushart, M.D.
Funding provided by Arthur H. and Dorothy M. Thornhill to provide faculty support in the Division of Hand Surgery, Department of Orthopaedic Surgery.

John L. Cameron, M.D. Professorship for Alimentary Tract Diseases in the Department of Surgery [2002] Timothy Pawlick, M.D.

Benjamin S. Carson, Sr., M.D. and Dr. Evelyn Spiro, R.N. Professorship in Pediatric Neurosurgery [2007]: Benjamin Carson, M.D.
Funding for this professorship was provided by Mr. and Mrs. Donald Spiro.

David J. Carver Professorship in Medicine [1974]: Henry R. Halperin, M.D.
Created by Dr. and Mrs. Samuel P. Asper in honor of Mrs. Asper’s father, Dr. Asper was a 1940 graduate of the School of Medicine and a member of the faculty. Previous occupants: Drs. Philip A. Tumulty and William Hazzard.

Funding for this professorship was provided by Tom Clancy, a friend of Johns Hopkins Medicine and Johns Hopkins Board of Visitors member.

Clayton Professorship in Oncology [1984]: Bert Vogelstein, M.D.
In 1947 Dr. and Mrs. William L. Clayton of Houston, Texas created the Clayton Fund which was used to support projects in cardiovascular disease under the direction of Dr. Benjamin M. Baker, class of 1927. In 1984 the direction was shifted to studies of colon cancer in the Oncology Center.

Professorship in the Clinical Care and Research of Pediatric Endocrinology [2001]: Leslie Plotnick, M.D.
Funds provided to fund a professorship in the clinical care and research of Pediatric Endocrinology in the Department of Pediatrics. At the time of Dr. Plotnick’s retirement, the name of the endowed professorship will become the Leslie Plotnick, M.D. Professorship in the Clinical Care and Research of Pediatric Endocrinology.

Donald S. Coffey Professorship of Urology [2004]: Robert H. Getzenberg, Ph.D.
Funding provided from the bequest of Mrs. Catherine Iola Michael and of the Mr. J. Smith Michael Unitrust.

V. Robert Colton Chair in Gastroenterology [1999]: Unoccupied.
Established by a commitment made in 1999 by V. Robert Colton, a dentist from Michigan.

Rear Admiral Ray R. Conner and Laura H. Conner Professorship in Pediatrics in the
School of Medicine [1997]: Janet R. Serwint, M.D.
Funding provided by the estate of Admiral Conner. The estate stipulates the holder of the chair shall be the Director of the Harriet Lane Clinic.

Sara Miller Coulson and Frank L. Coulson Professorship in Medicine [2011]: Roy C. Ziegelstein, M.D.
Funding provided from income from the principal which will be used “in honor of Dr. David Hellmann and that the holder of the chair be a physician who exemplifies Dr. Hellmann’s passion for clinical excellence and knowing their patient as a person.”

Michael J. Cudahy Professorship in Cardiology [1994]: James L. Weiss, M.D.
Funding provided by Michael J. Cudahy, the founder of Marquette Elecronics, which produces medical, diagnostic, monitoring and clinical information systems.

Charles Cummings, M.D. Professorship in Otolaryngology - Head and Neck Surgery [2005]: Unoccupied.
Funding provided by various donors.

Harvey Cushing Professorship in Neurosurgery [1981]: Henry Brem, M.D.
Funding provided by Mr. and Mrs. John H. Whitney of New York in honor of Mrs. Whitney’s father. Dr. Harvey Cushing, founder of the specialty of neurosurgery, was a member of the Johns Hopkins Department of Surgery from 1897-1912.

Dalio Family Professorship in Mood Disorders [2010]: Kay Redfield Jamison, M.D.
Funding provided by the Dalio Family to support the understanding, treatment, and dissemination of knowledge of mood disorders and support the position of the department director/s of the Johns Hopkins Mood Disorders Center.

Walter E. Dandy Professorship in Neurosurgery [2004]: Rafael J. Tamargo, M.D.
Funds provided by Walter E. Dandy, Jr.

Richard Bennett Darnall Chair in Surgery [1964]: Unoccupied.
Funding provided by a bequest in the will of Mrs. Eugenia B. Darnall whose husband, Richard Bennett Darnall, was an attorney in Annapolis, Maryland.

Richard Bennett Darnall Professor Emeritus of Cardiac Surgery [1964]: Vincent L. Gott, M.D.
See above.

Eugene DeJuan Sr. Professorship in Ophthalmic Education [2006]: Unoccupied.
Funds provided by Eugene DeJuan, Sr. to help support the residency program at the Wilmer Institute.

DeLamar Professorship in Biological Chemistry [1919]: Gerald W. Hart, Ph.D.
Funding provided by a bequest in the will of Capt. Joseph R. DeLamar, who was born in Holland in 1843 and came to America after the Civil War and engaged in the marine salvage business. In 1878 he moved west, entered the mining business and became the owner of the Utah Mine and Smelting Co. On the advice of his attorney, he divided his $30 million estate between the “three best medical schools of the day -Johns Hopkins, Harvard and Columbia”. Previous occupants: Drs. Walter J. Jones, W. Mansfield Clark, Albert L. Lehninger, and M. Daniel Lane.

Martin W. Donner Professorship in Radiology [1988]: Jonathan S. Lewin, M.D.
Funding provided by contributions of current and former faculty, fellows, and house staff of the Department of Radiology. Dr. Martin W. Donner was Director of the Department of Radiology from 1972-1987.

Clarence Doodeman Professorship in Cardiology [2005]: Robert G. Weiss, M.D.
Funding provided by Edward and Loretta Downey to honor Mrs. Downey’s father, Mr. Clarence Doodeman.

James T. Dresher, Sr., Professorship in Cardiac Surgery [2001]: Duke E. Cameron, M.D.
Funding provided by The Dresher Foundation, Inc., to establish an endowed professorship to honor James Dresher, Sr.

Funding provided by the Altsheler-Durell Foundation, Inc. to establish a full professorship at the School of Medicine which will support a leading specialist in retinal diseases, and in particular, age related macular degeneration and/or low vision.

George S. and Delores D. Eccles Professorship in Ophthalmology [1998]: Peter A. Campochiaro, M.D.
Funding provided by the Eccles Foundation and by Mrs. Eccles for a professorship in Ophthalmology.

Milton T. Edgerton, M.D. Professorship in Plastic Surgery [2011]: W.P. Andrew Lee, M.D.
Funding provided by Dr. Milton T. Edgerton for an endowed professorship for the Director of the Department of Plastic and Reconstructive Surgery.

Doctor Dorothy Edwards Professorship in Gynecology and Obstetrics [1986]: Harold E. Fox, M.D.
Funding provided by a bequest of Dr. Dorothy Edwards, who attended the Johns Hopkins School of Medicine from 1917-1921. She was
a successful gynecologist in Chicago. She specified that the Professorship be known by her title, first name, and last name.

**Akef El Maghraby Professorship in Preventive Ophthalmology** [1991]: Sheila K. West, Ph.D.
Funding provided by Dr. Akef El Maghraby.

**Eudowood Professorship in Pediatric Immunology** [1986]: Jerry A. Winkelstein, M.D.
Funding provided by the Eudowood endowment. Eudowood was the name of a tuberculosis hospital officially known as The Hospital for Consumptives of Maryland, which joined with other institutions to form the Children's Medical and Surgical Center. The Eudowood endowment is managed by a Board of Directors which provides funding for this and other professorships.

**Yvonne Jan and Edith M. Ewald Professorship in Neurology** [1994]: Unoccupied.
Established by commitment made by Edith M. Ewald in memory of her daughter.

**King Fahd Chair in Molecular Medicine** [1993]: Andrew P. Feinberg, M.D., M.P.H.
Funding provided by the Kingdom of Saudi Arabia. The King Fahd Professorships in the School of Medicine represent “an indication of the mutual human interest and mutual support and friendship between the Kingdom of Saudi Arabia and the United States of America.”

**King Fahd Chair in Pediatric Oncology** [1993]: Robert J. Arceci M.D., Ph.D.
See above.

**David L. Guyton, M.D. and Robert and Maureen Feduniak Professorship in Ophthalmology** [2009]: Michael Repka, M.D.
Established by Robert and Maureen Feduniak to support patient care and research related to amblyopia, strabismus, and eye diseases of children.

**Warfield M. Firor Chair in Surgery** [1969]: Pamela A. Lipsett, M.D.
Funding provided by a bequest of Alice Larsen Fink reflecting her “deep regard for Dr. Firor as a fine surgeon, teacher, and humanitaria.” Dr. Warfield M. Firor was a distinguished practicing surgeon in the Department of Surgery. Previous occupants: Drs. John Cameron and R. Robinson Baker.

**Nicholas J. Fortuin Professorship of Cardiology** [2002]: Hugh Calkins, M.D.

**Frank J. Frassica Professorship in Orthopaedic Surgery** [2011]: Frank J. Frassica, M.D.

**Jonas Friedenwald Professorship in Ophthalmology** [2004]: Unoccupied.
Named for father of experimental ophthalmic pathology.

**James F. Fries Professorship in Medicine** [2006]: Lisa A. Cooper, M.D., M.P.H.
Funding provided by James F. Fries, M.D. and Sarah Tilton Fries, M.P.H. to support a faculty member engaged in health outcomes research, clinical epidemiology, and/or health policy research.

**Robert Garrett Professorship in Pediatric Surgery** [1964]: Paul M. Colombani, M.D.
Funding provided by the Garrett Fund for the surgical treatment of children founded by Mary F. Jacobs. Previous occupant: Dr. J. Alex Haller.

**William Thomas Gerrard, Mario Anthony Duhon and Jennifer and John Chalsty Professorship in Urology** [1998]: William B. Isaacs, Ph.D.
Funding provided by Mr. William Thomas Gerrard and Mr. and Mrs. John Chalsty for the Department of Urology.

**James P. Gills Professorship in Ophthalmology** [1999]: Neil Bressler, M.D.
Funding provided by James P. Gills who trained at Johns Hopkins Hospital.

**Given Foundation Professorship in Pediatrics** [1962]: George J. Dover, M.D.
Funding provided by the Irene Heinz Given and John LaPoute Given Foundation of New York for the purposes of medical research and teaching. Previous occupants: Drs. Robert E. Cooke, John W. Littlefield, and Frank A. Oski.

**Morton F. Goldberg Professorship in Ophthalmology** [1999]: Ran Zeimer, M.D.
Funding provided by a number of unrestricted bequests to the Wilmer Institute.

**Vincent L. Gott, M.D. Professorship** [2000]: William Baumgartner, M.D.
Funding provided by various residents, patients and friends of Vincent L. Gott.

**Katherine Graham Professorship in Ophthalmology** [2002]: Sharon Solomon, M.D.
Funded by a major bequest from the Katherine Graham estate.

**Alex Grass Professorship in Oncology** [2003]: David S. Ettinger, M.D.
Funding provided by Mr. Alex Grass of Wormsleyburg, PA.

**Joseph E. Green Professorship in Macular Degeneration and Other Retinal Diseases** [1998]: Morton F. Goldberg, M.D.
Funding provided by a bequest from Joseph E. Green to the Department of Ophthalmology which will support research activities by a faculty member in macular degeneration.

Funding provided by various donors to support a faculty member in Ophthalmology.

**John W. Griffin, M.D., Directorship for the**
Brain Science Institute [2011]: Jeffrey Rothstein, M.D.
Income from the principal will be used to provide faculty support and “advance the work of the Brain Science Institute. Through the support provided...the director will be better able to communicate with and serve a large and diverse neurosciences community, while making decisions efficiently and moving targeted programs along rapidly.”

Burton E. Grossman Professorship in Ophthalmology [1998]: Oliver Schein, M.D.
Funding for this professorship was provided by Dr. and Mrs. Burton Grossman to ensure the integration of the progression of specific ophthalmologic diseases and to develop techniques for preventing these diseases.

Guerrieri Family Professorship in Ophthalmology [1998]: Donald Zack, M.D.
Funded by the Guerrieri Family Foundation for the Center for Genetic Engineering and Molecular Ophthalmology at the Wilmer Institute.

Willard and Lillian Hackerman Professorship in Oncology [1981]: Moody D. Wharam, Jr., M.D.
Funding provided by Mr. and Mrs. Willard Hackerman. Mr. Hackerman is a graduate of the Johns Hopkins University School of Engineering and was a long time trustee of the University. He is the CEO of Whiting-Turner Construction Co. and founded the Whiting School of Engineering. Previous occupant: Dr. Stanley E. Order.

Funding provided by Mr. Karl H. Hagen to provide faculty support in the Department of Ophthalmology.

Haller Professorship in Pediatric Neurologic Diseases [1996]: Harvey S. Singer, M.D.
Funding provided by a bequest from Miss Virginia Doriot Haller of Salem, VA, whose purpose is to support research with a primary focus on genetic, developmental and environmental factors in the neurologic diseases of children.

Bayard Halsted Professorship in Cell Biology and Anatomy [1943]: Unoccupied.
Funding provided by a bequest in the will of Mr. Edward Bayard Halsted, a retired stock broker in New York City. “The income thereof shall be forever devoted to research work for the advancement of knowledge as to the nature, causes, means of prevention, and cure of such maladies...in need of further study and investigation.” Previous occupants: Drs. David Bodian and Thomas D. Pollard.

William Stewart Halsted Professorship in Surgery [2000]: Julie A. Freischlag, M.D.
Funding provided by Department of Surgery’s Unit Executive Fund.

Jacob Handelsman Professorship in Surgery [2004]: Michael A. Choti, M.D.
Funding provided by grateful patient of Dr. Handelsman

Elizabeth Treide and A. McGehee Harvey Chair in The History of Medicine [1992]: Unoccupied.
Funding provided by Dr. and Mrs. Harvey, Dr. Harvey’s colleagues in the Department of Medicine, and many friends and relatives of the Harveys. This Professorship was placed in the Department of the History of Medicine to recognize Dr. Harvey’s (class of 1934) second interest in history after 27 years as Director of the Johns Hopkins Department of Medicine. Mrs. Harvey (class of 1943) was named to recognize her and other faculty wives for their contributions to this Institution.

Isaac Morris and Lucille Elizabeth Hay Professorship in Embryology [1996]: Peter Devreotes, Ph.D.
Funding provided by a commitment made in 1996 by Elizabeth D. Hay in memory of her parents.

Kyle Haydock Professorship in Oncology [2003]: Donald Small, M.D., Ph.D.
Endowed by author Tom Clancy memorializing a young friend who lost his life to cancer. To be used in perpetuity by a distinguished faculty member in Oncology for the purpose of advancing outstanding childhood cancer research and patient care.

Sherlock Hibbs/Eugene VanDyke Professorship for Research [2004]: Theodore M. Bayless, M.D.
Dean’s Office Professorship

The Charles J. Homcy, M.D. Professorship in Neurosciences and Kennedy Krieger School of Arts and Sciences [2009]: Unoccupied.
Funding provided by Charles J. Homcy, M.D. to provide direct salary support for the Homcy Professor for research and teaching in the Department of Neurosciences in the School of Medicine and the teaching of undergraduates and graduate neuroscience at the Krieger School of Arts and Sciences as well as in the sponsorship of undergraduate research at the Krieger School of Arts and Sciences.

Johns Hopkins Family Professorship in Oncology Research [2004]: Robert Brodsky, M.D.
Funds provided by the descendants of the parents of Johns Hopkins.

John Eager Howard Chair in Endocrinology and Metabolism [1990]: Paul W. Ladenson, M.D.
Funding provided by family, friends, colleagues, and grateful patients of Dr. John Eager Howard (class of 1928), who was a long time member of the Johns Hopkins faculty and Chief of the Division of Endocrinology. He was a superb internist, as well as investigator. His research contributions include the elucidation of the relationship between unilateral renal disease and high blood pressure, and the role of a protein factor in urine in preventing the formation of kidney stones.

R. Dale Hughes Professorship in Oncology [2000]: Mario A. Eisenberger, M.D.
Established through commitments made in 1999 by R. Dale Hughes and Frances M. Hughes and other donors. Mr. Hughes is a grateful patient of the Oncology Center and made this commitment because of the care he has received since 1987.

David S. Hungerford, M.D. Chair in Orthopaedic Surgery (Good Samaritan Hospital) [2001]: David S. Hungerford, M.D.
Established through a commitment made in 1997 by Good Samaritan Hospital and patients of David S. Hungerford.

Charles E. Iliff III, M.D. Professorship in Ophthalmology [2007]: Nicholas T. Iliff, M.D.
Funding for this professorship provided by Dr. Helen Ossofsky-Iliff to honor Dr. Charles Iliff and to provide support for research which will improve the outcome of ophthalmic surgery.

Funded by Julius H. Jacobson, II, M.D. to establish a chair in vascular surgery in the Department of Surgery.

Funding provided by Janssen Pharmaceutica, Inc., Jeremy and Nancy Halbreich, Theodore H. Strauss, Janie Strauss McGarr and various donors to create a professorship at the Marvin M. Schuster Center for Digestive and Motility Disorders at the Johns Hopkins Bayview Medical Center.

Robert D. Jeffs Professorship in Pediatric Urology [2010]: John P. Gearhart, M.D.
Funding provided by the Zanvyl and Isabelle Krieger Fund. Income from the principal will be used for a professorship in pediatric urology. The endowment will be held in the Brady Urological Institute at the School of Medicine.

To be established by commitments made in 1997 by colleagues of Richard T. Johnson and residents in the Department of Neurology. Dr. Johnson was a member of the Department of Neurology when it was created in 1969 and served for many years as director of the department.

Henry J. Knott Directorship of the McKusick/Nathans Center for Medical Genetics and Professorship in Medical Genetics [1999]: David Valle, Ph.D.
Funding provided by Marion I. Knott in honor of her late husband who served as a Trustee of the Hospital and, with his wife, was an extremely generous supporter of Hopkins.

Marion I. Knott Directorship of the Oncology Center and Professor in Oncology [1999]: William Nelson, M.D.
Funding provided by Marion I. Knott in honor of her late husband who served as a Trustee of the Hospital and, with his wife, was an extremely generous supporter of Johns Hopkins.

Arlene and Robert Kogod Professorship in Mood Disorders in the Department of Psychiatry [2008]: James Potash, M.D., Ph.D.
Funding will be provided by Arlene and Robert Kogod to provide the financial support and stability for research, education, and clinical activities of individual faculty members in the Department of Psychiatry.

Everett and Margorie Kovler Professorship in Pancreas Cancer Research [2009]: Scott Kern, M.D.
Funding provided by Everett and Marjorie Kovler to provide support of pancreatic cancer research. The endowment will be held in the Sidney Kimmel Comprehensive Cancer Center at the School of Medicine.

Zanvyl Krieger Professorship in Pediatric Ophthalmology [1991]: David L. Guyton, M.D.
Funded by a contribution from Mr. Zanvyl Krieger, a 1928 graduate of the Johns Hopkins University, a successful business man and philanthropist. He is a benefactor of many components of the Johns Hopkins University.

Funded by a contribution from Mr. Zanvyl Krieger, a 1928 graduate of the Johns Hopkins University, a successful business man and philanthropist. He is a benefactor of many components of the Johns Hopkins University. Additional funds to be solicited to complete the professorship.

Lapides Professorship in Otolaryngology [1997]: Unoccupied.
Funding provided by Linda S. and Julian L. Lapides.

George LeBoff Professorship for Research in Digestive Diseases [1999]: Mark Donowitz, M.D.
Funding provided by the estate of George LeBoff for support in the Division of Gastroenterology.
Lederer Professorship of Pediatric Epilepsy [1920]: Eileen P.G. Vining, M.D.
Funded by a gift for research in the care and cure of pediatric epilepsy.

Legum Professorship in Acute Neurological Medicine [1999]: Daniel Hanley, M.D.
Funding provided by Mr. and Mrs. Jeffrey Legum. Appointment to the Professorship will be made by the Dean on the recommendation of the Chairman of the Department of Neurology. The recipient will be a leader in research of severe brain injury and disease.

Doris Lescher and John G. Bauernschmidt II Professorship in Ophthalmology [2004]: Unoccupied.
Both donors stipulated that funds were to be used for research into retinal disease.

David Levine Professorship [2004]: Daniel E. Ford, M.D., M.P.H.
Established to be occupied by the Vice-Dean for Clinical Research.

Julia L. Levy Ph.D. Professorship in Ophthalmology [2004]: Susan Bressler, M.D.
Funding provided by QLT, Inc. of Vancouver, BC.

Robert L. Levy Chair in Cardiology [1975]: Lewis C. Becker, M.D.
Funding provided by a bequest of Dr. Robert L. Levy, a graduate of the School of Medicine in 1913 and a highly respected practicing cardiologist in New York City. Previous occupants: Drs. J. O’Neal Humphries, Myron L. Weisfeldt, and Eduardo Marban.

Wayne Lewis Professorship in Orthopaedic and Shoulder Surgery [2006]: Edward McFarland, M.D.
Funding provided by Dextra Bank and Trust Co., Ltd. to create a professorship in orthopaedics and shoulder surgery.

Donlin M. Long Chair in Hematology [1992]: Linzhao Cheng, M.D.
Funding provided by Clara Lucas Lynn, a grateful patient of Dr. William R. Bell.

Virginia and Daniel K. Ludwig Chair in Cancer Research [1996]: Stephen Baylin, M.D.
Funding provided by Daniel K. Ludwig, one of the world’s great ship owners, who dedicated his fortune to medical research on an international scale for the understanding and eradication of cancer.

Virginia and Daniel K. Ludwig Chair in Clinical Investigation of Cancer [1999]: Ross C. Donehower, M.D.
Funding provided by Daniel K. Ludwig, one of the world’s great ship owners, who dedicated his fortune to medical research on an international scale for the understanding and eradication of cancer.

James and Debra Lustig Professorship [2000]: Unoccupied.
Funding provided by James and Debra Lustig to support research in corneal disease and microbiology at the Wilmer Institute.

MacMillan Family Professorship in Clinical Pancreatic Cancer Research [2008]: Occupied by Daniel Laheru, M.D.
Funding provided by the MacMillan Family to be used for clinical pancreatic cancer research at the Sidney Kimmel Comprehensive Cancer Center.

David Marine Professorship of Medicine [1985]: Landon S. King, M.D.
Funding provided by the estate of Dr. David N. Marine, a 1947 graduate of the Johns Hopkins School of Medicine. He specialized in the study of pulmonary disease and tuberculosis.

Funding provided by Dr. Thomas H. Maren, class of 1951, who was a faculty member in the Department of Pharmacology directed by Dr. Marshall.

Eli Kennerly Marshall, Jr. Professorship in Oncology [1978]: Gary L. Rosner, M.D.
E. K. Marshall succeeded Abel as Professor of Pharmacology. This Professorship was initially in the Oncology Division of the Department of Medicine, but moved to Oncology when Oncology became a department. Previous occupant: Dr. Albert H. Owens.

Bessie Darling Massey Chair in Biomedical Engineering [1958]: Elliot McVeigh, Ph.D.
Funding provided by Mr. and Mrs. Massey, grateful patients of John Bordley. Previous occupant: Richard J. Johns, M.D.

**The A. Edward Maumenee Professorship in Ophthalmology [1993]: Harry A. Quigley, M.D.**
Funding provided by Mrs. Margaret Mosher and other friends, colleagues, and grateful patients of Dr. Maumenee who was Director of the Wilmer Eye Institute and Director of the Department of Ophthalmology from 1955-1979.

**David Hall McConnell Professorship of Urology [1973]: Alan W. Partin, M.D., Ph.D.**
Funding provided by Admiral H. P. John Duberg, a grateful patient of Dr. W. W. Scott. Adm. Duberg was married to Dorys McConnell Duberg, a daughter of David Hall McConnell who was the founder of the Avon Corporation. Previous occupant: Dr. W. W. Scott.

**The Hugh P. McCormick Family Professorship in Endocrinology and Metabolism [2003]: Unoccupied.**
Funding provided by Hugh P. McCormick of McCormick Spice.

**The Paul R. McHugh Chair in Motivated Behaviors [1998]: Timothy H. Moran, Ph.D.**
Funding provided by Mr. William F. Scandling and various donors in honor of Dr. Paul McHugh, Director of the Department of Psychiatry and Behavioral Sciences.

**Victor A. McKusick Professorship in Medicine and Genetics [2004]: Harry C. Dietz, III, M.D.**
Funding provided by anonymous donor & friends of Dr. McKusick.

**Eugene Meyer III Professorship in Psychiatry and Medicine [1982]: Phillip R. Slavney, M.D.**
Funding provided by Dr. Eugene Meyer, family and friends. Dr. Meyer, a 1941 graduate of the School of Medicine, trained in both Medicine and Psychiatry and the Professorship supports joint activities in these two departments.

**Harvey M. Meyerhoff Professorship in Bioethics [1999]: Jeremy Sugarman, M.D.**
Established by commitment made in 1999 by Harvey M. Meyerhoff, a long time University and Hospital Trustee and the founding Chairman of the Hopkins Health System Board.

**Robert E. Meyerhoff Professorships [2007]: Occupied by Michael A. Chattergoon, M.D., Ph.D. and Chiadi E. Ndumele, M.D.**
Funding provided to enable Johns Hopkins Medicine to recruit junior faculty members with exceptional promise.

Catherine Iola and J. Smith Michael Distinguished Professor in Urology [1988]: Donald S. Coffey, M.D.

Funding provided by Mrs. Catherine Iola Michael and Mr. Smith Michael. Mr. Michael was president and board chairman of the First National Bank of Aberdeen, which was later acquired by Equitable Trust Company. Both Mr. Michael and Mrs. Iola Michael grew up in Harford County, Maryland. Mr. Michael died in 1978. This Professorship was established in memory of Mr. J. Smith Michael.

**Edward D. Miller Professorship in Anesthesiology Research [2007]: Nicholas A. Flavahan, M.D.**
Funding provided from the Johns Hopkins Hospital Endowment Fund, Inc. Funds will be used to support research activities and research infrastructure in the Department of Anesthesiology and Critical Care Medicine.

**Michel Mirowski, M.D. Professorship in Cardiology [1998]: Gordon F. Tomaselli, M.D.**
Funding provided by the Mirowski Family Foundation, Inc., to provide faculty support in the Division of Cardiology in the School of Medicine. The Chair memorializes Dr. Mirowski, a cardiologist at Johns Hopkins who played a key role in the development of the implanted defibrillator.

**Arthur B. and Patricia B. Modell Professorship in Thoracic Surgery [2007]: Stephen C. Yang, M.D.**
Funding provided by Mr. and Mrs. Arthur B. Modell to honor a faculty member in the Department of Surgery. This gift will allow the Department of Surgery to have a profound impact on the field of thoracic surgery.

**Russell H. Morgan Professorship in Radiology [1994]: Paul Bottomley, M.D.**
Funding provided by friends and colleagues of Dr. Russell H. Morgan, Director of the Department of Radiology from 1946-1971.

**Richard and Kate Morton Chair in Genetic Research [2003]: Unoccupied.**
Funding provided by Richard F. Morton and Kathleen C. Morton to provide faculty support in the Institute for Genetic Medicine. Dr. Richard Morton completed an Ob/Gyn internship at Johns Hopkins and also serves on the Public Health faculty. Dr. Kathleen Morton is a pediatrician who served on the School of Medicine faculty and became the first woman named a dean there.

**Margaret C. Mosher Professorship in Ophthalmology [2002]: John D. Gottsch, M.D.**
Established in 2002 by a one-life gift annuity from the estate of Margaret C. Mosher of Santa Barbara, California.

**James B. Murphy Professorship in Oncology [2000]: Richard F. Ambinder, M.D., Ph.D.**
Established in 2000 by an anonymous donor in memory of James B. Murphy, Class of 1909.
Harry and Betty Meyerberg/Thomas R. Hendrix Professorship in Gastroenterology [2006]: Steven Meltzer, M.D. Funding for this professorship provides faculty support in the Division of Gastroenterology in the Department of Medicine.

Daniel Nathans Directorship of the Department of Molecular Biology and Genetics and Professorship in Molecular Biology and Genetics [1999]: Carol Greider, Ph.D. Funds provided by several anonymous donors in honor of Daniel Nathans. Dr. Nathans joined the faculty in 1962 and went on the direct the Department of Microbiology and Molecular Biology and Genetics. He served as interim president of the University from 1995 to 1996. He won the Nobel Prize in medicine in 1978 for his discovery and use of a restriction enzyme as “biochemical scissors” to cut and analyze DNA. In 1993 he received the nation’s highest scientific award, the National Medal of Science. Dr. Nathans died in 1999.

Paul K. Neumann Professorship in Pancreatic Surgery [1998]: Steven Leach, M.D. Funding provided by Mark D. and Robin Neumann in memory of Mr. Mark Neumann’s father to support a prominent surgeon in determining the causes, prevention and management options for pancreatic cancer research.

Noxell Chair in Dermatology [1995]: Sewon Kang, M.D. Funding provided by the Noxell Foundation. The Noxell Company was a cosmetics company founded and based in Maryland which became a part of the Proctor and Gamble Co. Previous occupant: Thomas T. Provost, M.D.

Odd Fellows Professorship in Ophthalmology [1963]: Henry D. Jampel, M.D., M.H.S. Funding provided by a grant for research in eye disease and eye pathology. Previous occupant: Dr. Arthur M. Silverstein.

Lewis J. Ort Professorship in Ophthalmology [1989]: Justin Hanes, Ph.D. Funded by a gift from the Lewis J. Ort family for the support of diagnosis and management of hereditary eye diseases.

William Osler Professorship in Medicine [1978]: Myron L. Weisfeldt, M.D. Funding provided by a bequest in the will of Dr. J. Earle Moore, a prominent Baltimore internist and pioneer in the chemotherapy of syphilis. He was director of the Syphilis Clinic at Johns Hopkins. The Professorship is named for the first Director of the Department of Medicine, Dr. William Osler, and has been occupied by Directors of the Department. Previous occupants: Drs. Victor A. McKusick and John D. Stobo.

Arnall Patz Distinguished Professorship in Ophthalmology [1993]: Unoccupied. Funded by gifts from family, friends, colleagues, and grateful patients of Dr. Arnall Patz, who was Director of the Wilmer Eye Institute and Director of the Department of Ophthalmology from 1979-1989.

Helen Golden Paulson Professorship in Gastroenterology [1982]: Anthony Kalloo, M.D. Funding provided by the estate of Helen G. Paulson in honor of Dr. Moses Paulson who was a practitioner of internal medicine and gastroenterology in Baltimore. He was a member of the part-time faculty of the Department of Medicine. Previous occupant: Drs. Thomas R. Hendrix, Mark Donowitz, and Francis Giardello.

Virginia M. Percy and William Algernon Percy Chair in Orthopaedic Surgery [1979]: Kristen Weber, M.D. Mrs. Percy was a grateful patient of Dr. Lee H. Riley, Jr. Previous occupant: Dr. A. Hari Reddi.

Ailiki Perroti Chair in the Department of Medicine [2006]: Paul Scheel, M.D. The income of the principal will be used for the benefit of the Chair of Nephrology for Johns Hopkins Medicine.

Henry Phipps Professorship in Psychiatry [1908]: J. Raymond DePaulo, Jr., M.D. Created by a gift from Mr. and Mrs. Henry Phipps of Philadelphia for whom the Phipps Psychiatric Clinic is named. Previous occupants: Drs. Adolf Meyer, John C. Whitehorn, Seymour S. Kety, and Joel Elkes.

Boone Pickens Professorship in Ophthalmology [2005]: Walter Stark, M.D. Funding provided by Mr. Boone Pickens of Dallas, Texas out of his respect and admiration of Dr. Stark.


Rainey Professorship in Pediatric Hematology [1992]: James F. Casella, M.D. Funding provided by Dr. and Mrs. Rainey, family and friends. Dr. Rainey was a 1933 graduate of the Johns Hopkins School of Medicine and practiced internal medicine in Greenville, SC. A family member was a patient of Dr. William Zinkham. Its purpose is to provide stable support for the Division
of Pediatric Hematology. Previous occupant: George J. Dover, M.D.

**John G. Rangos, Sr. Professorship in Adult Medicine [2001]: Francis M Giardiello, M.D.**
Funding provided by the John G. Rangos, Sr. Charitable Foundation to be designated for terms of at least five years, to a physician-scientist pursuing promising areas of research in gastrointestinal medicine and demonstrating exceptional promise in advancing new discoveries and treatments in the area of colon cancer.

**Mark M. Ravitch Endowed Professorship in Surgery [1985]: Occupied by Jonathan E. Efron, M.D.**
Funding provided by friends, patients, and colleagues of Dr. Mark M. Ravitch to promote surgical scholarship. Dr. Ravitch, a 1934 graduate of the Johns Hopkins School of Medicine, trained in surgery with Dr. Alfred Blalock. He held numerous posts in American academic surgery and finished his career as Professor of Surgery at the University of Pittsburgh. He was a general, thoracic, and pediatric surgeon best known for the introduction of surgical stapling and the surgical repair of pectus excavatum.

**Rose-Lee & Keith Reinhard Professorship in Urologic Pathology [2001]: Jonathan I. Epstein, M.D.**
Funding provided by Rose-Lee and Keith Reinhard to honor Patrick Walsh, M.D. and to further prostate cancer research by establishing an endowed professorship in the Brady Urological Institute. Dr. Walsh is the Director of the Department of Urology.

**Richman Family Professor for Alzheimer’s and Related Diseases [2008]: Peter V. Rabins, M.D., M.P.H.**
Funding provided by the Richman Family for the Department of Psychiatry and Behavioral Sciences for Alzheimer’s and related disorders.

**Lee H. Riley, Jr., M.D., Chair in Orthopaedic Surgery [1994]: Xu Cao, Ph.D.**
Funding provided by the family, friends, colleagues, and patients of Dr. Riley to provide support for a clinical scholar in Orthopaedic Surgery. Dr. Riley was Director of the Department of Orthopaedic Surgery from 1979-1991.

**Alfredo Riviere and Norma Rodriguez de Riviere Professorship in Endocrinology [1997]: Gary S. Wand, M.D.**
Funding provided by Alfredo Riviere and Norma Rodriguez de Riviere for thyroid related research.

**Robert A. Robinson Chair in Orthopaedic Surgery [1972]: Unoccupied**
Established by contributions from grateful patients and colleagues of Dr. Robert A. Robinson, who was Director of the Department of Orthopaedic Surgery from 1953-1979. Previous occupants: Drs. Lee H. Riley, Jr. and Richard N. Stauffer.

**Mark C. Rogers Chair in Anesthesiology and Critical Care Medicine [1992]: John A. Ulatowski, M.D., Ph.D.**
Funding provided by the Unit Executive Fund of the Department of Anesthesiology and Critical Care Medicine. Dr. Mark C. Rogers was Director of the Department of Anesthesiology and Critical Care Medicine from 1980-1993.

**Barbara B. Rubenstein Professorship in Oncology [2002]: Saraswati Sukumar, Ph.D.**
Funding provided by Trustee Mark Rubenstein and his children, David, Jonathan, and Hilary in memory of their wife and mother.

**Salisbury Family Professorship in Neurosurgery [2008]: Daniel Rigamonti, M.D.**
Funding provided by the Salisbury family.

**Samsung Professorship in Medicine [1997]: David M. Levine, M.D., Sc.D.**
Funding provided by the Samsung Corporation to endow a chair in the Department of Medicine, Division of Internal Medicine.

**Herman and Walter Samuelson Foundation Professorship in Oncology [1999]: Unoccupied.**
Funding provided by The Herman and Walter Samuelson Foundation for the purpose of advancing outstanding cancer research.

**D. William Schlott Professorship in Medicine [2001]: Unoccupied**
Funding provided by friends, patients and colleagues of Dr. D. William Schlott.

**Bernard L. Schwartz Distinguished Professorship in Urology [1997]: Mark P. Schoenberg, M.D.**
Funding provided by Dr. and Mrs. Bernard Schwartz. Dr. Schwartz is the CEO of Loral Space and Communications, Ltd. and a grateful patient of Johns Hopkins. Previous occupant: Dr. Fray F. Marshall.

**Lawrence Cardinal Shehan Chair in Physical Medicine and Rehabilitation [1993]: Jeffrey B. Palmer, M.D.**
Funding provided by the Good Samaritan Hospital to support the Director of Physical Medicine and Rehabilitation.

**Irving J. Sherman M.D. Professorship in Immunology [2003]: Gregory J. Riggins, M.D.**
Funds provided by Mr. and Mrs. Irving Sherman for the Department of Neurosurgery.

**Raj and Neerah Singh Professorship in Biomedical Engineering [2008]: Raimond L. Winslow, Ph.D.**
Funding provided by the Raj and Neerah Singh Charitable Foundation and will be used...
by the Department of Biomedical Engineering to recruit, retain, or support a distinguished faculty member specializing in computational medicine.

W.W. Smith Charitable Trust Professorship in Immunology [2002]: Daniel Drachman, M.D.
Established by a grant from the W.W. Smith Charitable Trust as a reflection of Bill Smith’s exceptional vision and his desire to enhance medical excellence.

Alfred Sommer Professorship in Ophthalmology [2004]: David S. Friedman, M.D., Ph.D.
Funds set aside by the Department of Ophthalmology for retinal research.

Lewis Cass Spencer Chair of Orthopaedic Surgery [1997]: Thomas L. Clemens, Ph.D.
Funding provided by Dr. Rowena Spencer, a member of the class of 1947, in honor of her father, the late Lewis Cass Spencer, M.D., an alumnus of the class of 1911 and the first orthopaedic surgical resident at Johns Hopkins.

Paul D. Sponseller, M.D. Professorship in Pediatric Orthopaedic Surgery [1997]: Paul Sponseller, M.D.

Theodore and Vada Stanley Distinguished Chair in Neurovirology in Pediatrics [1998]: Robert H. Yolken, M.D.
Funding provided by the Stanley Foundation. The endowment will support research in brain disorders, especially schizophrenia and bipolar disorders, which may be caused by infections in infancy and childhood.

Mary Wallace Stanton Professorship for Education [2004]: David Nichols, M.D.
Funds provided by donor to endow Professorships in the School of Medicine.

Mary Wallace Stanton Professorship for Faculty Affairs [2004]: Janice Clements, Ph.D.
Funds provided by donor to endow Professorships in the School of Medicine.

Walter J. Stark Chair in Ophthalmology [1992]: Walter J. Stark, Jr., M.D.
Funding provided by grateful patients of Dr. Stark: Mrs. Margaret Mosher, Ralph S. O’Connor, Ray Stark, and Mr. and Mrs. Albert Broccoli.

Stermer Family Professorship in Pediatric Inflammatory Bowel Disease [2001]: Maria Oliva-Hemker, M.D.
Funding provided by the Stermer Family for the Director of the IBD Center in the Department of Pediatrics.

Dr. Mary Betty Stevens Professorship in Rheumatology [1989]: Antony Rosen, M.D.
Funding provided by colleagues, friends and former patients of Dr. Mary Betty Stevens to support a clinical scholar in the Division of Rheumatology. Dr. Stevens, a 1955 graduate of the Johns Hopkins School of Medicine, specialized in clinical rheumatology and directed the division within the Department of Medicine.

Sunshine Natural Wellbeing Foundation Professorship in Chronic Fatigue Syndrome and Related Disorders in Pediatrics [2006]: Peter C. Rowe, M.D.
Funding provided to support a deserving faculty member.

Dr. Frank V. Sutland Chair in Pediatric Genetics [1991]: Ada Hamosh, M.D.
Funding provided by Mrs. Frank V. Sutland and family. Previous occupant: Dr. Haig H. Kazazian, Jr.
Funding provided to support a deserving faculty member.

Josephine S. Sutland Professorship in Newborn Medicine [1991]: Edward E. Lawson, M.D.
Funding provided by Mrs. Frank V. Sutland, Dr. Lawrence and Shelia Pakula and the Louis Gross Foundation.

Helen B. Taussig Professorship [1987]: Jean S. Kan, M.D.
Funding provided by the sale of Dr. Taussig’s property on Cape Cod to provide support for the Division of Pediatric Cardiology. Dr. Helen B. Taussig, a 1927 graduate of the Johns Hopkins School of Medicine, founded the specialty of pediatric cardiology. In association with Dr. Alfred Blalock, she developed the first surgical procedure for treatment of cyanotic congenital heart disease (blue baby operation). Previous occupants: Drs. Richard Rowe and Langford Kidd.

Richard W. TeLinde Distinguished Professorship of Gynecological Pathology [1989]: Robert J. Kurman, M.D.
Funding provided by the estate of Dr. Richard W. TeLinde, Director of the Department of Gynecology and Obstetrics from 1939-1960. He was an advocate of a close relationship between pathology and gynecology and insisted that there be a pathology unit within the Department of Gynecology and Obstetrics. Previous occupant: Dr. J. Donald Woodruff.

Therapeutic Cognitive Neuroscience Professorship [2000]: Barry Gordon, M.D., Ph.D.
Funding by an anonymous donor to support wide ranging efforts to improve mental functions in people with brain disorders (The Department of Neurology).

Richard J. Trastman Professorship in Anesthesiology and Critical Care Medicine [2003]: Myron Yaster, M.D.
Endowed Chair of Pediatric Anesthesia and
Intensive Care Medicine was renamed to honor Dr. Traystman.

**Philip A. Tumulty Associate Professorship in Medicine** [1994]: *Stephen D. Sisson, M.D.*

Established in 1994 by various donors including Helena Hendrickson, a patient of Dr. Schlott.

**Thomas and Dorothy Tung Professor in Anesthesiology and Critical Care Medicine** [2010]: *Unoccupied*

Funded by Dr. Thomas and Dorothy Tung. Income from the principal will support the Tung Professor.

**Hans and Ilza Veith Professorship in the History of Medicine** [1998]: *Unoccupied.*

Funded by Ilza Veith, Ph.D. to endow the Hans & Ilza Veith Professorship in the History of Medicine at the School of Medicine in memory of Professor Henry A. Siegerist.

**Philip Franklin Wagley Chair in Biomedical Ethics** [1995]: *Ruth Faden, Ph.D.*

Funding is provided by Dr. and Mrs. Wagley, family, friends, colleagues, and grateful patients. Dr. Philip F. Wagley, a 1943 graduate of the Johns Hopkins School of Medicine, practiced internal medicine in Baltimore. As a member of the faculty, he directed the course in medical ethics for medical students.

**Henry N. Wagner, Jr., M.D. Professorship in Nuclear Medicine** [2001]: *Richard L. Wahl, M.D.*

Funding provided by two anonymous donors and departmental funds to provide faculty support in the Division of Nuclear Medicine in the Department of Radiology.

**A. Earl Walker, M.D. Professorship in Functional Neurosurgery** [2008]: *Frederick A. Lenz, M.D.*

**Frank B. Walsh Professor of Neuro-ophthalmology** [1981]: *Neil R. Miller, M.D.*

Funding provided by friends and trainees. Dr. Frank B. Walsh was the founder of the subspecialty of neuro-ophthalmology.

**Patrick C. Walsh Professorship in Urology** [1998]: *Arthur L. Burnett, M.D.*

Dr. Patrick C. Walsh has been the Director of the Department of Urology since 1974. Funding was provided by an anonymous donor.

**Abraham & Virginia Weiss Professorship in Cardiology** [2004]: *David A. Kass, M.D.*

Funded by the Abraham & Virginia Weiss Trust.

**Robert Bond Welch Professor in Ophthalmology** [2005]: *James T. Handa, M.D.*

A group of donors expressed their interest in making their donations in recognition of their respect and admiration for Dr. Robert B. Welch. Dr. Welch obtained his M.D. degree from Johns Hopkins in 1953. He completed his internship and residency at the Wilmer Eye Institute.

**William H. Welch Professorship in the History of Medicine** [1934]: *Randall M. Packard, Ph.D.*

This Professorship honors Dr. William H. Welch, the first Dean of the Johns Hopkins School of Medicine. Previous occupants: Henry E. Sigerist, M.D., Richard H. Shryrock, Ph.D., Oswei Temkin, M.D., and Lloyd G. Stevenson, M.D.

**Wellcome Professorship in Clinical Pharmacology** [1971]: *Theresa A. Shapiro, M.D., Ph.D.*

Funds were provided by the Burroughs-Wellcome Fund. Previous occupants: Drs. Pedro Cuatrecasas and Paul Lietman.

**Lawson Wilkens Professorship in Pediatric Endocrinology** [2005]: *Sally Radovick, M.D.*

Funds will be used to support faculty and to honor Dr. Lawson Wilkins, the father of Pediatric Endocrinology.

**William Holland Wilmer Professorship in Ophthalmology** [1925]: *Peter J. McDonnell, III, M.D.*

Funding provided by charitable contributions of Col. and Mrs. Henry Breckenridge and the Wilmer Foundation. Dr. Wilmer was the first Director of the Wilmer Eye Institute and the first Director of the Department of Ophthalmology from 1925-1934. Previous occupants: Drs. William H. Wilmer, Alan C. Woods, A. Edward Maumenee, and Arnall Patz.

**J. Donald Woodruff Chair in Gynecology and Obstetrics** [1993] *Edward W. Wallach, M.D.*

Funding provided by colleagues and friends of Dr. J. Donald Woodruff, a 1937 graduate of the Johns Hopkins School of Medicine. Dr. Woodruff was a distinguished teacher and clinician in the Department of Gynecology and Obstetrics from 1942-1996.

**Alan C. Woods Professorship in Ophthalmology** [2002]: *Unoccupied.*

Funding provided by the Department of Ophthalmology Unit Executive Funds to support this professorship.

1 A date in brackets indicates year the named professorship was established.

**LECTURESHIPS AND VISITING PROFESSORSHIPS**

**The Herter Lectureship:** In November, 1902 Dr. and Mrs. Christian A. Herter of New York offered to the Medical Department of the Johns Hopkins University the sum of $25,000 for the formation of a memorial lectureship.
designed to promote a more intimate knowledge of the researches of foreign investigators in the realm of medical science." This gift was accepted by the Trustees of the University on November 3, 1902. According to the present terms of the gift, some eminent worker in the medical sciences is to be asked each year to deliver lectures at the Johns Hopkins University upon a subject with which he/or she has been identified. The selection of a lecturer is to be left to a committee representing the departments of pathology, physiological chemistry, and clinical medicine, and if "in the judgment of the committee it should ultimately appear desirable to open the proposed lecturership to leaders in medical research in this country there should be no bar to so doing."

**William Sydney Thayer and Susan Read Thayer Lectureship in Clinical Medicine:** On May 16, 1927 "a group of admirers of Dr. William Sydney Thayer" donated a fund to the Johns Hopkins University to endow a lectureship to be known as "The William Sydney Thayer and Susan Read Thayer Lectureship in Clinical Medicine".

According to the terms of the gift, the income of this fund is to be used to defray the expenses of one or more annual lecturers on subjects "in Clinical Medicine, Pediatrics, Neurology or border line branches." The selection of the lecturer or lecturers is to be made by a "Committee composed of those who are from time to time occupying the chairs of Professor of Medicine, Pathology, Pediatrics and Neurology at the Johns Hopkins Medical School."

**Hideyo Noguchi Lectureship:** In 1929 Dr. Emanuel Libman of New York generously gave the University $10,000 for the establishment of a lectureship in the History of Medicine. In accordance with Dr. Libman's desires, the lectureship was named after the distinguished investigator, Hideyo Noguchi.

**The Dohme Lectureship:** In June, 1916 Mrs. Charles E. Dohme of Baltimore generously offered to pay annually the sum of $1,000 to the Trustees of the Johns Hopkins University to make it possible to offer each year a course of lectures in memory of her deceased husband, Charles E. Dohme, a well-known pharmaceutical chemist of Baltimore. The purpose of these lectures was to promote the development of a more intimate relationship between chemistry, pharmacy, and medicine.

The donations made by Mrs. Dohme for this purpose up to the time of her death in December, 1937, made it possible to offer prior to 1938 thirteen courses of lectures by distinguished scientists either from this country or abroad. Upon her death the University received from her estate a legacy amounting to the sum of $18,500 after the payment of inheritance taxes to be used as an endowment fund, the income of which is to be devoted to the continuation of these lectures.

The lectureship is open to scientists from any part of the world, and the selection of the lecturer is made by a committee representing the departments of pharmacology, chemistry, and medicine.

**The Daniel Coit Gilman Lectureship:** Through a generous gift from the Avalon Foundation, the School of Medicine has been able to establish a distinguished lectureship designed to further understanding between medical science and the humanities. The lectureship has been named in honor of the first president of The Johns Hopkins University, Daniel Coit Gilman, who was so influential in establishing the graduate character of the School of Medicine. This lectureship was inaugurated in the academic year 1960-61 with the first Gilman Lecture being appropriately given by Dr. Milton Stover Eisenhower, eighth president of the Johns Hopkins University.

**The David M. Gould Lectureship in Radiology:** In 1962 friends and former associates of Dr. David M. Gould generously created a lectureship in his memory in the field of Radiology. Dr. Gould was a member of the Johns Hopkins faculty from 1947 to 1955. During this time, he left a lasting impression on student and physician alike for his warm understanding of their daily problems. His unusual skill as a clinical radiologist, teacher and investigator was admired and respected by all who knew him. At the time of his early death, Dr. Gould was Professor of Radiology at the University of Colorado. The lecturers are selected from scholars distinguished in clinical radiology or related disciplines in accordance with the action of a committee headed by the Chairman of the Department of Radiology.

**The Lawson Wilkins Lectureship:** Through generous gifts from the colleagues, the students and the friends of Dr. Lawson Wilkins, it has been possible to establish a distinguished lectureship designed to commemorate his great contribution to pediatric endocrinology.

**The Stanhope Bayne-Jones Memorial Lectureship:** An anonymous donor has established an annual lectureship to honor Dr. Stanhope Bayne-Jones, a distinguished alumnus of the Johns Hopkins University School of Medicine.

In view of his long interest in infectious diseases, microbiology, epidemiology, and preventive medicine, it has been decided to...
orient the Bayne-Jones Memorial Lectureship to problems in these fields of medical science.

**The Alfred Blalock Lectureship:** The Section of Surgical Sciences in 1982 established a commemorative lectureship to honor Dr. Alfred Blalock. Lecturers are selected from individuals who have made important contributions in clinical or investigative surgery and the selection is made by a committee representing the Section of Surgical Sciences.

**The David Barap Brin Visiting Professorship in Medical Ethics:** This visiting professorship, established by his family and friends, honors the memory and reflects the interests of David Barap Brin (1957-1980). The purpose of this visiting professorship is to foster the appreciation and understanding of ethical issues in basic and clinical research and patient care.

**The Samuel Novey Lectureship in Psychological Medicine:** The family, friends and colleagues of Dr. Samuel Novey wished to establish a lectureship to honor his contributions as practicing physician, and as a teacher of psychiatry and psychoanalysis.

At the time of his death, Dr. Novey was director of training at the Sheppard and Enoch Pratt Hospital. He had also for many years been actively engaged in teaching and research at the Johns Hopkins University School of Medicine. Because he held joint appointments in the Departments of Psychiatry and Medicine, it seemed especially appropriate to designate the broad field of psychological medicine as the topic to which the lectures would be addressed.

**The Willard Sears Simpkins Lectureship Fund** An annual lectureship has been established in memory of Willard Sears Simpkins, a former trustee of the John F. Kennedy Institute. Dr. Frederick L. Richardson, former director of the Institute, was instrumental in assuring this memorial. The lectures are to be selected from scholars distinguished in clinical or scientific aspects of child development or the related medical sciences. The selection of the lecturers will be left to a committee representing the Department of Pediatrics, Physiology, Neurology, and the Behavioral Sciences.

**The Sir Henry Hallett Dale Memorial Lectureship:** In 1971 the Burroughs Wellcome Fund generously provided an endowment to the Johns Hopkins University School of Medicine for the establishment of an annual Visiting Professorship of Clinical Pharmacology in honor of the distinguished pharmacologist. The purpose of the lectureship is the promotion of a wider appreciation of the importance of clinical pharmacology and its scientific base.

**William F. Rienhoff, Jr. Lectureship:** In 1971 a grateful patient announced her intention to endow a lectureship in clinical surgery in honor of Dr. William F. Rienhoff, Jr. Through her generous gifts to the University, the Lectureship was formally established in 1973. The lecturers are to be selected from scholars distinguished in clinical or investigative surgery, and the selection will be made by a committee representing the Section of Surgical Sciences.

**The Paul Ehrlich Lectureship:** In 1957 Dr. Emanuel Libman of New York generously gave to the School of Medicine a sum of $10,000 for the establishment of a lectureship in honor of Dr. Paul Ehrlich. The lectures under this endowment are given each year by the recipients of the Paul Ehrlich Awards and are presented on Young Investigators Day.

**The Alan Coopersmith Visiting Professorship:** The family, colleagues, and friends of Dr. Alan Coopersmith have established a lectureship (or in special circumstances, a visiting professorship) in his memory in the field of Pediatric Hematology-Oncology. Dr. Coopersmith was a member of the Pediatric House Staff (1971-1973) and a Fellow in Pediatric Hematology from 1973 until the time of his death on December 5, 1974. His concern for patients and their problems and his incisive approach to complex clinical situations demonstrated his excellence as a clinician. Also evident was his desire to explore the unknowns of medicine by developing investigative skills in the laboratory. Lecturers will be chosen from distinguished scholars in clinical and/or research Pediatric Hematology-Oncology.

**The William M. Shelley Visiting Professorship:** Following the accidental death of Dr. William M. Shelley in 1974, his colleagues, friends and former students generously created a Visiting Professorship in his memory, formally established in 1977. A graduate of the Johns Hopkins School of Medicine and former member of the Pathology house staff, Dr. Shelley served on the Pathology faculty from 1960 to 1970. In recognition of Dr. Shelley's commitment and contributions to teaching and residency training, the Visiting Professor spends several days with the residents and staff of the Department of Pathology in addition to delivering a formal lecture. The Visiting Professor is chosen from scholars distinguished in diagnostic pathology by a committee representing Pathology, Surgery and Oncology.

**The Philip Bard Lectureship:** In 1978 the friends, colleagues, and family of Philip Bard
donated funds to the Johns Hopkins University to endow a lectureship to be known as the Philip Bard Lecture in Medical Physiology.

According to the terms of this endowment, the income from the fund is to be used to defray the expenses of one or more annual lectures in Physiology, particularly as related to Medical Science. The selection of the lecturer or lecturers is to be made by a committee of those who are from time to time occupying the chairs of Physiology, Biological Chemistry, Pediatrics, and Medicine.

The John Howland Visiting Professorship: During the 1930's the Harriet Lane Board of Managers set aside funds toward a tribute to Dr. John Howland, who, in 1911, succeeded Dr. Clemens Von Pirquet as Professor of Pediatrics at the Johns Hopkins University. He is widely credited with establishing academic pediatrics as it is known today, and with creating the first successful full-time university clinical department in this country. He was a superb clinician, teacher, and clinical investigator, for example, concerning acidosis and diarrhea, and calcium metabolism in tetany and in rickets. The Visiting Professor is to be selected from leading pediatric clinician investigators, recommended by the Academic Affairs Committee of the Department of Pediatrics.

The Henry G. Kunkel Lectureship: The family, friends and former students of Henry G. Kunkel have endowed a lectureship in immunology commemorating this outstanding immunologist and clinical investigator. Dr. Kunkel, a graduate of the Johns Hopkins University School of Medicine, was Professor and Senior Physician at the Rockefeller University. During the course of his career he made outstanding contributions to immunology, genetics, and clinical medicine. His demonstration that myeloma proteins closely resemble normal immunoglobulins laid the foundation upon which the present knowledge of immunoglobulin structure and led to the recognition of IgM and IgA as separate antibody classes. Dr. Kunkel's pioneering work in systemic lupus erythematosus and rheumatoid arthritis contributed in a seminal manner to knowledge of the underlying pathogenesis of these autoimmune diseases.

The Leslie Hellerman Lectureship: The Leslie Hellerman Lectureship was established in 1983 by the Department of Physiological Chemistry (now Department of Biological Chemistry) of the Johns Hopkins University School of Medicine, and by the family, friends, and former students of Professor Hellerman (1896-1981) to honor his memory. In 1927 he joined the Department of Physiological Chemistry and formally retired from his productive career in 1961. His pioneering work related to the structure of enzymes, metallo-enzyme function and the application of mechanistic organic chemistry to explain enzymatic processes.

The Walter E. Dandy Visiting Professorship: Established in 1985, the Walter E. Dandy Visiting Professorship enables outstanding persons to be invited to spend a short period of time at Johns Hopkins reviewing research, meeting with students and faculty, and delivering the Dandy lecture. Among the goals of the professorship is to increase communication between basic and clinical neuroscientists.

Walter E. Dandy was a Hopkins neurosurgeon, whose outstanding research and neurosurgical abilities were summarized by his colleague Warfield Longcope, Professor of Medicine, who wrote that Dandy "had the genius of Lister combined with the brilliant technique of Horsley. He commanded respect and admiration from everyone who came in contact with him, and for those of us who saw him often, these were combined with great affection."

The Ray A. Kroc and Robert L. Kroc Lectureship: In 1985 The Kroc Foundation endowed a visiting scientist and lectureship. The funds are intended for the advancement of multiple sclerosis and other neurological disease research at Johns Hopkins University. Each year an eminent neuroscientist is invited for a visit of several days to meet informally with colleagues and to present a lecture. The selection of the lecturer is made by a committee chaired by the Director of the Department of Neurology.

The Nicholson J. Eastman Professorship and Lecture: Dr. Nicholson J. Eastman, one of the most influential and important American obstetricians, served for more than 20 years as Obstetrician-in-Chief at The Johns Hopkins Hospital and Director of the Department of Obstetrics in The Johns Hopkins University School of Medicine. Dr. Eastman was responsible in large part for the scientific development of obstetrics and his numerous publications probably represent the first efforts to scientifically delineate what we now recognize as maternal fetal medicine. On behalf of his former students, residents and friends, the Johns Hopkins University School of Medicine is happy to perpetuate his contributions to obstetrics and gynecology through the Nicholson J. Eastman Professorship and Lecture.

The Israel Zeligman Lectureship in Dermatology: The Israel Zeligman Lectureship in Dermatology was established in 1983 to honor the contributions of Israel Zeligman, M.D., who had been on the faculty of The
Johns Hopkins University School of Medicine since 1946. He had been responsible for the teaching of all the residents that had passed through the Department of Dermatology Residency Program at that time. Dr. Zeligman was highly respected in the private practice of Dermatology and one who gave freely of his time to promote the clinical training program at The Johns Hopkins University School of Medicine. The Lectureship is supported by revenues generated by donations from former residents and friends.

The Vernon B. Mountcastle Lectureship: Upon the retirement of Vernon Mountcastle from the Hopkins’ faculty in 1992, his friends and colleagues contributed funds to establish a lectureship in his name. The lectureship honors the major contributions of Dr. Mountcastle to neuroscience and to Johns Hopkins University. Each year a world class researcher is invited to the Medical School to lecture on an area relevant to the neurosciences.

The Albert Lester Lehninger Memorial Lectureship: In 1989 family, friends and former associates of Dr. Albert L. Lehninger established a lectureship in his memory in the field of biochemistry. Dr. Lehninger served as Professor and DeLamar Professor of the Department of Biological Chemistry from 1952 to 1978. He was then appointed University Professor of Medical Science, a position created to honor his distinguished service to the University, his scientific discoveries, and his teaching and writing achievements. He served in this position until his death in 1986. This Lectureship was inaugurated in 1990.

The Dean’s Lecture Series: This series of lectures is designed to bring the work of senior members of the faculty to the attention of the Hopkins community.

The Mary Elizabeth Garrett Lectureship: In 1996, the Women's Leadership Council in cooperation with the Dean’s Office inaugurated the Mary Elizabeth Garrett Lectureship. The lectureship honors Ms. Garrett who in 1890 provided the final funding necessary to open The Johns Hopkins University School of Medicine with the provision that women be admitted under the same terms as prescribed for men.

The Ira and Jean Belfer Lectureship: The Belfer Lectureship was established in 1992 by Dr. and Mrs. Myron Belfer in honor of his parents, Ira and Jean Belfer. Dr. and Mrs. Belfer created the Ira and Jean Belfer Lectureship to allow leaders in the field of pediatric and adult cardiology to come to Johns Hopkins to share their most recent discoveries.

Ira and Jean Belfer established the Peter Belfer Laboratories at the Johns Hopkins Medical Institutions in 1973 in memory of their youngest son, Peter, who was a patient at Hopkins from the age of 6 months until his death from heart disease in 1991 at the age of 25. Since that time, the Belfer family and their friends have displayed unflagging interest and continued generosity in the support of Belfer Laboratories.

The Professor Carol J. Johns Memorial Lecture in Lung Health and Disease: This lecture was established within the Division of Pulmonary and Critical Care Medicine at the Johns Hopkins School of Medicine following the death of Dr. Johns on February 24, 2000. This lectureship attests to the esteem in which she was held by the division as well as her commitment to excellence, the humanistic missions of the clinicians, and the contribution of women to medicine.

LECTURERS 2010-2011

THE WALTER E. DANDY LECTURE
H. Hunt Batjer, M.D.
Chairman, Department of Neurological Surgery
Northwestern Memorial Hospital
Michael J. Marchese Professor of Neurological Surgery
Chairman, Department of Neurological Surgery
Northwestern University
Why Neurosurgery is So Different

THE CHARLES E. DOHME MEMORIAL LECTURE
Professor Sir Salvador Moncada, FMedSci, FRS
Professor and Institute Director
The Wolfson Institute for Biomedical Research
University College London
Neurons, Mitochondria, Astrocytes, Glycolysis… What’s the Connection with Cancer?

THE DEAN’S LECTURE SERIES

Lecture I
Valina Dawson, Ph.D.
Professor of Neurology, Neuroscience, and Physiology
Director, Neuroregeneration and Stem Cell Programs, Institute for Cell Engineering
Johns Hopkins University School of Medicine
Signaling Networks Regulating Survival and Death in the Brain

Lecture II
Peter J. Pronovost, M.D., Ph.D.
Professor of Anesthesiology and Critical Care Medicine
Johns Hopkins University School of Medicine
Department of Health Policy and Management
Johns Hopkins Bloomberg School of Public Health and in the School of Nursing
Advancing the Science of Health Care Delivery
Lecture III
Srinivasa Raja, M.B.B.S.
Professor of Anesthesiology and Critical Care Medicine and Neurology
Johns Hopkins University School of Medicine
From Treating Postherpetic Pain to Using Herpes Virus for Pain Relief: Explorations in Pain Research

Lecture IV
Saraswati Sukumar, Ph.D.
Barbara B. Rubenstein Professor of Oncology
Breast Cancer Program, SKCCC at Johns Hopkins
Johns Hopkins University School of Medicine
Epigenetic Marks as Detectors, Targets and Predictors in Breast Cancer

Lecture V
David G. Nichols, M.D.
Mary Wallace Stanton Professor of Education
Professor of Anesthesiology and Critical Care Medicine and Pediatrics
Johns Hopkins University School of Medicine
From Genes to Society

THE ALPHA OMEGA ALPHA VISITING PROFESSOR
Thomas R. B. Johnson, M.D.
Bates Professor of Diseases of Women and Children
Chair, Department of Obstetrics and Gynecology
University of Michigan
Global Issues in Women’s Health

THE WILLIAM M. SHELLY MEMORIAL LECTURESHIP
Linda Ferrell, M.D.
Professor, Department of Pathology
Vice Chair of Clinical Affairs
Director of Surgical Pathology
University of California, San Francisco
School of Medicine
Non-alcoholic Fatty Liver Disease

THE WILLIAM F. RIENHOFF JR. LECTURESHIP
Carlos A. Pellegrini, M.D.
The Henry N. Harkins Professor and Chairman
Department of Surgery
University of Washington
The Changing Face of Surgical Education: At the Crossroads of the Patients, the Trainees and the Public Needs

See footnote 1 for the definition of “sex offenses.”

The term “crime of violence” means: “(a) an offense that has as an element the use, attempted use, or threatened use of physical force against the person or property of another, or (b) any other offense that is a felony and that, by its nature, involves a substantial risk that physical force against the person or property of another may be used in the course of committing the offense.” Section 16 of Title 18, United States Code.

See footnote 1 for the definition of a non-forcible sex offense.
TUITION AND OTHER FEES

Medical students matriculating in September 2011 will be charged tuition at the rate of $42,600 per year. The 2011-2012 tuition for graduate students registered in the School of Medicine is $42,600. These tuitions cover all normal charges. The tuition fee is payable in two equal installments, one at the opening of the academic year, and one at the beginning of the second half of the year. Living expenses, health insurance, a $200 imaging fee for first and second year students, and a $740 matriculation fee are in addition to the tuition charge. The matriculation fee is a general University assessment and is collected once only from new students at the time of their initial enrollment as full-time students and/or as degree candidates in the University. Special schedules for payment of fees can be arranged with the Office of Financial Affairs.

Students will not be admitted to the regular courses until they have registered at the Office of the Registrar of the School of Medicine and arranged for payment of their fees for the first half of the academic year. Registration is not required for the second half but arrangements must be made for the payment of second half tuition before students can be admitted to classes.

A late charge may be imposed in connection with all tuition and fees due to the School of Medicine as follows: Tuition, imaging and matriculation fees are due and payable at the beginning of each term. The late charge will be 1.5% per month of the unpaid balance, and will be assessed on the first day following the initial payment due date; and, one day following each due date thereafter until the balance and any late payment penalties are paid. The late payment penalty will not be assessed on any new transactions that were not previously reported to you on a bill and have not aged to a delinquent status.

Any unresolved past due balance may restrict further registration, issuance of transcripts and receipt of a diploma.

TUITION POLICIES

M.D. Candidates

Tuition rates are determined annually by the Board of Trustees. Annual tuition covers studies carried out during the entire 12 month period between enrollments (ordinarily September-August).

All M.D. candidates will be charged at the M.D. rate for a total of four years. Irrespective of the actual scheduling of the medical and graduate portions of their education students in M.D.-Ph.D. programs will ordinarily be required to pay M.D. rate tuition for the first four years in such programs. Tuition for the remaining years will be assessed annually at the M.D. rate or at the established University Ph.D. rate, whichever is lower. Alternative schedules for payments at the M.D. rate by students in M.D.-Ph.D. programs must be approved by the Vice Dean for Education.

Students who repeat a portion of the M.D. program will be assessed tuition at the annually established rate. Tuition is prorated to period of enrollment.

There is a $25 annual fee for Student in Residence status.

Graduate Students-Ph.D. and M.A. Candidates

Tuition for each 12 month period (September-August) of enrollment will be at the rate established by the University for Ph.D. candidates.

Visiting Medical Students

Visiting medical students from LCME accredited schools registered for clinical electives will be assessed a $300 registration fee per quarter or fraction thereof. Students from non-LCME accredited schools accepted for clinical electives will be assessed a $1,000 tuition fee and $300 registration fee for each nine week period or fraction thereof. The registration fee for research electives is $300 per quarter or fraction thereof. Enrollment of visiting medical students is usually limited to one quarter per academic year. Some surgical departments/divisions provide partial registration fee support.

Part-Time Degree Candidates

These students will be assessed tuition at the part-time rate established for the degree for which they are a candidate.

Special Students (Non-Degree Candidates)

Tuition will be assessed at the part-time rates established by the University for Ph.D. candidates.
Postdoctoral Students (Fellows)
Tuition for postdoctoral students who are not members of the Johns Hopkins Hospital house staff is $800 per annum, pro-rated in relation to period of enrollment. Tuition may be remitted as specified by the Executive Committee of the Board of Trustees.*

*The policy concerning tuition for fellows and postdoctoral students is based upon action of the Executive Committee of the Board of Trustees on January 19, 1966, as follows: “where special circumstances do not make payment of such fees feasible, it will be remitted.”

REFUND POLICY

Full Time Students
Full time students are billed on a semester basis. A total refund of tuition payments will be made for a full time student withdrawing before completion of four weeks of a semester. Students withdrawing after completion of four weeks will receive a pro-rated refund up to 60 percent calculated from day one of the semester. Students withdrawing after completion of 60 percent of a semester will receive no refund of tuition.

The date of withdrawal will be calculated from the date the student’s written statement of withdrawal is submitted to the Office of the Associate Dean for Student Affairs. Exceptions to this policy must be approved by the Vice Dean for Education.

Part Time Special Students
Part time special students are billed on a per course basis. Students withdrawing after the start of a course will receive a pro-rated refund up to 60 percent calculated from day one of the course. Students withdrawing after completion of 60 percent of a course will receive no refund of tuition.

HEALTH FEES AND INSURANCES

Health Insurance
All students, their spouses, and dependent children must have medical insurance that meets minimum standards of coverage as determined by the School of Medicine. Coverage is also available to same-sex domestic partners. If you have alternative coverage and want to opt out of the student health insurance offered by the School of Medicine for yourself and/or your dependents, you must complete the Waiver of SOM Student Health Program form. If you do not have alternative coverage, or if your alternative plan does not meet the minimum standards as outlined on the waiver form, you must enroll in the Student Health Program. To enroll, complete the Johns Hopkins Student Health Program Benefits Election Form. The annual cost to the student is as follows: single-$3,072, husband/wife-$7,590, parent/child-$7,590, family-$10,140. These rates are subject to annual change. All bills are payable in the Office of Financial Affairs.

University Health Service (UHS)
All students are required to pay the fee for access to University Health Services at the cost of $450 annually (September-August). An application is not required. University Health Services provides adult outpatient primary care and adult outpatient mental health care at no cost to you once you have paid the required annual fee. Your spouse/ssdp may also use UHS for adult primary care and adult mental health if covered under our Student Health Program. SHP will be billed for spouse/ssdp services.

Dental Insurance
All students are required to subscribe to the Student Dental Insurance Plan. The annual cost to the student is $192.

Life Insurance
In January of the second year the School of Medicine purchases a $100,000 term life insurance policy for each second year medical student. This policy remains in effect until the M.D. degree is awarded or until the student withdraws from the M.D. program. This insurance is provided at no cost to the student.

Disability Insurance
The School of Medicine provides a disability plan for all students enrolled as M.D. candidates. This coverage will provide benefits should a student develop a disability while enrolled as a student.

STUDENT RESEARCH SCHOLARSHIPS AND AWARDS

Most students at the School of Medicine engage in research projects at some time during their period of residence. Many students continue their investigative studies for three consecutive years during summer vacations and elective time of the regular medical curriculum. The results of original research are often published in leading scientific journals and presented at national meetings of scientific societies. Major contributions have been made by medical students participating in the research program at Johns Hopkins and other institutions. Research fellowships are frequently available to them in support of such studies. The stipends of these scholarships vary from $500 to $2,000.
Predoctoral Research Program for Medical Students The Predoctoral Research Program provides an opportunity for candidates for the M.D. degree at this institution to spend one year in an intensive research experience with a faculty member of the School of Medicine. Medical students participating in the program may elect to either: 1) interrupt their regular medical curriculum to take an additional year devoted to research, thereby delaying their date of graduation by one year, or 2) aggregate their elective quarters into one consecutive 12 month period in order to graduate with their class. Four stipends equivalent to that of a graduate student plus the individual health insurance premium will be available each year. All participants in the program will be responsible for only four years of tuition. Additional information and application requirements are available from the Associate Dean for Student Affairs.

Class of 1964 Physician of Letters Scholarship To provide scholarship support to students in the School of Medicine on a merit basis, recognizing students with the potential to excel as especially well-rounded physicians.

Harold Lamport Biomedical Research Prize The memory of Dr. Harold Lamport, a distinguished investigator, is honored by this prize established in 1976 by the Lamport Foundation. It is offered in the hope of stimulating interest in research in those students who had not made previous efforts in the laboratory. The Committee on Student Awards will determine the winner after careful study of essays and papers submitted by the students. The work must be original and must have been performed during a period in which the student was a matriculated student in the medical school pursuing the regular curriculum.

Dr. Harold Lamport Research Fund Mrs. Golden S. Lamport established the Dr. Harold Lamport Research Fund in honor of her husband, a Distinguished Service Professor of Physiology and Biophysics. The Lamport Fund will support the effort of medical students interested in research in the basic science areas of medicine.

A renowned investigator and educator, Dr. Lamport contributed to research in physiology, biophysics and circulation. He was first recognized internationally when he published a series of incisive studies of hemodynamics, including the first comprehensive analysis of the renal afferent and efferent arteriolar resistances in relation to kidney function in health and disease.

The Lamport Fund is available on a competitive basis to medical students at the Johns Hopkins University School of Medicine. The awards are to be used in support of a research effort which involves the summer or at least one quarter of the academic year at Johns Hopkins or in other settings which will provide similar opportunity.

W. Barry Wood Student Research Fund The W. Barry Wood Student Research Fund was established in 1971 by the family and friends of Dr. W. Barry Wood, Jr. Dr. Wood had a long association with the School of Medicine as student, house officer, Vice President of the University in charge of medical affairs, and Director of the Department of Microbiology. The fund commemorates Dr. Wood’s deep commitment to medical research and teaching. Income from this fund is to be used to support a student in the School of Medicine who is undertaking biomedical research at the Johns Hopkins University or at another appropriate institution. Each Wood Fellow is selected by the Committee on Student Awards on the basis of present commitment and future promise in research.

Brantigan Clinical Research Fund. The fund was established in 1998 by a gift from John W. Brantigan, M.D. The purpose of the fund is to provide financial support for students to conduct research and/or present their findings at professional meetings.

Henry Strong Denison Fund for Medical Research By agreement dated September 23, 1937, the Johns Hopkins University received from the Henry Strong Denison Medical Foundation, Incorporated, an endowment fund of $100,000, to be known as The Henry Strong Denison Fund for Medical Research in memory of Henry Strong Denison, M.D., 1908. While the gift is made broadly for the support of medical research, the income will be used for the specific purpose of aiding in the training for research of young people deemed by the medical faculty to be especially gifted for a career in medical investigation.

To fulfill the provisions of this gift, the income each year may be allocated for scholarships to students of the School of Medicine considered by the committee to give promise of achievement in research. These scholarships will be awarded on recommendation of the directors of departments and not upon application from the student.

William L. Straus, Jr., Scholar in Anatomy Award This fund was established in 1982 by an alumnus to honor Dr. Straus, former associate professor of anatomy and Acting Director of the Department of Anatomy. The donor specified that the award be made to a student with strong interests in basic research, people and the history of medicine at the Johns Hopkins University School of Medicine. The awards are to be used in support of a research effort which involves the summer or at least one quarter of the academic year at Johns Hopkins or in other settings which will provide similar opportunity.
from 1980 to 1984, has created an endowment account established by Dr. Miley B. Wesson, an alumnus of the School, is used as an award for a deserving student particularly interested in anatomy. The grant is given in the name of Franklin Paine Mall, the first professor of anatomy in the School of Medicine, as a token of appreciation. Selection is made by the First Year Committee on Student Promotions.

**Franklin Paine Mall Prize in Anatomy**

The income from an endowment account established by Dr. Miley B. Wesson, an alumnus of the School, is used as an award for a deserving student particularly interested in anatomy. The grant is given in the name of Franklin Paine Mall, the first professor of anatomy in the School of Medicine, as a token of appreciation. Selection is made by the First Year Committee on Student Promotions.

**William R. McAlpin Research Fund**

The purpose of this fund, made possible by a cash award to Dr. Jerome D. Frank from the National Mental Health Association, is to encourage research by students in the Johns Hopkins University School of Medicine and the Johns Hopkins University School of Public Health into any aspect of mental illness and mental health, but with preference given to studies relevant to clinical care, psychotherapy, or public health.

Recipient will be selected by a committee composed of the Chairman of the Department of Psychiatry and Behavioral Sciences of the Johns Hopkins School of Medicine, The Chairman of the Department of Mental Hygiene of the Johns Hopkins School of Public Health, or persons they designate, and Dr. Frank. To apply for a grant, the student must submit a letter to the chairman of either department stating the amount requested and the reasons for the request, with a supporting letter from a faculty member. Requests will be reviewed and reviewed at any time. The amount of any single grant, or the total multiple grants to any one person, shall not exceed $500.

**Leo Kanner Student Research Fund**

The Leo Kanner Student Research Fund was established in 1982 by Mrs. June Kanner to encourage medical student research in child psychiatry. Dr. Kanner, the first professor of child psychiatry at Johns Hopkins, was division director from 1930 to 1959 and is often called the Father of Child Psychiatry. Income from the fund is used to provide a student in the School of Medicine the opportunity to participate in a summer research project with a Child Psychiatry faculty member.

**Harry C. SALTZSTEIN PRIZE FOR MEDICAL WRITING**

This prize was established in 1990 through an endowment provided by the family of Dr. Saltzstein, a graduate of the Johns Hopkins University School of Medicine, Class of 1914. Dr. Saltzstein was the founder of Sinai Hospital of Detroit as well as its first Chief of Staff. He founded the Bulletin, Sinai Hospital of Detroit and ultimately became its editor. He maintained a life long interest in medical writing. His nephew, Dr. Sidney Saltzstein, graduated from the Johns Hopkins University School of Medicine in 1954. This annual prize will recognize excellence in medical writing by a student of the Johns Hopkins University School of Medicine.
who are interested in participating in research projects under the supervision of faculty members of the School of Medicine and of certain departments of the School of Public Health and the Homewood Schools. The Johns Hopkins University School of Medicine does not offer stipends for summer research at other institutions, but many medical students are assisted in obtaining support for summer programs of research and study at other institutions in this country and abroad. Updated information is available in the Office of Student Affairs.

**YOUNG INVESTIGATORS’ DAY**

The Young Investigators’ Day was established in 1978 to recognize student investigators in the School of Medicine and to provide them with a forum for presentation of their work. All degree candidates and postdoctoral fellows in the School of Medicine are invited to submit abstracts for the following awards:

The Johns Hopkins Medical and Surgical Association Awards for Postdoctoral Investigation were established in 1981 by the School of Medicine to recognize excellence in research by clinical or research fellows in the School of Medicine. These awards are designated for clinical research, laboratory research with direct clinical relevance, and basic laboratory research. The awards for the 2010-2011 academic year were:

**The A. McGehee Harvey Research Award.**
The 2010-2011 recipient was Youngsoeck Lee, Ph.D.

**The Helen B. Taussig Research Award** is awarded for clinical research with active or historical patient involvement. The 2010-2011 recipient was Qin Liu, Ph.D.

**The Alfred Blalock Research Award**
The 2010-2011 recipient was Jooho Shin, Ph.D.

**The W. Barry Wood, Jr. Research Award** is awarded for laboratory research with direct clinical relevance. The 2010-2011 recipient was Michael Christoph Haffner, M.D.

**The Albert L. Lehninger Research Award** is awarded for laboratory research without direct clinical relevance. The 2010-2011 recipient was Junbiao Dai Ph.D.

**The Daniel Nathans Research Award** The 2010-2011 recipient was Roger Lee Clem, Jr., Ph.D.

**The Michael A. Shanoff Research Award**
The award, consisting of an honorarium and a certificate, is made annually to a candidate in the M.D., Ph.D., or M.D.-Ph.D. program in the Johns Hopkins University School of Medicine who, among all similarly eligible students, is considered to have made the most significant research contribution.

The award will be given in recognition of a substantial and sustained contribution to research, preferably undertaken over more than one elective quarter. Thoroughness and originality of research are to be primary considerations in the selection of awardees. Most of the research must have been undertaken during the candidates’ studies at the Johns Hopkins Medical Institutions. The award may be shared by two or more students who have collaborated on a research project. If the award committee finds no meaningful way to distinguish between the relative merit of the contribution and achievement of candidates who have worked on different research projects, then the award may be divided equally between such candidates. The awardee(s) will be selected by a committee comprised of members of the Basic Science and Clinical faculties. The recipients for the 2010-2011 academic year were Jefferson James Doyle, M.B.B.Chir. and Lin Shen.

**The David Israel Macht Research Award**
This award was established in 1983 through an endowment provided by the family of Dr. Macht to commemorate the centenary of his birth. Dr. Macht was a graduate of the Johns Hopkins School of Medicine, Class of 1906 and was a member of the faculty of the Departments of Pharmacology and Medicine from 1910 to the middle 1930's. He was a versatile and pioneering investigator and had a special interest in opiate alkaloids, the absorption of drugs, and a number of other areas.

The award is intended to recognize excellence in investigation by a student in the School of Medicine, registered in M.D., Ph.D. or combined M.D.-Ph.D programs. The award will consist of an honorarium and an inscribed plaque.

The selection of the awardee will be made by a Committee composed of Basic Science and Clinical Faculty members on the basis of an essay in medical science submitted in competition for the award. The award will be awarded annually to a single individual. If in the opinion of the Committee, no meaningful distinction between the qualities of two essays can be made, the award may be divided among not more than two individuals. The recipients for the 2010-2011 academic year were Ting Guo.

**The Martin and Carol Macht Research Award**
This award was established in 1993 to recognize outstanding investigation by an M.D. or Ph.D., or M.D.-Ph.D. student in the School of Medicine. Dr. Martin B. Macht, who received both M.D. and Ph.D. degrees from Johns Hopkins, has been a Trustee of the University since 1975. Dr. Macht is an internist who has
been affiliated with the University of Cincinnati as Professor of Medicine and Psychiatry. Dr. Carol Macht received M.A. and Ph.D. degrees from Johns Hopkins in the History of Art and Archeology. The award was established through an endowment gift from the Macht family.

The selection of the awardee will be made by a committee composed of basic science and clinical faculty members on the basis of an essay in medical science submitted in competition for the award. The award will be awarded annually to a single individual. If in the opinion of the Committee, no meaningful distinction between the qualities of two essays can be made, the award may be divided among not more than two individuals. The award consists of an honorarium and certificate. The recipient for 2010-2011 academic year was Mingye Feng.

The Paul Ehrlich Research Awards
These awards are made annually to candidates in the Ph.D., M.D., or Masters programs in the Johns Hopkins University School of Medicine. They are given in recognition of contributions to research undertaken during the candidate’s studies at this institution. The recipients for the 2010-2011 academic year were Cheng Ran Huang, Hyo-eun Carrie Bhang, Ph.D, Ryota Matsuoka, and Eric Naimet Momin.

The Alicia Showalter Reynolds Research Award
This award was created by the School of Medicine Dean’s Office in 1997, to honor the memory of Alicia Showalter Reynolds, a Ph.D. student in the Department of Pharmacology and Molecular Sciences from 1992 until her untimely death in 1996. It is given in recognition of outstanding research by a Ph.D. candidate in the School of Medicine. The recipient for the 2010-2011 academic year was Nadine Laure Samara.

The Mette Strand Research Award
This award was established in 1998 by Dr. Strand’s colleagues and friends as a tribute to Dr. Strand, a Professor of Pharmacology and Molecular Sciences from 1977 to her untimely death in 1997. This award honors Dr. Strand’s contributions to humanity, her unyielding devotion to science, and her role in training a generation of graduate students. Preference is given to a Ph.D. student. The award was awarded at Young Investigators’ Day in April 2011 to Li He.

The Hans Joaquim Prochaska Research Award
This award was established in 1998 by his mentor and friend Paul Talalay to honor the excellence that Dr. Prochaska exemplified, and the distinction he brought to the Hopkins M.D.-Ph.D. program. This award is awarded annually to a student in the School of Medicine who has made an outstanding discovery with preference given to an M.D.-Ph.D. candidate. It was awarded at Young Investigators’ Day in April 2011 to Rebecca Lee Lamason.

The Bae Gyu Jung Research Award
This award was established by an endowment in 2007 by friends and family and awarded in 2011 to Emerson VanLeuven Stewart.

The Nuper Dinesh Thekdi Research Award
This award was established in 2002 in memory of Nupur Dinesh Thekdi, M.D.-Ph.D. student at Johns Hopkins. The 2010-2011 recipient was Michael Davin Kornberg.

STUDENT FINANCIAL ASSISTANCE
Financial aid for students at the Johns Hopkins University School of Medicine is awarded solely on the basis of demonstrated financial need. The aid program consists of loans from the federal government and University funds, as well as scholarship funds made available through the generosity of many donors. Students who require aid are first awarded a Unit Loan before they are considered for scholarship support, which is reserved for those students with greatest need. The Financial Aid Office is responsible for certifying the eligibility of students for educational loans with deferred interest and long-term payback provisions. The Federal Government is the largest source of educational loans. Financial aid applications will be provided to all admitted students. Financial considerations do not in any way influence admission decisions. Applicants will receive a financial aid award notice shortly after they have submitted a complete aid application. Foreign applicants who do not hold a permanent resident visa or an immigrant visa are not eligible for the financial aid program from the Johns Hopkins University School of Medicine. Qualified foreign students will be issued conditional acceptances into the School of Medicine under the following terms: on or before July 1 of the year of matriculation the accepted student must deposit in an escrow account to be established in the state of Maryland under terms acceptable to the School funds sufficient to meet all tuition, mandatory fees and living expenses for the anticipated period of enrollment. Details of financial requirements will be included in letters of acceptance.

Scholarships
Recognizing the pressing need for financial assistance to students in the School of
Medicine, many individuals and organizations have established funds for this purpose. Over the years many students now prominent in the field of medicine have been aided by one or another of these scholarships funds. In each instance the student is informed of the source of this scholarship aid.

**Vivian B. Allen Scholarship Fund**
Mrs. Vivian B. Allen (Mrs. Beaumont Allen) established an endowment fund in 1955 to provide tuition aid to medical students with financial need.

**Warde B. Allan Fund**
Established in 1968 by an anonymous gift to honor Warde B. Allan, M.D. for his eminent record at the School of Medicine and among his private patients. The fund is perpetuated by gifts from his widow, Mrs. Warde B. Allan.

**Alumni Class Scholarships**
Through the auspices of the Medical Annual Fund (Roll Call), alumni support medical students through class scholarship funds.

**American Medical Association Education and Research Foundation (A.M.A.-E.R.F.) Scholarships**
The A.M.A.-E.R.F. annually makes grants to medical schools, which at the Johns Hopkins University School of Medicine have been used to support student low interest loans.

**Marcia Anderson Memorial Fund**
An endowed fund established in 1989 by the husband, R. David Anderson, M.D., Class of 1990 and her family in memory of Marcia Anderson. The income is to provide scholarships to students with special needs.

**E. Cowles Andrus Fund**
This endowed fund was established by Mrs. E. Cowles Andrus in memory of her husband, Dr. E. Cowles Andrus, a distinguished Johns Hopkins physician, teacher and pioneer in the treatment of cardiovascular disease. In recognition of his devotion to Johns Hopkins, this fund provides financial assistance to needy medical students, with preference given to those who are planning a career in cardiovascular medicine.

**Ralph and Ellen Anthony Medical Scholarship Fund**
Ralph and Ellen Anthony, good friends of the School of Medicine, established the Anthony Medical Scholarship Fund in January of 1984 for the purpose of providing scholarship aid to financially needy students in the School of Medicine.

**Richard Westcott Appleton Scholarship Fund**
An endowment fund was established in 1973 in honor of Dr. Richard Westcott Appleton, the income of which is to be awarded to “a medical student of moral worth and intellectual promise.”

**Dr. and Mrs. Fred B. Aurin Scholarship Fund**
Established in 1998 by Fred B. Aurin, M.D. and his wife, this fund will provide scholarship support for medical students, with preference to those from the University of Oklahoma or Texas.

**Charles R. Austrian Fund for Medical Education**
An endowment fund was established in 1956 by friends and colleagues of the late Dr. Austrian, with income allocated to medical education and training of young physicians.

**Robert L. Avery, M.D. Endowed Scholarship Fund**
This endowment fund was established in 2003 to provide financial assistance to medical students.

**David Graham Baird and Mildred Batchelder Baird Memorial Scholarship Fund**
The endowed fund was established by the Winfield Baird Foundation to perpetuate the memories of David and Mildred Baird. The income from this fund is to be used to support the needs of students in the School of Medicine.

**Frances Ward Banks Memorial Scholarship Fund**
The Frances Ward Banks Memorial Fund was established by Elizabeth B. Banks in memory of her mother. The income from this fund is to be used to support meritorious students in the School of Medicine.

**Dr. John W. Barnaby Scholarship Fund**
This fund was established in 1997 through the estate of Dr. John Barnaby to provide scholarships to deserving medical students.

**Jeremiah A. Barondess Scholarship Fund**
This fund was established in 1999 by Jeremiah A. Barondess, M.D., in honor of his 50th graduation anniversary from the School of Medicine. Recipients should be M.D. candidates who also pursue a degree in the history of medicine.

**Jennie Lee Batson, M.D., Memorial Scholarship Fund**
This fund was established in 1999 by members of the class of 1984 upon their 15th Reunion. Dr. Batson was a member of the class of 1984 who died of cancer. The fund provides assistance to needy students.

**Dudley Beaumont Memorial Scholarship**
In 1945 the Trustees of The Louis D. Beaumont Trust contributed to the Johns Hopkins Hospital a fund in memory of a son, Dudley. The Hospital makes an annual contribution from this fund to the School of Medicine for scholarship support.

**Thomas Allen Beetham and Ida Covert Beetham Memorial Scholarship Fund**
The Thomas Allen Beetham and Ida Covert Beetham Memorial Scholarship Fund was established by Miss Martha E. Beetham to perpetuate the memories of Thomas and Ida Beetham. Miss Beetham specifically requested that the monies in this endowment fund be
used for supporting the scholarship needs of students in the School of Medicine.

**Elston L. Belknap Family Scholarship Fund**
The Elston L. Belknap Family Scholarship was established in July of 1981 by a bequest from Dr. Elston L. Belknap, a graduate of the School of Medicine in the Class of 1923. Its purpose is to provide assistance to deserving students in the School of Medicine, either in the form of loans or as scholarship aid.

**Fredericka Benton, M.D. Memorial Scholarship Fund** Established in 1995 by John J. Benton, M.D., this fund is to be used to provide scholarship aid to medical students with demonstrated financial need.

**Barnett Berman, M.D. Scholarship Fund**
Established in 1999 anonymously by a former student, in recognition of Dr. Berman’s long-time service and commitment to Johns Hopkins. Dr. Berman was an associate professor of medicine at Hopkins.

**Laurence H. and Ida Lea Blackburn Endowed Scholarship for Medical Education** Established in 2000 by Laurence H. Blackburn, Jr., M.D., and his wife, Rose, in honor of his parents. Dr. Blackburn, Jr. is a 1955 School of Medicine graduate.

**Dr. Alfred Blalock Scholarship Fund** This scholarship, established by Dr. and Mrs. Thomas Harrold, commemorates the great service to human kind and the many contributions of one of Johns Hopkins’ most distinguished surgeons, Alfred Blalock, who developed the blue baby operation designed to correct congenital abnormalities of the heart.

**Joseph N. and Elisa Bongiovanni Medical Student Aid Fund**
This endowed fund was established in 1987 by the estate of Dr. Alfred M. Bongiovanni in honor of his parents. Dr. Bongiovanni was a member of the faculty in the Department of Pediatrics from 1952 to 1955. The income from the fund is to provide financial aid to needy students in the School of Medicine.

**Samuel H. Brethwaite, M.D. Scholarship Fund.**
Dr. Brethwaite was a member of the Class of 1935. The fund was established by his estate in 1998.

**William and Wendyce Brody Fund** This fund was established in 1992 to fund medical students pursuing a degree in one of the engineering disciplines.

**Dr. Patrick and Mrs. Judith Brookhouser Scholarship Fund** Established in 1999 by Dr. & Mrs. Brookhouser to provide scholarships to needy medical students.

**Grafton Rayner Browne and Edna Spriggs Browne Scholarship Fund**
Dr. Grafton Brown died in 1973, leaving a Trust to provide scholarships for Hopkins medical students.

**Art Buchwald Scholarship Fund**
Established by Mr. Art Buchwald in 1989 in honor of the Centennial of Johns Hopkins Medicine. The income from this fund will provide scholarships for students in the School of Medicine who demonstrate financial need.

**Alden H. and Mary K. Burkholder Scholarship in Medical Education**
This fund was established in 1996 by Dr. and Mrs. John A. Burkholder to provide scholarships for qualified medical students.

**Laura L. and Kenneth I. Berns, M.D., Ph.D. Scholarship**
Established in 1999 to commemorate Dr. Berns’ 35th reunion and his lifelong devotion to medicine.

**Douglas G. Carroll, Jr. Student Aid Fund**
Established in 1976 by Dr. Douglas G. Carroll, Jr. to provide financial aid to deserving students in the School of Medicine.

**David J. Carver Scholarship Fund**
An endowed scholarship was established in 1957 by Dr. David J. Carver for students in the School of Medicine. Chinese students are to have preference insofar as they may be qualified applicants; second preference is for students of other Asian nationalities; third preference is for American students.

**JH Medical and Surgical Association Centennial Scholarship and Loan Fund**
Established in 1989 by the Johns Hopkins Medical and Surgical Association to commemorate the Johns Hopkins Medical Centennial. The fund is to be used to aid deserving students in the School of Medicine.

**Centennial Scholarship**
Jeff Altman, a stand-up comic who resides in California, provided the seed money for this scholarship when he donated the proceeds of a performance at Johns Hopkins back to the institution.

**Dean Alan M. Chesney and Dean Thomas B. Turner Scholarship Fund**
Established by friends and admirers of Dr. Alan M. Chesney and Dr. Thomas B. Turner to be used for scholarships for deserving medical students.

**Class of 1915 Memorial Fund**
A fund established through gifts and bequests from and as a tribute to the Class of 1915 for the purpose of awarding scholarship aid to a deserving student or students at the Johns Hopkins University School of Medicine.

**Class of 1926 and Charles O’Donovan Scholarship Fund**
This fund was established in 1950 by members of the School of Medicine Class of 1926 to provide income for a scholarship.

**Class of 1936 Fund**
Established in 1987 by the Class of 1936, this endowed fund is
to provide scholarships for students in the School of Medicine.

Class of 1937 Philip Bard Scholarship
Established as an endowed fund by the Class of 1937 in 1987 in honor of their 50th Reunion. The income is to provide scholarships to needy medical students in the School of Medicine.

Class of 1956 Memorial Fund
Endowed in 1971 by members of the Class of 1956, the income to be used to provide scholarships to medical students with financial need.

Class of 1965 Scholarship Fund
Endowed by the members of the Class of 1965 in honor of their 25th Reunion, the income to provide scholarships to needy medical students.

Class of 1966 Scholarship Fund
Endowed in 1989 by the members of the Class of 1966 in honor of their 25th Reunion, the income to provide scholarships for needy medical students.

Class of 1966 Scholarship Fund
Endowed by the members of the Class of 1966 in honor of their 25th Reunion, the income to provide scholarships to needy medical students.

Class of 1967 Scholarship Fund
Endowed by the Class of 1967 to commemorate their 25th Reunion; the income will provide financial assistance to needy medical students.

Class of 1976 Scholarship Fund
Endowed by the members of the Class of 1976 in honor of their 25th Reunion, the income to provide scholarships to medical students exhibiting financial need.

Class of 1978 Scholarship Fund
Endowed by the Class of 1978 to commemorate their 25th Reunion; the income will provide scholarships to needy medical students in the School of Medicine.

Class of 1980 Scholarship Fund
Dr. John T. Thompson and other Class of 1980 School of Medicine alumni established the Class of 1980 Scholarship Fund in 1995 to provide scholarship aid to financially needy medical students.

Class of 1983 Scholarship Fund
This fund was created by members of the Class of 1983 upon their 15th Reunion to provide assistance to needy medical students.

Class of 1986 Scholarship Fund
Endowed by the members of the Class of 1986 to commemorate their 15th Reunion, the income to provide scholarship assistance to needy medical students in the School of Medicine.

William A. Crawley, M.D., D.D.S, M’79
Endowed Scholarship Fund
Established in 2004; the income is to be used to provide financial assistance to worthy students in the School of Medicine.

Richard S. D’Agostino, M.D.
Endowed Scholarship Fund
This fund was created by Dr. D’Agostino, Class of 1978, to honor his devotion to medicine and his lifetime affiliation with the School of Medicine. Income from this fund will provide financial assistance to medical students at the School of Medicine.

Virginia Wells Davies Fund
The Virginia Wells Davies Fund was established by Virginia Wells Davies in November of 1981. Its purpose is to provide scholarship assistance to financially needy students pursuing the degree of Doctor of Medicine.

Marguerite T. Doane Scholarship Fund
Mrs. Marguerite T. Doane established an endowment fund in 1952 to provide tuition aid to certain students with financial need.

The Oscar and Victoria Dorsch Scholarship for Medical Education
This fund was established in June 2003. Income from the principal will be used to provide financial support for medical students in the School of Medicine.

Victoria S. Doust, M.D.
Endowed Scholarship Fund
Established in 1999 by Brewster C. Doust, M.D., Class of 1951. The fund is a tribute to his wife, Victoria.

Denise Dufer, M.D.
Endowed Scholarship Fund
Established in 1990 by the family, friends, and colleagues of Dr. Denise Dufer, Class of 1988. This endowed fund is to provide scholarships to needy medical students.

Joseph C. Eggleston Memorial Fund
An endowed fund established in 1989 by family, friends and colleagues of Dr. Joseph Eggleston, Class of 1962. Dr. Eggleston served on the medical staff in pathology from 1962 to 1989. The income is to provide scholarship assistance to needy medical students in the School of Medicine.

Robert Biggs Ehrman Scholarship Fund
Established in 1970 at the death of Mr. Ehrman to provide scholarships for medical students.

Epps Family Fund
Established in 1999 by Charles H. Epps, Jr., M.D., and Roselyn Payne Epps, M.D., M.P.H., M.A. The Epps family has extensive connections to Johns Hopkins and wishes to acknowledge the importance of the University in their lives. The fund was established in honor and memory of various family members.

Jean Epstein Memorial Fund
This endowment fund was established in 1985 by Mr. and Mrs. Alvin Epstein and the Alvin and Louella Epstein Foundation. The income from this fund provides a scholarship to deserving women who have an interest in neurology.

Eugenio Fernandez-Cerra, M.D.
Endowed Scholarship Fund
This fund was established in 1999 by Dr. Eugenio Fernandez-Cerra, a 1943 alumnus of the School of Medicine. Preference is given to students from Puerto Rico.

Dr. Edward M. Finesilver Memorial Scholarship Fund
This fund was established in 1999 by Mrs. Frances Blumenthal in memory...
of her father, an alumnus of the Class of 1924.

**Warfield M. Firor Fund** An endowed scholarship established in 1989 by the estate of Mrs. Thomasena Allen. The income is to provide financial aid to needy medical students.

**Fischer Family Scholarship for Medical Education** This scholarship fund recognizes the Hopkins family legacy of Janet Fischer, M.D., Class of 1948; Newton Fischer, M.D., former faculty in Otolaryngology; and Anne Crowe Fischer, M.D., Ph.D., Class of 1991. The purpose of this endowed fund is to provide financial assistance to medical students.

**Waldo Emerson Floyd III Scholarship Fund** The income from this endowment account is to be used for scholarship support for needy students. Students from the state of Georgia are to have preference insofar as there may be qualified applicants: second preference will be given to students from the southeastern part of the United States.

**Eric W. Fonkalsrud, M.D. and Margaret Z. Fonkalsrud Endowed Scholarship Fund** This fund was established in 2002 by Eric W. Fonkalsrud, Class of 1957, and his wife, Margaret Fonkalsrud. The couple has a life-long affiliation with the Johns Hopkins School of Medicine. Dr. Fonkalsrud served on the faculty in the School of Medicine's Department of Surgery and as a surgeon at the Johns Hopkins Hospital. The income from this fund will provide financial support to medical students who have demonstrated financial need.

**Sharon Fox Scholarship Fund in Memory of Henrietta B. Fox** An endowment fund established in 1967 under the will of Mr. Sharon Fox in memory of Henrietta B. Fox, the income from which is to be used for student aid in the School of Medicine.

**Bernard S. French Scholarship Fund** Established as a bequest from the estate of Sallye Lipscomb French as a memorial to her husband, Bernard S. French, to provide scholarship support at the School of Medicine.

**I. Phillips Frohman, M.D. Scholarship** Established in 2000 by a gift from Dr. Frohman.

**Bernice and Joseph Fuld Memorial Scholarship Fund** This fund was established in 1998 by Stuart L. Fuld, M.D., Class of 1963, and Ulrike L. Fuld. The income is to be used for financial assistance to medical students.

**Dr. and Mrs. Abraham Genecin Memorial Fund** This fund was established in 1999 by Mrs. Rita Genecin and other donors to provide assistance to needy medical students.

**Gilliam Family Scholarship Fund** This endowed fund, established in 2001 by the Gilliam Foundation and Mr. James H. Gilliam, Jr., is to provide financial assistance to Morgan State University graduates enrolled at the Johns Hopkins University School of Medicine who have demonstrated need.

**The Anita Desch Gipe Memorial Scholarship Fund** Established in 1999 by the estate of R. Norman Gipe of Heathsville, Virginia, in memory of his wife.

**Maurice H. Givens-David E. Rogers Scholarship Fund** Established by a gift from the estate of Dr. Maurice H. Givens to provide scholarships for students in the School of Medicine.

**Emil Goetsch Fund for Medical Students** The income from this endowment, established in 1963, is used for scholarships for medical students.

**Morton F. Goldberg, M.D. Scholarship Fund** Established to honor Dr. Goldberg’s (Class of 1975) leadership at the Wilmer Eye Institute. Income from this fund will be used to provide assistance to deserving medical students.

**David Goldfarb Family Endowment Fund** Established in 1995 by David Goldfarb, M.D., this fund is to be used to provide scholarship assistance to medical students with financial need.

**Lillian Ruth Goldman Scholarship Fund** Established in 1986 as a bequest from the estate of Lillian Ruth Goldman to provide scholarship assistance to needy and deserving medical students.

**Scholarship Fund in Memory of Leonard L. Greif** This fund was established in 1957 as an endowment, with income to be allocated to aid deserving students in the School of Medicine.

**Norman M. and Eleanor H. Gross Scholarship Fund** This fund was established in 2002 by the Norman M and Eleanor H. Gross Trust. Mr. and Mrs. Gross were well known for their care and compassion for others. The Norman M. and Eleanor H. Gross Scholarship Fund provides financially needy students the opportunity to pursue their education at the Johns Hopkins Medical School.

**Gorham Family Scholarship for Medical Education** Established in 2000 by George W. Gorham, M.D., class of 1954. It recognizes the legacy of George E. Gorham and L. W. Gorham both medical graduates of the Class of 1910.

**Helen L. and William D. Guynn Memorial Scholarship Fund** This fund was established in 1998 by Dr. and Mrs. J. Alex Gardner to provide scholarship support to students in the School of Medicine, preferably to any acceptable candidate applying for admission to the Johns Hopkins University School of Medicine, from southwestern Michigan.
Scholarship Fund Established in 1995 by Dr. Robert W. Guynn, the income from this fund will be used to provide scholarship assistance to needy medical students.

Richard D. Hahn Scholarship Fund This endowment fund was established in 1980 by the Myers Family of Baltimore to recognize the competence and compassion with which Dr. Hahn, a member of the Class of 1936, serves his patients. The income from this fund provides a scholarship to a third year medical student who intends to specialize in internal medicine.

Rowena Sidbury Hall, M.D., Scholarship This fund was established in 2002 by Rowena Sidbury Hall, Class of 1943 (February), of Silver Spring, Maryland. She served as a member of the faculty in the School of Medicine's Department of Pediatrics and as a pediatrician at the Johns Hopkins Hospital. Preference in award of the scholarship is given to women interested in pediatrics.

Louis Hamman Memorial Scholarship This is an endowed scholarship in memory of the late Dr. Louis Hamman, a graduate of the School of Medicine and for many years a devoted member of the medical faculty. It was established in 1950 through gifts from many of Dr. Hamman's friends. The income is available for a scholarship for a medical student whose financial need and developmental promise justify such an award.

Isabella Harrison, M.D. Scholarship Fund for Medical Education This fund was established in 1999 by Dr. Harrison, a 1938 graduate of the School of Medicine. It is to be awarded to female students interested in surgery.

Charles L. Hartsock Memorial Scholarship Fund This scholarship was established in 1961 in memory of Dr. Charles L. Hartsock, Class of 1920, by members of his family and friends to provide aid to needy and worthy medical students.

Morrison Leroy Haviland Scholarship Fund Established in 1988 by Dr. James W. Haviland and his brother Morrison C. Haviland in honor of their father, Morrison Leroy Haviland, a member of the Medical School Class of 1902. This income is used for needy medical students.

Dr. George and Catherine Hayes Scholarship Fund This fund was established in 1994 by Dr. and Mrs. George J. Hayes to provide scholarship assistance to needy medical students.

Edward C. Held, M.D., Scholarship Fund This fund was established in 1996 by Mrs. Helen Duryea to provide support to students in the School of Medicine who have demonstrated financial need.

John Helfman Scholarship Fund Established in 1989 to honor the memory of Dr. Helfman, this scholarship will be used for loans or gifts to needy students in the School of Medicine.

Frank Norman Hillis, Jr. Memorial Scholarship in Medical Education This endowment fund was established in 2002 by Panamerican Consulting International, Ltd. This gift is in memory of Frank N. Hillis, Jr. (d '99), who was founder of Panamerican Consulting Ltd. Preference is given to students from either Florida or Maryland who wish to specialize in the field of cardiology.

Dorothy D. Hoelzer Scholarship Fund This fund was established in 2002 by the estate of Dorothy D. Hoelzer (d '02) to be used for scholarships for students who would not be able to attend Johns Hopkins Medical School without financial assistance.

Jesse W. and Emma Dieringer Hubbard Memorial Scholarship Fund Established in 1992 by Dr. Jesse Donald Hubbard and his brother Dr. John Stanley Hubbard in memory of their parents. This income is used for scholarship aid to needy medical students in the School of Medicine.

George Skaife and Fredericka Louise Hughes Family Scholarship This scholarship was established in 1998 by Mr. William Hughes and Ms. Gail Hughes Deets. It provides scholarship support for students with an interest in geriatrics.

Evelyn H. Hurlburt and Irene H. Sluckis Scholarship Fund This fund was established in 1997 by Mr. Charles O. Banks and Ms. Irene Sluckis to provide scholarship assistance in the School of Medicine.

Waddie Pennington Jackson Scholarship Fund This scholarship fund was established in 1963 by Dr. W. P. Jackson, Class of 1917, in memory of his wife, Bessie Gillis Jackson, income from which is to provide scholarship support for needy students in the School of Medicine.

Edwin Bosley and Dorothy Duncan Jarrett Memorial Fund for Medical Scholarships Established in 1977 by a gift from Mr. and Mrs. Edward Foss Wilson in honor of Dr. Edwin B. Jarrett, a distinguished graduate, to provide endowed scholarships to worthy students in the School of Medicine.

William H. Jarrett II Scholarship Fund This fund was established in 1993 by Dr. William H. Jarrett II, a graduate of the Johns Hopkins University School of Medicine 1958, in honor of his 35th anniversary class. The scholarship monies will be made available to financially needy medical students to help defray their costs of medical education.
Dr. Nancy Jenison Scholarship Fund
Through a generous bequest from Dr. Nancy Blanche Jenison, a member of the Class of 1911, a scholarship fund was established in 1963 to provide financial assistance for deserving women medical students.

The Johns Hopkins Hospital Women's Board Scholarship Fund
The Women's Board of the Johns Hopkins Hospital makes an annual contribution to the School of Medicine to provide financial assistance to deserving students.

The Johns Hopkins Medical and Surgical Association Scholarships
These scholarships are provided annually by The Johns Hopkins Medical and Surgical Association. Each year the Association designates for honor distinguished former members of the Johns Hopkins medical community.

Morris Joseph Medical Residence Fund
Dr. Morris Joseph has created a scholarship fund to defray the cost of a room in Reed Hall for a deserving medical student.

Dr. Thomas J. Kennedy, Jr. Scholarship Fund
In honor of Dr. Kennedy's 50th Class Reunion, this fund was established in 1993 to provide scholarship assistance to financially needy students in the School of Medicine.

Dr. John T. King, Jr. Scholarship Fund
Established in 1978 by a gift from Dr. John T. King, Jr., one of Johns Hopkins' most distinguished physicians for more than six decades, to provide endowed scholarships for medical students.

Herbert Koteen, M.D. Scholarship Fund
This fund was established in honor of Dr. Koteen upon his eightieth birthday by his family. The income is to be used for scholarship aid to financially needy students in the School of Medicine.

Milton B. Kress Scholarship Fund
Established in 1987 by a bequest from the estate of Milton Kress. The income from this endowed gift is to be used as scholarships for needy students in the School of Medicine. The students and amounts of each scholarship is to be selected by the Dean of the School of Medicine.

Louis F. Krumrein, M.D. Scholarship Fund
Established as a bequest from Dr. Louis F. Krumrein, Class of 1918, for the benefit of deserving students who could not otherwise afford a medical education.

Oliver and Elizabeth Laster Scholarship for Medical Education
This fund was established in 2001 by Oliver and Elizabeth Last er of Hewlett, New York. This fund honors their children, Andrew J. Laster, A&S 1975, Med. 1979; Steven Laster, Med. 1986; and Geraldine Laster Macomber; and memorializes their parents, Alan and Caroline Laster and Dr. Bernard and Hannah Aschner. Drs. Andrew and Steven Laster served as members of the Johns Hopkins Hospital staff in the Department of Medicine. The income is to be used to help medical students finance their education.

Dr. Maurice Lenarsky Scholarship Fund
This fund was established in 1991 by Jane Lenarsky in honor of her father Dr. Maurice Lenarsky upon his eightieth birthday. The income is to be used for scholarship aid to financially needy medical students with preference given to fourth year students with an interest in pediatrics.

John I. Mandler, M.D. and Marilyn S. Mandler, R.N. Scholarship for Medical Education
This scholarship fund will be used to support a medical student with financial need.

Rex R. Martin, M.D. and Ann Y. Martin Scholarship Fund
Established in 2000. Dr. Martin is a 1950 graduate of the School of Medicine. This fund is in honor of his 50th graduation anniversary.

Bessie Darling Massey Scholarship Fund for Medical Students
Established in 1967 at the death of Mrs. Bessie Darling Black Massey; the income is to be used for scholarships in the School of Medicine.

Keith D. Maxwell, M.D., Memorial Scholarship Fund
This fund was established in 1999 by members of the Maxwell family and other members of the Class of 1973 in honor of their 25th Reunion. Funds provide scholarship support to needy medical students.

Manfred Mayer Scholarship Fund
Established in 1985 by the colleagues and friends of Dr. Manfred Mayer to provide scholarships to support needy medical students with special consideration given to displaced persons or refugees.

John Scott McFarland Scholarship Fund
An endowment fund established in 1965 under the will of Dr. John S. McFarland, a member of the Class of 1902. The income from the fund is to be used to assist worthy students in the School of Medicine.

Robert S. McGraw Scholarship Fund
This scholarship was established by The McGraw Foundation in April 1983 with the purpose of providing assistance to financially needy students in the School of Medicine. It honors Dr. Robert S. McGraw, who was a member of the Class of 1954.

Dr. Edwin Leonard McQuade Scholarship Fund
The income from this endowment, established in 1954, is used for scholarships...
for medical students.

**Dorothy Reed Mendenhall Scholarship Fund**
An endowment fund, to provide an annual scholarship to a deserving woman medical student, was established in 1957 by members of the family of Dr. Dorothy Reed Mendenhall.

**Rose Meinhardt Fund**
An endowed scholarship established by the estate of Rose Meinhardt to provide assistance to needy, deserving and outstanding students who wish to pursue a career in medical research.

**H. Houston Merritt Scholarship Fund**
Established in 1990 with a gift from the estate of H. Houston Merritt, this fund provides scholarship aid to students in the School of Medicine. Preference is given, whenever possible, to students from the state of North Carolina.

**Adolf Meyer Scholarship**
Established by a former student of Dr. Adolf Meyer, to be used for scholarship aid for students of the School of Medicine.

**Mildvan Alumni Endowed Scholarship Fund**
This fund was established in 2003 by the Mildvan family to honor their devotion to medicine and help needy M.D. or M.D./Ph.D. students in good standing at the School of Medicine.

**Orville and Kathryn Miller Scholarship Fund**
An endowment fund established in 1965 by Mrs. Orville R. Miller and her son, Mr. Orville Miller, of Portland, Oregon. The income from this fund is to be used to assist students in the Five Year Program with preference to be given to students from the state of Oregon.

**Daniel L. Moore, M.D. Scholarship Fund**
The scholarship was established in honor of Dr. Moore’s 35th School of Medicine Reunion, with income to be used to provide scholarship assistance to financially needy medical students.

**Dr. L. F. Morawetz Scholarship**
Endowed Scholarships in memory of the late Dr. L. F. Morawetz are available to students in the School of Medicine who are in need of financial support.

**William W. More Memorial Scholarship Fund**
Established in 1995 by Dr. Thomas H. Powell to provide scholarship support to needy students in the School of Medicine.

**M. Sandra Morse Scholarship Fund**
This fund was established in 1993 by M. Sandra Morse to show gratitude for the joy the medical school students had given her during her 29 year tenure as Director of Financial Aid. The endowment income is to be used to provide assistance to financially needy students in the School of Medicine.

**Morris J. Moskowitz, M.D. Scholarship Fund**
Established in 2000 by the estate of Morris J. Moskowitz, M.D., who was a member of the School of Medicine Class of 1922.

**Dr. Donald G. and Barbara Mulder Scholarship Fund**
In 1995, Dr. and Mrs. Donald Mulder established this endowment fund to provide scholarships for needy medical students.

**Leslie E. Myatt, M.D. and Marion D. Myatt Memorial Scholarship Fund**
Established by the estate of Mrs. Myatt, in memory of her and her spouse, Leslie, School of Medicine Class of 1921.

**Jesse Myers Scholarship Fund**
Established in 1971 in memory of Jesse Myers, who was killed in an automobile accident while he was a First Year student in the School of Medicine. The fund is to be used to assist minority students at the School of Medicine.

**James F. Nabwangu, M.D., Scholarship Fund**
Established in 1996 by James F. Nabwangu, M.D., to fund a scholarship for students at the School of Medicine.

**Russell A. Nelson Scholarship Fund**
This fund was established in 2002 by Russell A. Nelson, Med. 1937, of Naples, Florida and his wife, Ruth J. Nelson, Nurs. 1937, through the Russell A. and Ruth J. Nelson Trust and the Ruth J. Nelson Trust. Dr. Nelson served as a hospital trustee, a faculty member in the Department of Medicine at the School of Medicine, and as president of the Johns Hopkins Hospital. Dr. And Mrs. Nelson both died in 2001. This fund provides scholarship assistance to deserving medical students in the School of Medicine.

**Nu Sigma Nu Medical Student Scholarship Fund**
was established in 1985 at the direction of Dr. William Hillis, an alumnus of the School of Medicine and a former member of our faculty. The income is to be used for scholarships to students in the School of Medicine, and it gives recognition to the past contributions of the Nu Sigma Fraternity to the community of the School of Medicine.

**Peter D. Olch, M.D. Memorial Scholarship Fund**
Established in 1995 by Oliver N. Massengale, M.D., this fund is to be used to provide scholarship assistance to medical students with demonstrated financial need.

**Dr. E. Paul O’Sullivan Scholarship Fund**
This fund was established in 1993 by Dr. E. Paul O’Sullivan, a graduate of the School of Medicine in 1943, to provide scholarships to financially needy medical students.

**Parents Fund for Medical Students**
Endowed in 1990 by parents of medical students with financial need.
Sheila S. and Dr. Lawrence C. Pakula Scholarship for Medical Education This scholarship was established in 1999 through a gift from Dr. Lawrence C. Pakula and Mrs. Sheila S. Pakula.

The Emanuel and Patricia M. Papper Scholarship This fund was established to provide tuition scholarships to medical students.

Gertrude Wills Parker and Edward Milton Parker Endowed Scholarship Fund Established in 1996 by Ronald E. Parker, M.D., to provide scholarship support to students in the School of Medicine.

Edwards A. Park Scholarship Fund An endowment fund, established by friends, former students, and professional colleagues of Dr. Park at the time of his eightieth birthday, December 30, 1957, with income allocated to student scholarships in the School of Medicine.

Dr. John W. and Isabella Hunner Parsons Scholarship Fund An endowment fund was established in 1969 to provide financial assistance to needy and worthy students in the School of Medicine. The fund was established by Mrs. Roger G. Walker in memory of her late parents, Dr. John W. and Isabella Hunner Parsons and their devotion to and lifelong involvement with the Johns Hopkins University. Dr. Parsons, the recipient of B.A. and M.D. degrees from the John Hopkins University, was an internist, allergist and member of the School of Medicine faculty. Mrs. Parsons was a Baltimore portrait painter whose paintings hang in the Johns Hopkins University and Hospital.

Samuel H. Payne Scholarship Fund This endowment fund was established by Mr. Mosby H. Payne to honor the memory of Samuel Payne and to provide scholarships for deserving students from the state of Virginia.

Willis C. Penney Memorial Scholarship Fund An endowment fund was established in 1986 by Della N. Penney and Susan E. Penney to provide financial assistance to needy and worthy students in the School of Medicine.

Virginia Romberger Reber Pettijohn Scholarship Fund Established in 1995 by the Estate of Virginia R. R. Pettijohn, this fund is to be used to provide scholarship assistance to medical students with financial need.

Giacomo and Jan Pirzio-Birolli Scholarship Fund This fund was endowed in 2001 by the estate of Giacomo Pirzio-Birolli, Class of 1951, and his wife, Jan M. Pirzio-Birolli of Mercer Island, Washington. Prior to his death in 1998, Dr. Pirzio-Birolli often expressed his gratitude for the medical education he received after World War II from the Johns Hopkins University School of Medicine. The establishment of this fund, in his memory, will assist future generations of medical students to experience similarly enlightened medical education in the tradition of Johns Hopkins.

Gregory L. Plock Memorial Scholarship Fund Family, friends, and former classmates established this endowed fund in 2002 in memory of Gregory L. Plock, Med. 1987, to create a lasting legacy of their friend and classmate. The fund provides financial assistance to deserving students in the School of Medicine.

Warner M. and Lora Kays Pomerene Fund Established in 1980 with a gift from the estate of Warner M. Pomerene, this fund provides scholarship aid to students in the School of Medicine. Preference is given to the extent possible, to students who plan to become general practitioners in the field of family medicine.

Jeanette B. and Loring W. Pratt Scholarship Fund The income from this endowment, established in 1993, is used to provide scholarships for students in the School of Medicine.

Radiology Fund for Medical Students Scholarship The Russell H. Morgan Department of Radiology and Radiological Science has established a scholarship fund for medical students which is enhanced from time to time by donations deriving from the earnings of the department.

Harry A. Raider Scholarship Fund Established by Mr. Raider to pay the tuition and/or other expenses of worthy students enrolled in the School of Medicine.

Rita Meena Raju Memorial Scholarship for Medical Education Established in 1999. Rita Meena Raju entered Johns Hopkins Medical School in 1993, and died suddenly after a brief illness in 1995. The purpose of this fund is to provide scholarship support to students who exemplify the highest ideals in the medical profession. Donors to the fund include her family and friends.

Randall Scholarships The scholarship fund was endowed in 1961 by an alumnus of the School of Medicine who wished to remain anonymous. The purpose of the Randall Scholarships is to assist able and deserving medical students in a low income bracket. To qualify for renewal of these scholarships, students must maintain academic standing in the highest third of the class.

Rosemarie Hope Reid, M.D. Memorial Fund This fund was established in 1994 in memory of the School of Medicine 1992 graduate Rosemarie Hope Reid by her family,
friends, and former classmates. The income is to be used to help medical students finance their educations.

Ferdinand O. Reinhard Medical Scholarship These are endowed scholarships made possible in 1951 by a bequest from the late Dr. Ferdinand O. Reinhard, a graduate of the School of Medicine.

Herbert Remmer Memorial Scholarship Fund This endowment fund was established by Hilda Remmer in 1986. The income from this fund provides scholarships for medical students with preference given to Jewish students.

Dr. Maurice L. Richardson Fund Established as a bequest from the estate of Dr. Maurice L. Richardson. The income from this fund is to be used for scholarships for worthy students in the School of Medicine.

Louis M. Rosenfeld Scholarship Fund Established in 1990 by the Estate of Madalyn Schwentker Rosenfeld, this fund in memory of Louis M. Rosenfeld’s father, Jesse Rosenfeld, his mother, Rose R. Rosenfeld, and his sister, Carolyn Rosenfeld, is to be used to provide students residing in the state of Maryland with scholarship support.

Florence Rena Sabin Scholarship Fund The Johns Hopkins Women’s Medical Alumni Association, Incorporated established this fund in 1959 in memory of an eminent graduate of the School of Medicine, Class of 1900. The income is available for scholarships for deserving women medical students of academic distinction and promise, preferably a student entering the first year.

Arun B. Sapre, M.D. Memorial Scholarship Fund An endowed fund established in 1996 by Mrs. Arun B. Sapre, family, friends, and colleagues of Dr. Arun B. Sapre. The income is to provide scholarship assistance to needy medical students in the School of Medicine.

Morris Schapiro Scholarship Fund An endowment was established by the Morris Schapiro and Family Foundation in February, 1954, to aid needy, promising students. This gift was in commemoration of Mr. Morris Schapiro’s seventieth birthday.

Oscar B. Schier Fund for Medical Student Aid This endowment was established with a gift from the estate of Ida F. Schier in memory of her brother, a Baltimore dairyman and national authority on the handling of milk. The income from this fund provides scholarship aid for financially needy medical students.

Ottolie Schillig Scholarship Fund The monies for the Schillig Scholarship Fund were dedicated during her lifetime by Ottolie Schillig. She asked that this fund be used to provide scholarships for deserving young students and to assist them in obtaining an education as doctors of medicine.

School of Medicine Alumni Scholarship Fund Income from an endowment provided by graduates of the School.

School of Medicine Scholarship Fund By action of the Board of Trustees of the Johns Hopkins University, a capital sum of $400,000 has been set aside, the income from which is to provide financial assistance to needy and deserving students.

Henry M. Seidel, M.D., Scholarship Fund was established by the Class of 1984 and endowed by gifts from the Classes of 1978-1990 to honor Dr. Henry M. Seidel, Associate Dean for Student Affairs. An alumnus of the Class of 1946, Dr. Seidel is recognized for his outstanding service to the students in their career development. The fund will provide scholarships to needy students in the School of Medicine.

Ezra S. Shaya Fund An endowed fund established by Dr. Ezra S. Shaya, Class of 1954. The income is to provide scholarships to needy medical students.

Daniel Marsh Shrewbrooks, M.D. Memorial Loan Fund was established to commemorate the life of Dr. Daniel Marsh Shrewbrooks, a member of the Class of 1915. Its purpose is to provide a loan resource for “deserving and needy students of the Johns Hopkins School of Medicine.”

Dr. Barnard E. Simon and Bitten H. Simon, R.N. Scholarship Fund Established in 2000 through the estate of Dr. Bernard E. Simon to provide scholarships for medical students. Dr. Simon, Class of 1937, was a plastic surgeon whose work with the Hiroshima Maidens, after World War II, won him international acclaim.

J. Morris Slemons Scholarship Fund Established by a bequest from Anne G. Slemons to be used for scholarships for medical students.

Elizabeth A. Small Endowment Fund The fund was established by Elizabeth Anne Small, M.D., to provide scholarship support for women who are interested in dermatology.

Herbert Sloan, M.D. and Doris Edwards Sloan Scholarship for Medical Education This scholarship fund was established in 2003. Income from this fund will provide financial support for deserving medical students.

Wladimir Solowiej, M.D. Scholarship Fund This endowment fund was established with a gift from the estate of Dr. Wladimir Solowiej, a Baltimore physician who emigrated from Poland. Although he was never on the staff, Dr. Solowiej nevertheless had high regard for
Johns Hopkins. The income from this fund provides two scholarships, one in his name and one in the name of his sister, Augenia Zebrowska.

**Alberta Speaks Scholarship Fund** Established in 1986 as a bequest from the estate of Alberta Speaks to provide scholarship assistance for needy black students.

**Lisa Marie Sprague Memorial Scholarship** Established in 1998 by Arthur Sprague, Class of 1960, and Mrs. Sprague in memory of their daughter.

**Paul Luther Stine Memorial Scholarship Fund** Established in 1996 from the Estate of Mildred C. Stine, to provide scholarship support to students in the School of Medicine, preference to be given to otherwise eligible applicants who are graduates of Brunswick High School, Frederick County, Maryland, residents of Frederick County, Maryland, or residents of the State of Maryland.

**Barry and Evelyn Strauch Scholarship Fund** Barry S. Strauch, A&S 1962, Med. 1965, and his wife Evelyn M Strauch established this fund to commemorate his 35th class reunion. Their gift reflects the couple’s devotion to medical excellence and their lifelong affiliation with the Johns Hopkins University School of Medicine. The income is to be used to provide financial assistance to worthy students in the School of Medicine.

**Josephine S. Sutland Scholarship for Medical Education** This scholarship was established in 1999 to provide assistance for needy medical students.

**Helen B. Taussig Fund** Established in 1986 by the Life Income Gift Annuity of Dr. Helen B. Taussig. The income of this fund is to provide scholarships to needy medical students.

**Owsei Temkin Scholarship Fund** In 1993 Dr. Barbara P. Wasserman and Dr. Martin P. Wasserman established this fund in honor of Dr. Owsei Temkin. This fund provides financial assistance to needy medical students, with preference given to those who have a special interest in the humanities.

**Vander Salm Family Scholarship Fund** The Johns Hopkins University gratefully acknowledges the receipt of a gift from Thomas J. Vander Salm, M.D. to establish a permanent named endowed scholarship fund. Dr. Vander Salm graduated from the School of Medicine in 1966. The fund will provide assistance to medical students.

**Roger L., M.D. and Mary J. von Heimburg Scholarship Fund** Established in 2000. Dr. von Heimburg a graduate of the School of Medicine in 1955, passed away in September 1999. He lived for a long time in Green Bay, Wisconsin and asked that preference be given to students from the midwest.

**William D., M.D., and Selma S. Voorhees Scholarship for Medical Education** Established in 2000. Mrs. Selma Voorhees opened the fund in honor of her husband, William, a graduate of the medical class of 1945.

**Elmer Wakefield, M.D. Scholarship Fund** This fund was established in 1998 by the estate of Dr. Wakefield to provide scholarships for students in need of additional funds to continue their education.

**Dr. Arthur Nathan Wang Memorial Scholarship Fund** This fund was created in 1988 in honor and in memory of Dr. Arthur Nathan Wang, an alumnus of the School of Medicine. Dr. Wang’s promising career as a neurosurgeon was tragically ended early in his life by a fatal accident. The income from the fund each year will provide a scholarship to a needy and deserving student who intends to pursue a career in clinical neurosurgery. In establishing the fund, the family and friends of Dr. Wang hope to help others to complete the contribution to medicine and society begun by him.

**James Johnston Waring Memorial Scholarship Fund** Through a generous gift from Mrs. James J. Waring, an endowment in memory of her husband has been established in the School of Medicine, the income from which is to be used as a scholarship fund for needy and worthy students. Although a member of the class of 1908, Dr. Waring subsequently received his degree from another school, having found it necessary to withdraw from the Medical School at the end of his junior year. Nevertheless, Dr. Waring was active in Hopkins’ alumni affairs until his death in June, 1962.

**Frederick and Gladys C. Warring Memorial Scholarship** This fund was established in 1996 from the Gladys C. Warring estate to provide scholarships for students in the School of Medicine.

**David R. Weakley, M.D. Scholarship Fund** An endowment fund established in 1995 by Dr. David R. Weakley, to provide scholarship support to medical students in the School of Medicine.

**Margaret Morris Weiss, M.D., and Robert A. Weiss, M.D. Endowed Scholarship Fund** This fund was established by Dr. Margaret Morris Weiss, and Dr. Robert A. Weiss to honor their devotion to medicine and lifetime affiliation with the School of Medicine. Income from this fund will provide financial assistance to medical students.

**Frances Turner White Fund** This fund,
established with a gift from the estate of Frances Turner White, provides scholarships for needy and deserving medical students.

Dr. Raymond Wing Memorial Scholarship Fund This fund was established in 1981 by Mrs. Raymond Wing to honor the memory of her husband, a member of the School of Medicine Class of 1927. It will provide support for students in their first year of study at the School of Medicine.

Winslow Foundation Scholarship Fund Gifts have been received annually since 1974 to fund scholarships for medical students, with preference for residents of Maryland, the District of Columbia, or North Carolina.

Charles Marion Wolfe Scholarship Fund The Fund was established in 1997 through the estate of Doris L. Wolfe in memory of her husband, Charles Marion Wolfe, to be used for a worthy medical student.

Ruth P. Young and Joseph M. Young, M.D. Endowed Scholarship Fund Established in 2004; the income is to be used to provide financial assistance to worthy students in the School of Medicine.

Evers P. and Adeline E. Zepp Scholarship Fund A fund was established as a bequest from the estate of Adeline E. Zepp to be used in support of the education of medical students.

Lydia B. Edwards, M.D. Revolving Loan Fund This fund was established in 1999 to provide Loans to students in their 2nd, 3rd, or 4th year of medical school. Dr. Edwards is a 1932 graduate of the School of Medicine.

Filbert Foundation, Inc. Medical Student Loan Fund A $10,000 revolving loan fund established by the Filbert Company Foundation of Baltimore.

J. Theron Hunter Loan Fund Established by Dr. J. Theron Hunter, of the Class of 1925, to be used for aid in the form of loans to deserving students in the third and/or fourth year classes of the School of Medicine.

The Johns Hopkins Women's Medical Alumnae Association Student Loan Fund Established in 1971 by The Johns Hopkins Women's Medical Alumnae Association to provide financial assistance to medical students, preferably women.

Robert Wood Johnson Foundation Loan Fund Established to provide aid to needy medical students who are female, members of designated racial minority groups and/or from rural areas.

W. K. Kellogg Loan Fund Established in 1942 to provide financial assistance to students in the School of Medicine.

Haldorff B. and Lillian S. Kneale Loan Fund Dr. Kneale was a member of the Class of 1920 who pursued a distinguished career in Urology. He and Mrs. Kneale planned the Fund which was established after Dr. Kneale's death in July 1983. It is a source of loans to medical students who, as one of the
requirements for a loan, must be in the upper third of their class.

**Pearl Konttas, M.D. Loan Fund** This Loan Fund was established by Dr. Konttas in 1982. She was a member of the Class of 1923 and, during her professional career, served as a pediatrician.

**Gertrude D. Maengwyn-Davies Loan Fund** This is an endowed loan fund established in 1986. The income from the fund is to provide loans to deserving graduate and medical students interested in research in the basic health sciences.

**George C. McKinstry Medical Loan Fund** This fund was established to be used for individuals of character who are in need of assistance to complete their medical education.

**The Nannie J. (Mrs. Ashby) Monroe Memorial Loan Fund** This fund was established by James Monroe, M.D., JHUSOM ’34, in memory of his mother, Nannie J. (Mrs. Ashby) Monroe. It provides loans for needy students in the School of Medicine.

**Wille H. Norton Loan Fund** The Wille H. Norton Loan Fund was established in July 1983 upon the receipt of a bequest from the estate of Dr. Wille H. Norton. Its purpose is to make loan monies available to financially needy students in the School of Medicine. Dr. Norton was a member of the Class of 1910 who pursued a distinguished career in obstetrics and gynecology.

**School of Medicine Loan Fund** In 1962 the Trustees of the University set aside $100,000 to be used as revolving loan funds for medical students.

**Arnold A. Schwartz Fund** A loan fund for students in the School of Medicine established in 1964 under the will of the late Arnold A. Schwartz.

**Surdna Foundation Loan Fund** This fund was established in 1971 to provide loans for medical students.

**Miley B. Wesson Memorial Loan Fund** The fund was established in 1999, and provides low interest loans to medical students.

**Dr. Lawrence R. Wharton Loan Fund** Gifts from a grateful patient of Dr. Wharton have established a loan fund for students in the School of Medicine.
Departments, Divisions, Institutes, Centers, and Subjects of Instruction

Anesthesiology and Critical Care Medicine

JOHN A. ULATOWSKI
Mark C. Rogers Professor and Director of the Department of Anesthesiology and Critical Care Medicine, Professor of Neurological Surgery, Professor of Neurology

DAN E. BERKOWITZ
Professor of Anesthesiology and Critical Care Medicine, Professor of Biomedical Engineering

ROBERT H. BROWN
Professor of Anesthesiology and Critical Care Medicine, Joint Appointment in Medicine, Joint Appointment in Radiology

TODD DORMAN
Professor of Anesthesiology and Critical Care Medicine, Joint Appointment in Medicine, Joint Appointment in Radiology

NICHOLAS A. FLAVAHAN
Edward D. Miller, M.D. Professor of Anesthesiology Research

CLARA FRONTICELLI, Professor Emerita

DANIEL F. HANLEY
Jeffrey and Harriet Legum Professor of Acute Neurological Medicine in the Department of Neurology, Professor of Anesthesiology and Critical Care Medicine, Professor of Neurological Surgery

MEREL H. HARMEL, Visiting Professor

CHARLES W. HOGUE, JR., Professor

ROGER ANTHONY JOHNS
Professor of Anesthesiology and Critical Care Medicine, Professor of Medicine

RAYMOND C. KOEHLER, Professor

JACKIE L. MARTIN, Professor

EDWARD D. MILLER
Professor of Anesthesiology and Critical Care Medicine

MAREK A. Z. MIRSKI
Professor of Anesthesiology and Critical Care Medicine, Professor of Neurology, Professor of Neurological Surgery

DAVID G. NICHOLS
Mary Wallace Stanton Professor of Education, Professor of Anesthesiology and Critical Care Medicine, Professor of Pediatrics

DANIEL NYHAN
Professor of Anesthesiology and Critical Care Medicine, Associate Professor of Surgery

PETER JOHN PRONOVOST
Professor of Anesthesiology and Critical Care Medicine, Joint Appointment in Health Sciences Informatics, Associate Professor of Surgery

SRINIVASA NAGA RAJA
Professor of Anesthesiology and Critical Care Medicine, Professor of Neurology

MARK CHARLES ROGERS, Adjunct Professor

ARTIN A. SHOUKAS
Professor of Biomedical Engineering, Professor of Anesthesiology and Critical Care Medicine, Joint Appointment in Physiology

FREDERICK E. SIEBER, Professor

THOMAS J.K. TOUNG
Professor of Anesthesiology and Critical Care Medicine, Joint Appointment in Neurological Surgery

CHRISTOPHER L. WU, Professor

MYRON YASTER
Richard J. Traytsman Professor of Anesthesiology and Critical Care Medicine, Professor of Pediatrics

SEAN MICHAEL BERENHOLTZ
Associate Professor of Anesthesiology and Critical Care Medicine, Assistant Professor of Surgery

LAUREN CLAIRE BERKOW
Associate Professor of Anesthesiology and Critical Care Medicine, Assistant Professor of Otolaryngology-Head and Neck Surgery

IVOR D. BERKOWITZ
Associate Professor of Anesthesiology and Critical Care Medicine, Associate Professor of Pediatrics

JUAN RICARDO CARHUAPOMA
Associate Professor of Neurology, Associate Professor of Anesthesiology and Critical Care Medicine, Associate Professor of Neurological Surgery

PAUL JORDAN CHRISTO, Associate Professor

STEVEN P. COHEN, Associate Professor

JEFFREY M. DODD-O
Associate Professor of Anesthesiology and Critical Care Medicine, Assistant Professor of Surgery

ROBERT T. DONHAM, Associate Professor

1 Corrected to 7/1/11. Primary appointments listed first.
The School of Medicine:
NASIR ISLAM BHATTI
Associate Professor of Otolaryngology-Head
and Neck Surgery
JIMMIE T. SYLVESTER
Professor of Medicine
The Bloomberg School of Public Health:
WAYNE MITZNER
Professor of Environmental Health Sciences
MACHIKO SHIRAHATA
Professor of Environmental Health Sciences
The School of Nursing:
MARGUERITE KEARNEY
Associate Professor of Nursing

ELECTIVE OPPORTUNITIES—Curriculum

Consultant: Dr. Brad Winters. Elective courses must be approved by the preceptor; any member of the department may act as preceptor.

Clinical Electives

E 1. Advanced Clinical Clerkship in Anesthesiology. Dr. Winters. 4.5 weeks.

This clerkship will allow students who have completed a Basic Anesthesiology Clerkship to expand their experiences in anesthesia practice. Students may create their own experience by either choosing to spend the clerkship doing general operating room cases or by seeking to gain experience in sub-specialty areas of anesthesiology including cardiac anesthesia, obstetrics anesthesia, neuroanesthesia, pediatric anesthesia and pain management. The amount of time a student chooses to spend in any one or more of these sub-specialty areas is customizable to meet the student’s interests. This elective is recommended for students who are interested in applying to an Anesthesiology residency program. Note: ICU is now a separate elective and no longer available through this course (previously neurocritical care and cardiac-surgical critical care were available as an advanced elective and no longer available through this course). Anesthesiology providers (attending and residents) will manage patients on rounds and are expected to attend didactic sessions and in-depth case discussions. They will also learn the principles of anesthetic management, including appropriate pre-operative evaluation, intra-op management and post-op transition. Hemodynamic management including intravenous fluid therapy, vasopressor use and transfusion practice will be emphasized. Students will learn how anesthetic management varies based on patient age, co-morbidities and the specific surgical procedure such as abdominal surgery and intracranial surgery.

E 5. Advanced Clinical Clerkship in Pediatric Anesthesia. Drs. Shaffner, Schwengel, and staff. 2 or 4 weeks; by arrangement.

Prerequisite: Core clerkship in Pediatrics and Clinical Preceptorship in Anesthesiology.

Students will be responsible for the preoperative evaluation, intraopera tive management, and postoperative evaluation of children. This course is designed for students planning careers in pediatrics, pediatrics or pediatric surgery.

E 6. Management of Pain and Suffering. Drs. Christo, Hartsell, and staff. 2-4 weeks; by arrangement; one student per rotation.

Prerequisite: Clinical Preceptorship in Anesthesiology preferred, but not required.

This course is intended for students who have an interest in the assessment and treatment of pain and its attendant emotional manifestations. The focus will be on the use of analgesics, nerve blocks, and behavioral modification. The problems associated with cancer pain will also be part of this experience. It is hoped that this course will provide the student with some tools and insight into the management of pain and suffering in patients presenting either to routine medical practices or to specialty pain clinics.

E 7. Anesthesiology Research. Dr. Winters and staff. Minimum of one-half quarter; available all year; as arranged.

Prerequisites: Clinical Preceptorship in Anesthesiology preferred, but not required.

Many opportunities exist within the department for research in areas of basic science (molecular, genetic, cell biology, basic pathophysiology, biochemistry), clinical trials, biomedical engineering,
information management, outcomes research and data mining, and health policy & safety initiatives. Specific research opportunities should be reviewed on the departmental website. The interested student should contact the faculty member supervising the research prior to registering for the elective.


Prerequisites: Core Clerkships in Medicine and Surgery.

Students function as subinterns, participating in all SICU activities under the supervision of the SICU/Weinberg ICU housestaff and attending physicians. The rotation offers exposure to the care of critically ill patients undergoing extensive surgical procedures. The rotation includes formal training in the pathophysiology of critical illness, exposing the student to invasive procedures, obtaining and interpreting physiologic measurements, and pharmacologic manipulation of the cardiovascular system.
Biological Chemistry

GERALD WARREN HART
DeLamar Professor of Biological Chemistry, Director of the Department of Biological Chemistry

MICHAEL JERRY CATERINA
Professor of Biological Chemistry, Professor of Neuroscience

SUSAN W. CRAIG
Professor of Biological Chemistry, Professor of Pathology

PETER N. DEVREOTES
Isaac Morris Hay and Lucille Elizabeth Hay Professor of Embryology in the Department of Cell Biology, Professor of Biological Chemistry

PAUL T. ENGLUND, Professor Emeritus

STEPHEN J. GOULD, Professor Emeritus

ROBERT E. JENSEN
Professor of Cell Biology, Professor of Biological Chemistry

LANDON STUART KING
David Marine Professor of Medicine, Professor of Biological Chemistry

M. DANIEL LANE
University Distinguished Service Professor Emeritus of Biological Chemistry

SIMEON MARGOLIS
Professor Emeritus of Medicine, Professor Emeritus of Biological Chemistry

ALBERT S. MILDVAN, Professor Emeritus

CRAIG MONTELL
Professor of Biological Chemistry, Professor of Neuroscience

DENISE J. MONTELL, Professor

AKHILESH PANDEY
Professor of Biological Chemistry in Genetic Medicine, Professor of Oncology, Professor of Pathology

PETER L. PEDERSEN
Professor of Biological Chemistry, Professor of Oncology

DANIEL M. RABEN
Professor of Biological Chemistry, Professor of Oncology, Professor of Physiology

GABRIELE VALERIA RONNETT
Professor of Neuroscience, Professor of Biological Chemistry, Professor of Neurology

GREGG L. SEMENZA
C. Michael Armstrong Professor of Pediatrics, Professor of Biological Chemistry, Professor of Medicine, Professor of Oncology, Professor of Radiation Oncology and Molecular Radiation Sciences

DAVID ROBERT SHORTLE
Professor of Biological Chemistry, Professor of Biophysics and Biophysical Chemistry

BARBARA T. SOLLNER-WEBB, Professor

Qi-QUN TANG, Adjunct Professor

JENNIFER EILEEN VAN EYK
Professor of Medicine, Professor of Biological Chemistry, Professor of Biomedical Engineering

MEHBOOB ALI HUSSAIN
Associate Professor of Pediatrics, Associate Professor of Biological Chemistry, Associate Professor of Medicine

JOEL L. POMERANTZ, Associate Professor

GEORGE H. SACK, JR.
Associate Professor of Medicine, Associate Professor of Biological Chemistry

SRIRAM SUBRAMANIAM, Visiting Associate Professor

YOLANDA M. FORTENBERRY
Assistant Professor of Pediatrics, Assistant Professor of Biological Chemistry

ERIN D. GOLEY
Assistant Professor of Biological Chemistry (from 08/01/2011)

TAKANARI INOUE
Assistant Professor of Cell Biology, Assistant Professor of Biological Chemistry, Assistant Professor of Pharmacology and Molecular Sciences

SETH S. MARGOLIS
Assistant Professor of Biological Chemistry (from 09/01/2011)

MOLLIE K. MEFFERT
Assistant Professor of Biological Chemistry, Assistant Professor of Neuroscience

KAREN L. REDDY
Assistant Professor of Biological Chemistry, Joint Appointment in Medicine

BALTAZAR REYNAFARJE, Visiting Assistant Professor

MICHAEL J. WOLFGANG, Assistant Professor

NATASHA ELIZABETH ZACHARA, Assistant Professor

ROBERT NORMAN COLE, Instructor

XINYAN WU, Instructor

SEUNG HUN CHA, Research Associate

JODIE G. FRANKLIN, Research Associate

WILLIAM P. TEW, Research Associate

BECKY JOANNE TU-SEKINE
Research Associate in Biological Chemistry (from 09/01/2011)

ZENGXIA LI, Visiting Scientist

MOHAMMED ABDUL MAJID, Visiting Scientist

TAKASKI SAKAMOTO, Visiting Scientist

YIKANG SHI
Visiting Scientist in Biological Chemistry (from 09/19/2011)

FACULTY ASSOCIATED WITH THE DEPARTMENT OF BIOLOGICAL CHEMISTRY HOLDING A PRIMARY APPOINTMENT IN:

The School of Medicine:

RICHARD L. HUGANIR
Professor of Neuroscience

PAUL A. WATKINS
Professor of Neuroscience

The Bloomberg School of Public Health:

PETER C. AGRE
Professor of Molecular Microbiology and Immunology
PIERRE A. COULOMBE
E.V. McCollum Professor and Chair of the
Department of Biochemistry and Molecular Biology

The Department of Biological Chemistry has two major instructional functions. It provides required and elective instruction in biochemistry and molecular biology toward the degree of Doctor of Philosophy. Two graduate programs are available: the departmental graduate program in Biological Chemistry and the joint graduate program in Biochemistry, Cellular and Molecular Biology (BCMB). The BCMB graduate program is a joint effort of the Departments of Biological Chemistry, Molecular Biology and Genetics, Biophysics and Biophysical Chemistry, Pharmacology and Molecular Sciences, Cell Biology, Neurosciences, and Physiology (see Graduate Program Section: Biochemistry, Cellular and Molecular Biology, and Biological Chemistry).

The staff and the facilities of all seven departments provide opportunities to medical students, graduate students, and postdoctoral fellows for carrying out research projects in many different areas of biochemistry and molecular biology.

REQUIRED COURSE WORK FOR M.D. PROGRAM

First Year —

340.600 Scientific Foundations of Medicine.
Drs. Pedersen, Raben, Gould, and staff. First eight weeks of medical school; one week in November, M.-F., 8:00-2:00; Clinical Correlations, schedule varies.
Biochemistry, Cell Biology, Genetics, and Pharmacology are fully integrated into a combined course of study presented by the basic science departments. The course provides a comprehensive, fully integrated coverage of the molecular basis of cellular metabolism and function. The course will emphasize small group learning and problem solving. The student will participate in "Journal Club", in which important papers in the front-line biomedical literature will be discussed. Clinical Correlations related to basic science concepts will be held at various days and times. Enrollment of non-medical students requires approval from the course director. Prerequisites: Elementary courses in inorganic chemistry, organic chemistry, general biology, and general physics. At least one upper-level course in Biochemistry or Cell Biology is strongly recommended.

OTHER COURSES AND ELECTIVE OPPORTUNITIES—The courses described below are required for Ph.D. candidates but are available to medical students as elective opportunities.
Curricular Consultants: Drs. Pedersen and Raben. Elective courses for medical students must be approved by the preceptor; any member of the department may act as preceptor.

Biological Chemistry

800.708 BCMB Core Discussion. Meets Fridays, first three quarters.
This course, which is limited to BCMB students, is required for all first year BCMB students. Critical discussion of current research articles in biochemistry, molecular and cell biology.

340.801 Advanced Topics in Biochemistry and Molecular Biology. 2-3 hours per week. Time to be arranged.
Prerequisite: Scientific Foundations of Medicine 340.600; enrollment limited to approximately eight students.
Systematic study and discussion of the current literature pertaining to the particular topics under consideration that quarter; topics will vary from year to year.

340.808 Research Seminar.
Reports on current research by the staff, visiting scientists, and advanced students form the basis of this seminar which meets weekly throughout the year.

340.805 Research in Biochemistry and Molecular Biology. Staff.
Properly qualified individuals are accepted for graduate and postdoctoral research training. Medical students are also accepted for research training in elective quarters and summers. By arrangement with staff members.
Research areas represented in the department are as follows:
1. DNA replication and topology.
2. Transcription and the control of gene expression.
3. Cellular differentiation.
4. Protein folding and mechanism of enzyme action.
5. Cytoskeletal, contractile, and cell surface proteins.
6. Membranes, receptors, and intra- and intercellular communication.
8. Signal transduction.

340.699 Developmental Biology. Dr. Deborah Andrew.
Prerequisite: Molecular biology, cell biology, and genetics.
A graduate-level course covering molecular and cellular basis of embryonic development in multicellular organisms.

340.702 Current Topics in Biological Chemistry.
This course allows first-year Biological Chemistry students to explore areas relevant to the Biological Chemistry curriculum at a level of depth greater than that available in the core courses. Students meet every one to two weeks as a group with individual faculty members to discuss current or classic papers from the literature related to the faculty member’s broad range of interests. Emphasis is
placed not only on the scientific questions being explored, but also on a critical approach to papers from the primary literature. The small group size allows for an extremely interactive forum in which students can scrutinize both the theoretical and practical aspects of a given study and evaluate the study’s relevance to the greater biological picture.

340.806 Research Projects in Biochemistry, Biophysics and Molecular Biology.

Brief, open-ended research projects of about two months duration. Graduate students participate in three projects during four quarters in laboratories of various faculty members in Biological Chemistry, Molecular Biology and Genetics, Biophysics and Biophysical Chemistry, Pharmacology and Molecular Sciences, and Cell Biology.

Research interests of individual staff members in the Department of Biological Chemistry are as follows:

DR. CATERINA
Molecular mechanisms of pain and temperature sensation; roles of transient receptor potential ion channels in immunity

DR. CRAIG
Cell adhesion and cytoskeleton.

DR. GOULD
HIV/AIDS; retrovirology; exosome biogenesis; alloimmunity.

DR. HART
Dynamic glycosylation of nuclear and cytoskeletal proteins in transcription, signal transduction, cancer, diabetes, and Alzheimer’s disease.

DR. MEFFERT
The regulation of neuronal gene expression in health and disease.

DR. C. MONTELL
Molecular genetics of sensory signaling; animal behavior and TRP channels.

DR. D. MONTELL
In vivo analysis of morphogenetic cell movements and cell invasion using genetics and live imaging.

DR. PANDEY
Global analysis of signal transduction pathways using mass spectrometry; bioinformatics; protein-protein interactions; databases; cancer biomarkers.

DR. PEDERSEN
Mitochondria; metabolism; motors & medicine with emphasis on understanding and treating/curing cancer and heart disease.

DR. POMERANTZ
Functional specificity and design of signal transduction pathways.

DR. RABEN
Biochemistry and chemistry of lipids and lipid metabolizing enzymes involved in signaling cascades.

DR. REDDY
Understanding how the nuclear periphery and other subcompartments contribute to general nuclear architecture and to specific gene regulation.

DR. SACK
Structure of human amyloid A proteins and their role in inflammation.

DR. SHORTLE
Computational approaches to refining protein models and de novo structure prediction.

DR. SOLLNER-WEBB
Analysis of forces that organize the DNA in the cell nucleus: an in vivo self-association of DNA sequences directs sub-nuclear localization in mammalian cells.

DR. WOLFGANG
CNS control of metabolism; neuronal metabolism; neurochemistry.

DR. ZACHARA
The role of intracellular glycosylation, O-GlcNAc, in mediating life and death decisions in response to cellular injury.

GRADUATE PROGRAM—Students are accepted for graduate work leading to the degree of Doctor of Philosophy (see Graduate Programs).
LLOYD B. MINOR
University Distinguished Professor of Otolaryngology-Head and Neck Surgery, Professor of Biomedical Engineering, Professor of Neuroscience

ALEKSANDER S. POPEL
Professor of Biomedical Engineering, Professor of Medicine, Professor of Oncology

DAVID A. ROBINSON
University Distinguished Service Professor Emeritus of Ophthalmology, University Distinguished Service Professor Emeritus of Biomedical Engineering, University Distinguished Service Professor Emeritus of Neuroscience

MURRAY B. SACHS
University Distinguished Service Professor of Biomedical Engineering, Professor of Neuroscience, Professor of Otolaryngology-Head and Neck Surgery

JOSHUA MICHAEL HARE
Adjunct Professor of Medicine, Adjunct Professor of Biomedical Engineering

STEVEN SHIH-TING HSIAO
Professor of Neuroscience, Professor of Biomedical Engineering

RICHARD J. JOHNS
University Distinguished Service Professor Emeritus of Biomedical Engineering, Professor Emeritus of Medicine

DAVID A. KASS
Abraham and Virginia Weiss Professor of Cardiology in the Department of Medicine, Professor of Biomedical Engineering

MAYURESH V. KOTHARE, Visiting Professor

JONATHAN S. LEWIN
Martin W. Donner Professor of Radiology, Professor of Biomedical Engineering, Professor of Neurological Surgery, Professor of Oncology

W. LOWELL MAUGHAN
Professor of Medicine, Professor of Biomedical Engineering

LLOYD B. MINOR
University Distinguished Professor of Otolaryngology-Head and Neck Surgery, Professor of Biomedical Engineering, Professor of Neuroscience

ALEKSANDER S. POPEL
Professor of Biomedical Engineering, Professor of Medicine, Professor of Oncology

DAVID A. ROBINSON
University Distinguished Service Professor Emeritus of Ophthalmology, University Distinguished Service Professor Emeritus of Biomedical Engineering, University Distinguished Service Professor Emeritus of Neuroscience

MURRAY B. SACHS
University Distinguished Service Professor of Biomedical Engineering, Professor of Neuroscience, Professor of Otolaryngology-Head and Neck Surgery

JOSHUA MICHAEL HARE
Adjunct Professor of Medicine, Adjunct Professor of Biomedical Engineering

STEVEN SHIH-TING HSIAO
Professor of Neuroscience, Professor of Biomedical Engineering

RICHARD J. JOHNS
University Distinguished Service Professor Emeritus of Biomedical Engineering, Professor Emeritus of Medicine

DAVID A. KASS
Abraham and Virginia Weiss Professor of Cardiology in the Department of Medicine, Professor of Biomedical Engineering

MAYURESH V. KOTHARE, Visiting Professor

JONATHAN S. LEWIN
Martin W. Donner Professor of Radiology, Professor of Biomedical Engineering, Professor of Neurological Surgery, Professor of Oncology

W. LOWELL MAUGHAN
Professor of Medicine, Professor of Biomedical Engineering
EDITH DIAMENT GUREWITSCH
Associate Professor of Gynecology and Obstetrics, Associate Professor of Biomedical Engineering

AKHIL JAY KHANNA
Associate Professor of Orthopaedic Surgery, Associate Professor of Biomedical Engineering

SCOT C. KUO
 Associate Professor of Biomedical Engineering, Associate Professor of Cell Biology

ALBERT CLARK LARDO
 Associate Professor of Medicine, Associate Professor of Biomedical Engineering

XINGDE LI, Associate Professor

ROBERT E. MILLER
Associate Professor of Pathology, Joint Appointment in Health Sciences Informatics, Associate Professor of Biomedical Engineering

LEWIS HARTLEY ROMER
Associate Professor of Anesthesiology and Critical Care Medicine, Associate Professor of Biomedical Engineering, Associate Professor of Cell Biology, Associate Professor of Pediatrics

RICHARD DAVID SCHULICK
John L. Cameron Professor of Alimentary Tract Diseases in the Department of Surgery, Associate Professor of Biomedical Engineering, Associate Professor of Gynecology and Obstetrics, Professor of Oncology

MARK J. SHELHAMER
Associate Professor of Otolaryngology-Head and Neck Surgery, Associate Professor of Biomedical Engineering

JEFFREY H. SIWERDESEN
Associate Professor of Biomedical Engineering, Associate Professor of Radiology

JOE ALEXANDER, JR., Adjunct Assistant Professor

ANGELO HOMAYOUN ALL
Assistant Professor of Biomedical Engineering, Assistant Professor of Neurology

ISAAC N. BANKMAN, Assistant Professor

MICHAEL A. BEER
Assistant Professor of Genetic Medicine, Joint Appointment in Molecular Biology and Genetics

HARRY RANDALL GOLDBERG
Assistant Professor of Biomedical Engineering, Joint Appointment in Molecular Biology and Genetics

WARREN L. GRAYSON, Assistant Professor

JORDAN J. GREEN
Assistant Professor of Biomedical Engineering, Assistant Professor of Ophthalmology

DANIEL ALFREDO HERZKA, Assistant Professor

CHAO-WEI HWANG
Assistant Professor of Medicine, Assistant Professor of Biomedical Engineering

SCOTT MITCHELL PAUL, Adjunct Assistant Professor

JOHN JEREMY RICE, Adjunct Assistant Professor

LEW C. SCHON
Assistant Professor of Orthopaedic Surgery, Assistant Professor of Biomedical Engineering

THOMAS B. WOOLF
Professor of Physiology, Joint Appointment in Biophysics and Biophysical Chemistry, Assistant Professor of Biomedical Engineering

YOUSEPH YAZDI, Assistant Professor

KECHEN ZHANG
Assistant Professor of Biomedical Engineering, Assistant Professor of Neuroscience

JASON J. BENKOSKI, Research Associate

XIAOFENG JIA
Research Associate in Biomedical Engineering, Research Associate in Physical Medicine and Rehabilitation

NIRANJAN PANDEY, Research Associate

TUCK WAH SOONG, Research Associate

JOSEPH WEBSTER STAYMAN, Research Associate

IN HONG YANG
Research Associate in Biomedical Engineering (from 07/15/2011)

HAIYAN DING, Visiting Scientist

RAHUL R. KALIKI, Visiting Scientist

HYOUNG-NAM KIM, Visiting Scientist

RONG LIU, Visiting Scientist

HARIS SAYBASILI
Visiting Scientist in Biomedical Engineering (from 09/07/2011)

FACULTY ASSOCIATED WITH THE DEPARTMENT OF BIOMEDICAL ENGINEERING HOLDING A PRIMARY APPOINTMENT IN:

The G.W.C. Whiting School of Engineering:

JOEL S. BADER
Associate Professor of Biomedical Engineering

ANDREW S. DOUGLAS
Professor of Mechanical Engineering

KALINA HRISTOVA
Professor of Materials Science and Engineering

PABLO A. IGLESIAS
Professor of Electrical and Computer Engineering

KONSTANTINOS KONSTANTOPOULOS
Professor of Chemical and Biomolecular Engineering

JERRY L. PRINCE
William B. Kouwenhoven Professor of Electrical and Computer Engineering

The Bloomberg School of Public Health:

WAYNE A. MITZNER
Professor of Environmental Health Sciences

REQUIRED COURSE WORK—The Department of Biomedical Engineering provides three educational programs. The Medical School program is described below, the Graduate Program leading to the Ph.D. degree is described on page 39, and the Graduate Program leading to the M.S.E. in Biomedical Engineering is described on page 42. Course work in the Graduate Programs is available to qualified medical students on an elective basis.
The required work for medical students in this area is integrated with the required work in Physiology 360.600 and Neuroscience 440.600. It includes lectures and laboratory exercises on control systems, signal analysis, hemodynamics and modeling.

**COURSES AND ELECTIVE OPPORTUNITIES**—Curricular Consultant: Dr. McVeigh. Elective courses must be approved by the preceptor; any member of the department may act as preceptor.

**Biomedical Engineering (E)**

Courses are listed below by both School of Medicine and School of Engineering course numbers. For additional undergraduate courses, consult the Arts and Sciences/Engineering catalog.

**Special Studies and Research.** Dr. McVeigh and staff.

Students may participate in current research activities in the department or may arrange to conduct independent work under the guidance of a preceptor. Students may, in addition, participate in the regular seminars and conferences. A list of faculty in Biomedical Engineering and faculty associated with Biomedical Engineering can be found on page 126.

**Ethics of Biomedical Engineering Innovation.** (580.415 School of Engineering) Drs. Rice, Logsdon, MacGabhann, and Yazdi.

Engineers confront problems and make decisions that hold long term social consequences for individuals, organizations, communities, and the profession. For biomedical engineers, these decisions may relate to: inventions such as medical devices and pharmaceuticals; neural prosthetics and synthetic biological organisms; responsible and sustainable design; availability of biotechnology in the developing world. Using a combination of cases, fieldwork, and readings, we examine the ethical issues, standards, theory and consequences of recent and emerging engineering interventions as a way to understand the profession and to form a basis for future decisions. In addition students will learn and practice multiple forms of communication, including oral, visual, and written rhetoric. A particular focus will be communication targeted to different stakeholders including other professionals and the public. Students will apply good communication principle to the discussion of biomedical engineering ethics, develop their own ethical case studies, and participate in group projects to aid ethical decision-making, and to improve communication of complex biomedical ethical issues to others.

**Systems Bioengineering I.** (580.421 School of Engineering) Dr. Trayanova

*Prerequisites:* 580.221 Molecules and Cells; 580.222 Systems and Controls; 110.302 Differential Equations (or equivalent).

A quantitative, model-oriented investigation of the cardiovascular system. Topics are organized in three segments. (1) Molecular/cellular physiology, including electrical signaling and muscle contraction. (2) Systems cardiovascular physiology, emphasizing circuit-diagram analysis of hemodynamics. (3) Cardiovascular horizons and challenges for biomedical engineers, including heart failure and its investigation/treatment by computer simulation, by gene-array analysis, by stem-cell technology, and by mechanical devices (left-ventricular assist and total-heart replacement).

**Systems Bioengineering II.** (580.422 School of Engineering) Dr. Wang.

*Prerequisites:* 580.222 Molecules and Cells; 580.222 Systems and Controls; 110.302 Differential Equations (or equivalent).

A quantitative, model-oriented approach to the study of the nervous system. The course requires the use of simulations to explore dynamics of neural encoding of physiological signals. The first half of the course introduces functional anatomy of the central nervous system, models of neurons, neural networks, and learning and memory. The second half of the course introduces the structure and function of the auditory, visual and motor systems, with emphasis on the neural coding of sensory signals, adaptation of sensori-motor maps, and control of movements.

**Systems Bioengineering III.** (580.429 School of Engineering) Dr. Bader.

*Prerequisites:* 580.221 Molecules and Cells; 580.222 Systems and Controls.

Computational and theoretical systems biology at the cellular and molecular level. Topics include organizational patterns of biological networks; analysis of metabolic networks, gene regulatory networks, and signal transduction networks; inference of pathway structure; and behavior of cellular and molecular circuits.

**Bioelectricity.** (580.434 School of Engineering) Dr. Tung.

*Prerequisite:* 580.421 Systems Bioengineering I (or equivalent); *Recommended:* 520.213 Circuits.

Topics will include dielectric properties of biological tissues, electromanipulation of cells, electrical stimulation, defibrillation, impedance imaging, standards for electromagnetic field exposure, and electrical safety. Special emphasis will be placed on theoretical concepts and experimental approaches used to characterize the bioelectrical properties of cardiac muscle.

**Biomechanics of Cells and Organisms.** (580.448 School of Engineering) Drs. Sun and Spector.

*Prerequisites:* 171.101-102 Physics I and II; 110.202 Calculus III.

The significance of the mechanical factors to cell biology under normal and pathological conditions is shown based on concepts of continuum and statistical mechanics. The main experimental techniques to probe the cellular mechanical properties are introduced and the connection between the models and experiments is demonstrated. We also discuss the role of proteins, membranes and cytoskeleton in cellular function and how to describe them using mathematical models.

**Rehabilitation Medicine.** (580.456 School of Engineering) Dr. Scot Paul.
**Prerequisites:** Basic knowledge of mechanics, electronics, materials, modeling and simulation, CAD.

The primary objective of this course is to introduce biomedical engineering students to the challenges of engineering solutions for persons functioning with disabilities. In order to achieve this goal, other objectives include: gaining a basic appreciation of the modalities used to treat impairments, the opportunities for application of engineering to improve treatment delivery, understanding the science and engineering applied to helping persons with disabilities function in the everyday world and an basic knowledge of the legal, ethical issues and employment opportunities in rehabilitation engineering.

By the conclusion of the course, students should be able to:

- Understand the breadth and scope of physical impairment and disability and its associated pathophysiology
- Characterize the material and design properties of current modalities of treatment of impairments and adaptations for disability
- Apply engineering analysis and design principles to critique current and design new solutions for persons with disabilities

**Statistical Methods in Imaging.** (580.466 School of Engineering) Dr. Jedynak.

*Prerequisites:* 110.202 Calculus III; 550.310 Probability and Statistics (or equivalent).

Denoising, segmentation, texture modeling, tracking, object recognition are challenging problems in imaging. We will present a collection of statistical models and methods in order to address these, including the E.M. algorithm, Maximum Entropy Modeling, Markov Random Fields, Markov Chain Monte Carlo, Boltzmann Machines, and Multilayer Perceptrons.

**Medical Imaging Systems.** (580.472 School of Engineering) Dr. Prince.

*Prerequisite:* 520.214 Signals and Systems or equivalent (Same as 520.432).

An introduction to the physics, instrumentation, and signal processing methods used in general radiology. X-ray computed tomography, ultrasound imaging, magnetic resonance imaging, and nuclear medicine. The primary focus is on the methods required to reconstruct images within each modality, with emphasis on the resolution, contrast, and signal-to-noise ratio of the resulting images.

**Modern Biomedical Imaging, Instrumentation, and Techniques.** (580.473 School of Engineering) Dr. Tsui.

*Prerequisite:* 580.472 Medical Imaging Systems.

An intermediate biomedical imaging course covering modern biomedical imaging instrumentation and techniques as applied to diagnostic radiology and other biomedical applications. It includes recent advances in various biomedical imaging modalities, multi-modality imaging and molecular imaging. The course is team taught by experts in the respective fields and provides a broad based knowledge of modern biomedical imaging to prepare students for graduate studies and research in biomedical imaging. Also, the course will offer tours and practical experience with modern bio-medical imaging equipment in clinical and research settings.

**Quantummechanical Basis of Nuclear Magnetic Resonance.** (580.475 School of Engineering) Drs. Van Zijl and Pekar.

*Prerequisites:* Basic physics and mathematics.

Basics of NMR spectroscopy theory, data acquisition and processing. Topics include phenomenological/semi-classical description of NMR, introduction to quantum mechanics, quantum mechanics of NMR, density matrix, Cartesian spin operator formalism, homonuclear and heteronuclear pulse sequences for coupled spins, polarization transfer and coherence transfer, coherence transfer formalism, phase cycling for coherence selection, pulse sequences for multidimensional NMR, phase-sensitive and magnitude detection, and coherence selection using pulsed magnetic field gradients.

**Microfabrication Laboratory.** (580.495 School of Engineering) Drs. Andreou and Wang.

*Prerequisite:* Permission of instructor.

This laboratory course is an introduction to the principles of microfabrication and microengineering of devices and structures for medicine, biology and the life sciences. Course comprises of laboratory work and accompanying lectures that cover photolithography, soft-lithography, silicon oxidation, physical deposition, electrochemical deposition, etching, packaging, design and analysis CAD tools, and foundry services. Permission of instructor is required.

**Micro/Nanoscience and Biotechnology.** (580.496 School of Engineering) Dr. J. Wang.

An introduction to the physical and chemical principles important to MEMS, BioMEMS, and bionanotechnology. Topics include scaling laws, colloids and surfaces, micro and nanofluidics, thermal forces and diffusion, chemical forces, electrokinetikis, electric aspects of surface chemistry, capillary forces and surface tension, and top-down and bottom-up nanofabrication.

**Computational Functional Genomics.** (580.610 School of Engineering) Dr. Goutsias.

*Prerequisite:* Working knowledge of elementary probability and statistics.

An introduction to mathematical and computational techniques for Functional Genomics, a growing area of research in cell biology and genetics whose objective is to understand the biological function of genes and their interactions. Computational functional genomics focuses on the problems of collection, processing, and analyzing data related to genome-wide patterns of gene expression with the objective to discover mechanisms by which a cell’s gene expression is coordinated. This has become feasible with the development of DNA micro array technology, which allows the simultaneous measurement of gene expression levels of thousand of genes. Topics include: an introduction to cell biology (cells, genome, DNA, transcription, translation, control of gene expression, DNA and RNA manipulation); DNA micro array technology and experimental design; processing and analysis of micro array data (data reduction and filtering, clustering); and computational models for genetic regulatory
networks (Boolean networks, Bayesian networks, ODE-based networks).

**Introduction to Linear Systems** (580.616 School of Engineering) Dr. Sarma.
This course examines linear, discrete- and continuous-time, and multi-input-output systems in control and related areas. Least squares and matrix perturbation problems are considered. Topics covered include state-space models, stability, controllability, observability, transfer function matrices, realization theory, feedback compensators, state feedback, optimal regulation, observers, observer-based compensators, measures of control performance, and robustness issues using singular values of transfer functions.

**Structure and Function of the Auditory and Vestibular Systems, Synapses, and Controls** (or equivalent). Topics include representation of sound and balance in neural discharge patterns, anatomy of the central auditory and vestibular systems, synaptic transmission and signal processing in central neurons. This course consists of weekly discussions of current literature in systems neuroscience. The selected readings will focus on neural mechanisms for perception, attention, motor behavior, learning, and memory, as studied using physiological, psychophysical, computational, and imaging techniques. Students are expected to give presentations and participate in discussions.

**Structural Neuroscience** (580.630 School of Engineering) Drs. X. Wang, Young, and Zhang.
Prerequisites: 580.422 Systems Bioengineering II; 550.420 Probability; 580.222 Signals and Systems (or equivalent).

Theoretical methods for analyzing information encoding and functional representations in neural systems. Models of single and multiple neural spike trains based on stochastic processes and information theory; detection and estimation of behaviorally relevant parameters from spike trains; system theoretic methods for analyzing sensory receptive fields; network models of neural systems. Both theoretical methods and the properties of specific well-studied neural systems will be discussed.

**Computational Motor Control** (580.631 School of Engineering) Dr. Shadmehr.
Prerequisites: 580.422 Systems Bioengineering II; 110.302 Differential Equations; 110.201 Linear Algebra (or equivalent).

This course introduces tools from robotics, control theory, and computational neuroscience to understand some depth the primate motor system. Our approach is to use mathematics to explore functions of muscles, spinal reflex systems, integration of vision and proprioception in the posterior parietal cortex, formation of motor plans, and online control. Our focus is on how various parts of the cortical and sub-cortical motor system contribute to the control and learning of movements, and how motor disorders arise from damage to these neural structures.

**Bioelectric Magnetic Phenomena in Cardiac Muscle** (580.635 School of Engineering) Dr. Tung.
Prerequisites: 110.202 Calculus III; 110.302 Differential Equations; 520.213 Circuits; 520.214 Signals
and Systems; 520.219 Fields, Matter and Waves; 580.421 Systems Biomedical Engineering I (or equivalent).

This course reviews theoretical concepts and experimental approaches used to characterize electric, magnetic, and electromagnetic phenomena that arise in biological tissues. Topics include volume conductor models of cells and tissues, complex conductive properties of tissue and cell suspensions, bioelectric and biomagnetic measurements, electric and magnetic stimulation, and impedance plethysmography. Selected topics will be chosen for oral presentations by class participants.

**Feedback Control in Biological Signaling Pathways.** (580.636 School of Engineering) Dr. Iglesias.

**Prerequisites:** 110.302 Differential Equations; 520.353 Control Theory.

Signal transduction pathways in biological systems need to be precisely regulated. This control is done through feedback regulatory loops. Students in this course will formulate mathematical models of signaling pathways and analyze their behavior using engineering control theory.

**Contemporary Topics in the Engineering of Cells.** (580.637 School of Engineering) Dr. Tung.

Cardiac ionic currents, molecular correlates and blockers, calcium clock repolarization reserve, alternans, electrical remodeling, cardiac memory, defective calcium cycling, ion channel mutations, human embryonic stem cells, paracrine signaling, extracellular matrix and cytoskeleton, synthetic tissue scaffolds, in vitro experimental models.

**Models of Physiological Processes in the Neuron.** (580.639 School of Engineering) Dr. Young.

**Prerequisites:** School of Engineering 580.420-422 or equivalent; School of Arts and Sciences 110.302, or 500.303 or equivalent; 520.213 recommended.

Single-neuron modeling, emphasizing the use of computational models as links between the properties of neurons at several levels of detail. Topics include thermodynamics of ion flow in aqueous environments, a biology and biophysics of ion channels, gating, nonlinear dynamics as a way of studying the collective properties of channels in a membrane, synaptic transmission, and integration of electrical activity in multi-compartment dendritic tree models. Students will study the properties of computational models of neurons; graduate students will develop a neuron model using data from the literature.

**Cellular Engineering.** (580.641 School of Engineering) Drs. Green and Yarema.

**Prerequisite:** 580.221 Molecules and Cells (or equivalent). **Recommended:** Matlab

This course focuses on principles and applications in cell engineering. Class lectures include an overview of molecular biology fundamentals, experimental and mathematical techniques, binding equilibrium, cell-cell interactions, cell-matrix interactions, and cell dynamics at both theoretical and experimental levels. Lectures will cover the effects of physical (e.g. shear stress, strain), chemical (e.g. cytokines, growth factors), and electrical stimuli on cell function. Furthermore, topics in metabolic engineering, enzyme evolution, polymeric biomaterials, and drug and gene delivery will be discussed. This course is intended as part 1 of a two-semester sequence.

**Tissue Engineering.** (580.642 School of Engineering) Drs. Elisseef and Grayson.

**Prerequisite:** 580.221 Molecules and Cells (or equivalent). **Recommended:** 580.441/580.641

This course focuses on the application of engineering fundamentals to designing biological tissue substitutes. Concepts of tissue development, structure, and function will be introduced. Students will learn to recognize the majority of histological tissue structures in the body and understand the basic building blocks of the tissue and clinical need for replacement. The engineering components required to develop tissue-engineered grafts will be explored including biomechanics and transport phenomena along with the use of biomaterials and bioreactors to regulate the cellular microenvironment. Emphasis will be placed on different sources of stem cells and their applications to tissue engineering. Clinical and regulatory perspectives will be discussed. This course is intended as part 2 of a two-semester sequence.

**Introduction to Nonlinear Dynamics in Physiology.** (580.651 School of Engineering) Dr. Shelhamer.

**Prerequisites:** Knowledge of signals and systems or instructor's consent.

This course is designed for students who may be interested in applying the techniques of nonlinear dynamics and chaos to the analysis of physiological data. Topics covered will include: fractals; strange attractors; bifurcations; state-space attractor reconstruction; Poincaré sections; dimension calculations; Lyapunov exponents; entropy, tests for determinism; and nonlinear forecasting. Examples will be drawn from studies in cardiology, brain function, and the oculomotor system.

**Introduction to Orthopaedic Biomechanics.** (580.655 School of Engineering) Dr. Allen.

**Prerequisite:** 110.302 Differential Equations.

This course will cover static and dynamic forces in the musculoskeletal system, joint reactions, soft and hard tissue response to force loads, muscle mechanics, material properties, biomechanical lumped parameter systems, modeling, and injury mechanisms.

**Statistical Mechanics in Biological Systems.** (580.671 School of Engineering) Dr. Sun.

Principles of statistical physics are discussed in the context of biological problems. After an introduction, topics covered will include equilibrium theory of liquids and polymers, theory of chemical reactions in complex environments, stochastic models, dynamics of membrane and channels, theory of biological motors, computer simulation of liquids and proteins. (Co-listed as 530.671)

**Biosensing and BioMEMS.** (580.672 School of Engineering) Dr. J. Wang.

The course discusses the principles of biosensing and introduces micro- and nano-scale devices for fluidic control and molecular/cellular manipulation, measurements of biological phenomena, and clinical applications. (Colisted as 530.672)

This course provides the student with a complete introduction to the physical principles, hardware design, and signal processing used in magnetic resonance imaging. Biomedical Engineering and dynamic magnetic resonance spectroscopy. The course is designed for students who wish to pursue research in magnetic resonance. Prerequisite: 580.222 Systems and Controls or 520.214 Signals and Systems. (Co-listed as 520.673 and 520.673)

Advanced Topics in Magnetic Resonance Imaging. (580.677 School of Engineering) Dr. Herzka

Prerequisites: Basic physics and mathematics; MATLAB; 580.476/676 Magnetic Resonance in Medicine.

An advanced imaging course with in-depth quantitative coverage of topics central to magnetic resonance imaging, ranging from techniques currently used in the radiology practice to new developments at the cutting edge of MRI research. Topics include: steady-state imaging and contrast mechanisms, MRI simulations, RF pulse and coil design, flow imaging and angiography, cardiac imaging, diffusion imaging, functional MRI, parallel imaging, and high-field imaging. As part of the course, students will be expected to read and understand classic and current literature. The course is taught by a team of experts in the respective fields and will provide an excellent foundation for students interested in deep understanding of magnetic resonance imaging.

Advanced Topics in Computer Vision. (580.681 School of Engineering) Dr. Vidal

Prerequisites: 110.202 Calculus III; 600.461 Computer Visions or instructors permission (co-listed as 600.681)

State-of-the-art methods in dynamic vision, with an emphasis on segmentation, reconstruction, and recognition of static and dynamic scenes. Topics include reconstruction of static scenes (tracking and correspondence, multiple view geometry, self-calibration), reconstruction of dynamic scenes (2-D and 3-D motion sementation, nonrigid motion analysis), recognition of visual dynamics (dynamic textures, face and hand gestures, human gaits, crowd motion analysis), as well as geometric and statistical methods for clustering and unsupervised learning, such as K-means, Expectation Maximization, and Generalized Principal Component Analysis. Applications in robotics and biomedical imaging are also included.

Computational Models of the Cardiac Myocyte. (580.682 School of Engineering) Drs. Winslow and Greenstein.

Recommended prerequisites: 580.421-22 Systems Bioengineering I and II; 110.201 Linear Algebra; 110.302 Differential Equations (or equivalent); knowledge of C/C++ or Matlab.

The cardiac myocyte is one of the most extensively studied cells in biology. As such, it serves as an important example of how to develop quantitative, dynamic, computational models of cell function. “Computational Models of the Cardiac Myocyte” will present a comprehensive review of all aspects of modeling of the cardiac myocyte as an introduction to the discipline of computational cell biology. The course will be presented in an innovative way. Students will be expected to review web-based course material prior to weekly lab meetings. Weekly three-hour lab session will be used to interact with the instructors, and to implement and study computational models.

Foundations of Computational Biology I. (580.687 School of Engineering) Dr. Sun.

This course presents the fundamental concepts in equilibrium and non-equilibrium statistical mechanics and apply them to topics in modern molecular computational biology. Monte Carlo and statistical ensembles are presented. Field theories are introduced to describe the mechanics of membranes, cytoskeleton, and biofluids. Kinetic theory, master equations, and Fokker-Planck equations are discussed in the context of ion channels and molecular motors (co-listed with 530.687).

Foundations of Computational Biology and Bioinformatics II. (580.688 School of Engineering) Dr. Karchin.

Prerequisites: Mathematics through Linear Algebra and Differential Equations; Molecular Biology and Genetics at the level of 580.221 or equivalent; 660.226 or equivalent; homework assignments will require programming in Python; Foundations of Computational Biology and Bioinformatics is not a prerequisite for this course.

This course will introduce probabilistic modeling and information theory applied to biological sequence analysis, focusing on statistical models of protein families, alignment algorithms, and models of evolution. Topics will include probability theory, score matrices, hidden Markov models, maximum likelihood, expectation maximization and dynamic programming algorithms.

Systems Biology of Cell Regulation. (580.690 School of Engineering) Dr. Levchenko.

Prerequisites: 110.201 and 110.302 or equivalent; advanced biology.

This course will explore the recent advances in Systems Biology analysis of intracellular processes. Examples of the modeling and experimental studies of metabolic, genetic, signal transduction, and cell cycle regulation networks will be studied in detail. The classes will alternate between consideration of network-driven and network element (gene, metabolite or protein)-driven approaches.

Learning Theory. (580.691 School of Engineering) Dr. Shadmehr.

Prerequisites: 550.291 or equivalent linear algebra; probability theory.

This course introduces the probabilistic foundations of learning theory. We will discuss topics in regression, estimation, optimal control, system identification, Bayesian learning, and classification. Our aim is to first derive some of the important mathematical results in learning theory, and then apply the framework to problems in biology, particularly animal learning and control of action.

The aim of this two-semester course is to describe the foundations of computational methods for the statistical and dynamical modeling of multivariate data. The emphasis of the second semester is to use methods from algebraic geometry, probability theory and dynamical systems theory to build models of data. Topics include nonlinear dimensionality reduction (PCA, LLE), unsupervised learning (central clustering, subspace clustering, GPCA), and estimation and identification of dynamical systems (Kalman filtering, subspace identification, hybrid system identification). We will apply these tools to model data from computer vision, biomedical imaging, neuroscience, and computational biology.

**Sensorimotor Systems.** (580.701 School of Engineering) Dr. Shadmehr.

A weekly seminar course that covers recent research papers in the field of sensorimotor neuroscience. The papers address questions of interest in both basic neuroscience and clinical neuroscience. The papers are presented by students, and the audience typically includes a number of clinical and basic science faculty, as well as graduate students and postdocs. The course web page is at jhu.motor.lab.googlepages.com.

**Neuroengineering Seminar.** (580.702-703 School of Engineering) Dr. Thakor.

Neuroengineering represents the application of engineering principles to develop systems for neurological research and clinical applications. Examples of research in this area include design of instrumentation for brain monitoring, development of signal processing methods to analyze brain rhythms, contemporary imaging methods ranging from optical/CT/MRI, use of micro- and nanotechnologies to probe from neurons and brain, and development and application of neural stimulators, prosthesis, and deep brain stimulations and robotic/image-guided therapeutic devices. This two-semester course will have one-hour-long weekly lectures and seminars by training program faculty (from BME, EE, Radiology, Neurology, and Neurosurgery). During the second semester, the students will then engage in a short project of clinical (or scientific) significance to increase awareness of the literature, work with the faculty members and their lab and gain hands-on experience. Ph D students only.

**Advanced Seminars in Integrative and Systems Biology.** (580.718-19 School of Engineering) Dr. Levchenko.

The course is designed to introduce the current concepts, methods and modes of analysis being developed in the context of experimental and computational systems biology, with the particular emphasis on the study of signal transduction and cell-cell communication networks. Topics include development and analysis of computational and experimental models of cell interactions with other cells, with extracellular matrix and with micro- and nano-fabricated analysis platforms. The areas of application range from the bacterial signaling to stem cell development and tissue regeneration. Students will be required to read current journal articles, online presentations and actively participate in the in-class discussions. Every student will also be required to be engaged in individual projects and report on their progress.

**Advanced Seminars in Chemical Glycobiology and Carbohydrate Drug Design.** (580.728-29 School of Engineering) Dr. Yarema.

This course uses the current literature to teach advanced topics in carbohydrate engineering. Students will be required to read current papers, selected textbook chapters and online content to prepare for interactive teaching sessions with faculty and other students. Potential topics will include: sugars as information storage entities and signaling molecules; methods to manipulate and characterize complex carbohydrates in vivo, through chemo-enzymatic methods, and emerging high-throughput methodology; carbohydrate-based drug development; and the role of sugars in stem cell biology and tissue engineering. Evaluation will be both by faculty and fellow students.

**Advanced Seminars in Cardiac Electrophysiology and Mechanics.** (580.738-39 School of Engineering) Dr. Trayanova.

This course uses the current literature to teach advanced topics in cardiac electrophysiology and mechanics. Students will be required to read current articles and then conduct interactive teaching sessions with faculty and other students. Potential topics will include: ion channels, cardiac excitation-contraction coupling, myofilament regulation, cardiac arrhythmias, heart failure, therapies for arrhythmias and pump dysfunction. Evaluation will be both by faculty and fellow students.

**Pattern Theory: From Representation to Inference.** (580.744 School of Engineering) Dr. Miller.

This course examines the metric pattern theory of Ulf Grenander in which shapes and patterns are studied as random processes on graphs. The course begins with the study of Markov processes on directed acyclic graphs, including Markov chains and branching processes, and on random fields on regular lattices. Moving to the continuum, the course examines Gaussian random fields, second order representation theory and random processes of geometric shape through Gaussian fields on manifolds. Numerous examples are examined in image understanding and image analysis.

**Advanced Seminars in Magnetic Resonance Imaging.** (580.748-49 School of Engineering) Dr. McVeigh.

This course uses the current literature to teach advanced topics in magnetic resonance imaging. Students will be required to read current papers, selected textbook chapters and online content to prepare for interactive teaching sessions with faculty and other students. Potential topics will include: image artifacts, effect of motion, resolution and SNR, realtime imaging, clinical applications. Evaluation will be both by faculty and fellow students.

**Principles of the Design of Biomedical Instrumentation.** (580.771 School of Engineering) Dr. Thakor.

*Prerequisite:* 520.345 ECE Laboratory.

This course is designed for graduate students interested in learning basic biomedical instrumentation design concepts and translating these into advanced projects based on their research on current state-of-the-art. They will first gain the basic knowledge of instrumentation design, explore...
various applications, and critically gain hands-on experience through laboratory and projects. At the end of the course, students would get an excellent awareness of biological or clinical measurement techniques, design of sensors and electronics (or electro-mechanical/chemical, microprocessor system and their use). They will systematically learn to design instrumentation with a focus on the use of sensors, electronics to design a core instrumentation system such as an ECG amplifier. Armed with that knowledge and lab skills, students will be encouraged to discuss various advanced instrumentation applications, such as brain monitor, pacemaker/defibrillator, or prosthetics. Further, they will be “challenged” to come up with some novel design ideas and implement them in a semester-long design project. Students will take part in reading the literature, learning about the state-of-the-art through journal papers and patents, and discussing, critiquing, and improving on these ideas. Finally, they will be implementing a selected idea into an advanced group project.


**Prerequisite:** 580.221 Molecules and Cells or equivalent or approval of instructor.

Introduction to non-invasive techniques as applied to an early diagnosis of disease, altered gene expression, cellular therapeutics, and fundamental molecular or metabolic changes. Includes magnetic resonance imaging, radionuclide imaging, and optical imaging techniques. Covered will be: principles of specific targeting and non-specific uptake of diagnostic contrast agents; NMR spectroscopy of metabolic changes in cancer; use of cell tracking using exogenous tags; imaging of stem cells, imaging using reporter genes, theranostics (combined therapeutics and diagnostics), imaging cancer, imaging of neurodegenerative disease, and imaging of cardiovascular disease. The emphasis of the overall course is to learn how molecular/cellular imaging will change the way future diagnostic radiology and drug development will be practiced.

210.801-802 Special Studies in Biomedical Engineering. (580.801-802 School of Engineering) Staff.

Studies conducted in any area of biomedical engineering on a tutorial basis by prior arrangement with a member of the faculty. May be taken more than once.
**Biophysics and Biophysical Chemistry**

L. MARIO AMZEL, Professor of Biophysics and Biophysical Chemistry, Director of the Department of Biophysics and Biophysical Chemistry

ROBERT J. COTTER
Professor of Pharmacology and Molecular Sciences, Professor of Biophysics and Biophysical Chemistry

HOWARD M. DINTZIS, Professor Emeritus

DANIEL J. LEAHY
Professor of Biophysics and Biophysical Chemistry, Professor of Pharmacology and Molecular Sciences

JON R. LORSCH, Professor

DAVID ROBERT SHORTLE
Professor of Biological Chemistry, Professor of Biophysics and Biophysical Chemistry

PETER C.M. VAN ZIJL
Professor of Radiology, Professor of Biophysics and Biophysical Chemistry, Professor of Oncology

CYNTHIA WOLBERGER
Professor of Biophysics and Biophysical Chemistry, Investigator of the Howard Hughes Medical Institute

WEI YANG, Adjunct Professor

RENEE Z. DINTZIS
Associate Professor of Cell Biology, Associate Professor of Biophysics and Biophysical Chemistry

MARIO ANTONIO BIANCHET
Assistant Professor of Neurology, Assistant Professor of Biophysics and Biophysical Chemistry

DOMINIQUE FRUEH, Assistant Professor

SANDRA BEATRIZ GABELLI
Assistant Professor of Medicine, Assistant Professor of Art as Applied to Medicine, Assistant Professor of Biophysics and Biophysical Chemistry, Assistant Professor of Oncology

ALBERT Y. LAU, Assistant Professor

JUNGSAN SOHN, Assistant Professor

HERSCHEL V. WAOLF, Assistant Professor

SILVIA A. PINEIRO, Visiting Scientist

FACULTY ASSOCIATED WITH THE DEPARTMENT OF BIOPHYSICS AND BIOPHYSICAL CHEMISTRY HOLDING A PRIMARY APPOINTMENT IN:

The School of Medicine:

THOMAS B. WOOLF
Professor of Physiology

The School of Arts and Sciences:

ERNESTO FREIRE
Hendry Walters Professor of Biology

GEORGE D. ROSE
Professor of Biophysics

The Bloomberg School of Public Health:

SEAN T. PRIGGE
Associate Professor of Molecular Microbiology and Immunology

**REQUIRED COURSE WORK FOR M.D. PROGRAM**

**First Year**

100.600 **Scientific Foundations of Medicine.** Dr. Lorsch. Monday-Friday, 8:00 a.m.-1:00 p.m.; Clinical Correlations, F., 2:00-3:30 p.m.

Biochemistry, Cell Biology, Genetics, and Pharmacology are fully integrated into a combined course of study presented by the basic science departments. The course provides a comprehensive coverage of the fundamental principles underlying the molecular basis of cellular metabolism and function. The course emphasizes small group learning and problem solving. The student will participate in “Journal Club,” in which important papers in the front-line biomedical literature will be discussed. Clinical Correlations related to basic science concepts will be held. Enrollment of non-medical students requires approval from the course director.

**Prerequisites:** Elementary courses in basic chemistry, organic chemistry, general biology, and general physics. At least one upper-level course in Biochemistry or Cell Biology is strongly recommended.

**COURSES AND ELECTIVE OPPORTUNITIES—Curricular Consultant: Dr. Amzel. Elective courses must be approved by the preceptor; any member of the department can act as preceptor.**

**Biophysics**

100.801/100.807 **Research in Biophysics.** By arrangement with the staff. Research will be conducted in various aspects of molecular biology. In particular the molecular structures of proteins and nucleic acids, their biosynthesis and functional interrelationships will be studied.

Research interests represented in the Department of Biophysics and Biophysical Chemistry are as follows:

**DR. AMZEL**
- Structure enzymology of redox and phosphoryl transfer enzymes: MICAL, peptidyl amidating monoxygenase, PI3K, and Nudix hyrolases; selected areas of structural thermodynamics.

**DR. DINTZIS**
- Receptor oligomerization of cell function.

**DR. FRUEH**
- Structural and dynamic studies of active enzymatic systems by Nuclear Magnetic Resonance (NMR); mechanisms of domain communication in non-ribosomal peptide synthetases- NMR method development.

**DR. LAU**
- Computational and experimental studies of macromolecular interactions and conformational transitions.

**DR. LEAHY**
- Molecular mechanisms governing signaling.

**DR. LORSCH**
- Mechanisms of eukaryotic translation.
100.707 Advanced Topics in Protein Crystallography. Dr. Leahy. Course offered at the School of Medicine. Alternating years with Fundamentals of Protein Crystallography (100.706). One meeting per week, fourth quarter. Next offered 2013.  
Prerequisites: Elementary crystallography.  
In a journal club format this course examines standard advanced topics in crystallography as well as aspects of the current literature. Topics may include: refinement, approaches to the phase problem, fourier transform methods, etc.

100.708/AS:250.685 Proteins and Nucleic Acids. Drs. Woodson and Bowman. Interdivisional Course. Given every year during the first and second quarters (fall semester); three hours per week. Offered at the Homewood Campus. Tu/Th in the morning.  
Prerequisites: Calculus, elementary physics, and basic biochemistry, or consent of instructor.  
The graduate-level course provides an introduction to macromolecular structure, with emphasis on the physical underpinnings. Topics include: primary, secondary, tertiary structure of proteins and RNA; energetics, folding, protein and protein-nucleic acid interactions, and dynamics of macromolecular complexes. Format is class discussion of assigned readings from primary scientific literature with computer-based lab assignments. The course begins with an intensive introduction to the Python computer scripting language and the Unix operating system.

100.709 Macromolecular Structure and Analysis. Drs. Cotter, Green, Hoh, Leahy, Raben, Schnaar, Shortle, Wade, Wolberger, Woolf, and Zhang. First quarter; three hours per week. TTh, 9-10:30.  
The structure and properties of biological macromolecules will be presented. Experimental and computational methods used to study macromolecular structure including X-ray crystallography, magnetic resonance, spectroscopy, microscopy, and mass spectrometry will also be covered.

100.710 Biochemical and Biophysical Principles. Drs. Amzel, Lorsch, Shortle, Xiao, and Wade. First quarter; four and a half hours per week. M/W/F, 9-10:30  
The physical and chemical principles underlying biological processes are presented and discussed. Topics include thermodynamics, chemical equilibriu, chemical and enzymatic kinetics, electrochemistry, physical chemistry of solutions, and structure and properties of water. Elementary concepts of statistical thermodynamics will be introduced as a way of correlating macroscopic and microscopic properties.

100.711 Structure Determination. Dr. Leahy and faculty. Fourth quarter; three hours per week. Alternating days, 9-10:30.  
This course will cover macromolecular structure determination by x-ray crystallography and nuclear magnetic resonance (NMR). The lectures will build upon the introduction to protein and nucleic acid structure and analysis given in the course, “Macromolecular Structure and Analysis.” The course will emphasize structure determination methods and will cover the basic theory underlying x-ray crystallography and NMR, the steps in structure determination, and the application of these methods to
addressing various questions in protein structure and function.

100.713 Using Structure to Understand Biology. Dr. Wolberger and department faculty.
Prerequisites: Molecular Structure and Analysis or the equivalent
The thousands of structures in the Protein Data Bank (PDB) that are the product of x-ray crystallography and NMR spectroscopy comprise a rich resource for understanding many processes in biology, provided that one knows how to use and interpret the information. The goal of this course is to teach students how to make use of structural information in the PDB using commonly available tools that are accessible to the non-expert. Students will learn how to read a structure paper, understand structure quality and limits of interpretation, and use coordinates from the Protein Data Bank to explore a structure and make figures. Topics covered will include non-covalent interactions, modeling point mutants, identifying binding pockets, making homology models, and calculating electrostatic surface potentials. Classes will combine lectures with real-time demonstrations. Homework will involve exercises using structure modeling software.

GRADUATE PROGRAM—Students are accepted for graduate work leading to the degree of Doctor of Philosophy (see Graduate Programs-Program in Molecular and Computational Biophysics Program).
Cell Biology

PETER N. DEVREOTES
Isaac Morris Hay and Lucille Elizabeth Hay
Professor of Embryology in the Department of Cell Biology, Professor of Biological Chemistry, Director of the Department of Cell Biology

DEBORAH JEAN ANDREW, Professor

CHI VAN DANG
Johns Hopkins Family Professor for Oncology
Research in the Department of Medicine, Professor of Cell Biology, Joint Appointment in Molecular Biology and Genetics, Professor of Oncology, Professor of Pathology

ANN L. COX HUBBARD
Professor of Cell Biology, Joint Appointment in Medicine, Professor of Physiology

ROBERT E. JENSEN
Professor of Cell Biology, Professor of Biological Chemistry

ABRAHAM KUPFER, Professor

STEVEN D. LEACH
Paul K. Neumann Professor of Pancreatic Cancer in the Department of Surgery, Professor of Cell Biology, Professor of Oncology

CAROLYN E. MACHAMER, Professor

SUSAN MICHAELIS, Professor

DOUGLAS M. MURPHY, Adjunct Professor

KATHERINE E. MALAMAR, Research Assistant

HIROMI SESAKI, Assistant Professor

LELITA TALAMANTEZ BRAITERMAN, Research Associate

MARGARET DE CUEVAS, Research Associate

HIROSHI IKE, Research Associate

SANG JOON KIM, Research Associate

HANNAH KUPFER, Research Associate

THOMAS R. HYNES, Visiting Scientist

CHRISTIAN JAMES KETCHUM
Visiting Scientist in Physiology, Visiting Scientist in Cell Biology

MING JIE WANG, Visiting Scientist

ZHONGYAN ZHANG
Visiting Scientist in Cell Biology (from 09/01/2011)

FACULTY ASSOCIATED WITH THE DEPARTMENT OF CELL BIOLOGY HOLDING A PRIMARY APPOINTMENT IN:
The Bloomberg School of Public Health:

MICHAEL JOSEPH MATUNIS
Professor of Biochemistry and Molecular Biology

REQUIRED COURSE WORK FOR M.D. PROGRAM

First Year

100.600 Scientific Foundations of Medicine.
Drs. Lorsch, Nathans, Robinson, Raben and staff.
M.-F., 8:00-1:00; Clinical Correlations, F., 2:00-3:30 p.m.

Biochemistry, Cell Biology, Genetics, and Pharmacology are fully integrated into a combined course of study presented by the basic science departments. The course provides a comprehensive, fully integrated coverage of the molecular basis of cellular metabolism and function. The course will emphasize small group learning and problem solving. The student will participate in “Journal Club,” in which important papers in the front-line biomedical literature will be discussed. Clinical Correlations related to basic science concepts will be held at various days and times. Enrollment of non-medical students requires approval from the course director.

Prerequisites: Elementary courses in inorganic chemistry, organic chemistry, general biology, and general physics. At least one upper-level course in Biochemistry or Cell Biology is strongly recommended.

OTHER COURSES AND ELECTIVE OPPORTUNITIES—Curricular Consultant: Dr. Devreotes. Elective courses must be approved by preceptor; any member of the department may act as preceptor.

Cell Biology

ME110.700 Advanced Study and Teaching in Cell Biology.

Prerequisite: Consent of course director.

Residents and advanced students who wish additional training may serve as teaching Assistants in Scientific Foundations of Medicine. Individual supervision of reading and laboratory work is available. Year course.
340.703 Graduate Cell Structure and Dynamics. Taught in cooperation with other faculty of the program in Biochemistry, Cellular and Molecular Biology by Dr. Espenshade and staff.

The objective of this course is to provide the basics of cell biology, including the structure, function, and biogenesis of cellular organelles. Also covered are essential concepts on the cytoskeleton, cell-cell and cell-extracellular matrix interactions, cell motility, chaperones, and protein turnover.

ME110.730 Membrane Traffic. Dr. Machamer. Fourth quarter; four weeks.

Opportunities for training in cell and developmental biology, physical anthropology and vertebrate paleontology are available for qualified predoctoral and postdoctoral students. Fellowships covering normal living costs and tuition are available.

ME110.800 Advanced Work and Research. By arrangement with the staff.

Opportunities for training in cell and developmental biology, physical anthropology and vertebrate paleontology are available for qualified predoctoral and postdoctoral students. Fellowships covering normal living costs and tuition are available.

ME110.727 The Cytoskeleton. Dr. Robinson and Associates. Fourth quarter; four weeks.

In this course, we will explore the fundamental mechanisms of the cytoskeleton that the cell uses to drive motility and dynamic shape changes. We will emphasize the breadth of research on the cytoskeleton ranging from classic studies of muscle, cytoskeletal structure, enzymological and single molecule studies of motor proteins, rheology, polymer dynamics, cytoskeletal signaling, the cytoskeleton in disease, and chemical approaches to the cytoskeleton. The course format will be a combination of lecture and student-led discussions of hallmark papers.

ME340.704 Developmental Biology. Dr. Andrew and Associates. Fourth quarter; four weeks.

Team taught by BCMB faculty, this course covers the molecular and cellular basis of embryonic development in multiple organisms. Topics include stem cell biology, cloning, and the relationship between development and disease in addition to the fundamental molecular and cellular mechanisms that control the development of a mature organism from a single cell, the fertilized egg. Emphasis will be placed on key experiments or experimental approaches that have yielded significant insight into developmental mechanisms. Some descriptive embryology will be discussed to provide an anatomical basis for the cellular and molecular mechanisms.

Research interests represented in the Department of Cell Biology are as follows:

DR. ANDREW
Developmental genetics of organ formation; Drosophila.

DR. CHAKRAVARTI
Extracellular matrix biology in inflammation and innate immunity; keratoconus, corneal infections, and inflammatory bowel diseases.

DR. DEVREOTES
Chemoattractant directed cell migration; signal transduction.

DR. DINTZIS
Instruction on the structure and function of the cells and tissues of organs of the human body.

DR. ESPENSHADE
Cellular regulation of cholesterol homeostasis and adaptation to hypoxia.

DR. EWALD
Cellular mechanisms and molecular regulation of epithelial morphogenesis in development and cancer.

DR. HUBBARD
Pathways and mechanisms of protein trafficking in polarized epithelia; Wilson and Menkes Diseases; copper ATPases.

DR. INOUE
Lipid signaling in chemotaxis.

DR. IIJIMA
Directed cell migration; tumor metastasis; primary cilia; synthetic chemical biology; technology development.

DR. JENSEN
The dynamics of mitochondria and their DNA in yeast; trypansomes and mammalian cells.

DR. KUO
Mechanical functions of cells; actin-based protrusion and cell motility; nanoscale biophysics; laser-based imaging and bioinstrumentation.
DR. KUPFER
Cellular interactions in the immune system; the immunological synapse; mechanisms of T cell activation and induction of tolerance.

DR. LEACH
Pancreatic development and differentiation using both mouse and zebrafish model systems.

DR. E. MATUNIS
Molecular genetics of germ line stem cell function.

DR. M. MATUNIS
Molecular mechanisms of SUMOylation and functions of mitosis; DNA repair; stress response pathways and *P. falciparum* development.

DR. MACHAMER
Intracellular protein trafficking; enveloped virus assembly.

DR. MICHAELIS
Yeast and mammalian cell biology; progeria and lamin A processing; ER quality control and cystic fibrosis; ABC transporters.

DR. D. ROBINSON
Probing the molecular, biochemical, and mechanical basis for cytokinesis and cellular morphogenesis.

DR. SESAKI
Mitochondrial dynamics; membrane fusion and fission.

DR. WILSON
The cell nucleus, nuclear membranes, lamins, nucleoskeleton, membranes of Emery-Dreifuss muscular dystrophy and other laminopathies.

DR. YANG
Cell migration and integrin signaling

**GRADUATE PROGRAM**—Students are accepted for graduate work leading to the degree of Doctor of Philosophy (see Graduate Programs)
The Department of Dermatology provides instruction directed at the basic science aspects of the skin and at clinical cutaneous disease during each of the medical school years. The emphasis of the department is upon the pathophysiology of cutaneous reaction patterns, a correlation of skin lesions (gross Pathology) with microscopic changes, the recognition and treatment of diseases that primarily affect the skin and the identification of skin changes that reflect diseases in other organ systems.
REQUIRED WORK

Dermatology-First and Second Years

Preclinical (first/second) years of Genes to Society (GTS) curriculum. Dr. Kang and staff.
During the first two years of GTS, a group of lectures, case discussions, and workshops dealing with clinical presentation and the mechanisms of cutaneous disease.

ELECTIVE OPPORTUNITIES—Curricular Consultant: Dr. Sewon Kang. Elective courses must be approved by the preceptor; any member of the department may act as preceptor.

E 1. Clinical Clerkship in Dermatology. Dr. Sewon Kang and staff. Offered all year; one month; four students; two month drop.
Prerequisites: Internal Medicine, Surgery, and Pediatrics
Students may apply towards the end of their 3rd or 4th year of medical school for a clinical elective in dermatology where the focus is placed on intensive exposure to a large number of patients in different clinical settings. Students will spend time exclusively at the Johns Hopkins facilities (Outpatient Center, Greenspring Station, Bayview Medical Center and Harriett Lane Pediatric Center). Our clinical services at these locations provide an excellent opportunity for students to interact with different types of patients and to be exposed to a wide range of skin problems. Parallel to the clinical activities, there are didactic sessions most mornings and occasionally at the end of the workday as well. Formal lectures on basic dermatology topics are given by dermatology residents and sessions at a more advanced level are taught by faculty members. No formal exam is given and grading is based on the evaluations submitted by residents and faculty members.

E 2. Advanced Clinical Clerkship in Dermatology. Drs. Chien, Cohen, Hinds, Kang, Patel and Wang. Offered all year; one to three months; two month drop.
Students who have already taken the basic elective in dermatology and who are interested in a specific area of Dermatology, in dermatology research, and students interested in pursuing dermatology as a career may benefit from this elective. This elective gives the student the opportunity for more “in depth” participation in specific areas of interest within the department of Dermatology under guidance of a faculty mentor. Arrangements have to be made between the interested student and the faculty member who will be mentoring him/her. The main objective of this elective is active participation in a small clinical research project, or clinical and scholarly work with faculty member with a certain specialty focus. The faculty mentor will provide the specific schedule. Students are encouraged to participate in all didactic activities including Grand Rounds and faculty lectures during the time spent in the department.

E 3. DermatoPathology Clinical Clerkship. Dr. Janis Taube. Offered all year; half quarter; one student; two month drop.
Prerequisites: Internal Medicine, Surgery, Pediatrics, Pathology, and Clinical Clerkship in Dermatology.
Students may apply during their 3rd or 4th year for an elective in dermatopathology. Students will attend daily sign out where they will be exposed to a large volume of cases. Additional exposure will come through the use of study sets which are available to the students. The students will attend the Dermatology weekly Grand Rounds where they will see patients and participate in the discussion and presentation of the Pathology for those patients. Additionally, the students will attend two formal dermatopathology teaching sessions per week.

Research opportunities in the Department of Dermatology

DR. ALHARIRI
General dermatology.

DR. ANHALT
Immunodermatology.

DR. CHIEN
Skin aging; pharmacology; translational research.

DR. COHEN
Pediatric dermatology.

DR. FISCHER
Dermatopathology.

DR. GARZA
Stem cells in dermatology, hair, wound healing.

DR. HINDS
Ethnic skin.

DR. KANG
Translational research in dermatology.

DR. MILLER
Skin infection.

DR. PATEL
Acne; skin disease in solid organ transplant patients.

DR. PUTTGEN
Pediatric dermatology; hemangiomas.

DR. TAUBE
Melanoma; dermatopathology.

DR. WANG
Skin surgery; melanoma.
Emergency Medicine

GABOR D. KELEN
Professor of Emergency Medicine, Director of the Department of Emergency Medicine
JOSHUA M. EPSTEIN, Professor
J. ALEX HALLER, JR.
Professor Emeritus of Pediatric Surgery, Professor Emeritus of Emergency Medicine, Professor Emeritus of Pediatrics
ARUJN S. CHANMUGAM, Associate Professor
PETER MICHAEL HILL, Associate Professor
EDBERT BRIAN HSU, Associate Professor
THOMAS DEAN KIRSCH, Associate Professor
FREDERICK LEVY, Associate Professor
MELISSA LEE MCCARTHY, Adjunct Associate Professor
RICHARD E. ROTHMAN
Associate Professor of Emergency Medicine, Joint Appointment in Medicine
NELSON TANG, Associate Professor
JAMIL D. BAYRAM, Assistant Professor
EDWARD S. BESSMAN, Assistant Professor
DAVID A. BRADT, Assistant Professor
CHRISTINA LYNNE CATLETT, Assistant Professor
ROBIN MARY CUDDY, Assistant Professor
SUZANNE DOYON, Adjunct Assistant Professor
GIORGIO GIOVANNI GALETTO, Assistant Professor
HUGH F. HILL, III, Assistant Professor
BEATRICE HOFFMANN, Assistant Professor
YU-HSIANG HSIEH, Assistant Professor
JENNIFER LEE JENKINS, Assistant Professor
JULIANNA JOAN JUNG, Assistant Professor
MARK KING, Assistant Professor
FREDERICK K. KORLEY
Assistant Professor of Emergency Medicine, Occupying the Robert E. Meyerhoff Chair
SCOTT RYAN LEVIN, Assistant Professor
MATTHEW JASON LEVY, Assistant Professor
HORACE K. LIANG, Assistant Professor
HUBERT S. MICKEL, Assistant Professor
MICHAEL G. MILLIN, Assistant Professor
WILLIAM ELLIS NORTHINGTON, Assistant Professor
HARDIN ATTWOOD PANTLE
Assistant Professor of Emergency Medicine, Assistant Professor of Pediatrics
JULIUS CUONG PHAM
Assistant Professor of Emergency Medicine, Assistant Professor of Anesthesiology and Critical Care Medicine
LINDA ANN REGAN, Assistant Professor
ANDREW I. STOLBACH, Assistant Professor
ALEXANDER VU, Assistant Professor
SAMUEL PAI-SUN YANG, Assistant Professor
MOHAMMAD ANWAR, Instructor
WALTER FLEMING ATHA, Instructor
SHARON P. BORD, Instructor
SEAN BOUVET, Instructor
LEAH E. BRIGHT, Instructor
JOY ELIZABETH CROOK
Instructor in Emergency Medicine (to 07/31/2011)
SARA DAMEWOOD, Instructor
SAMIT PRAKASH DESAI, Instructor
ANDREA FREYER DUGAS, Instructor
STEPHEN G. HOLTZCLAW, Instructor
LIAM C. HOLTZMAN, Instructor
GABRIELLE ANDREA JACQUET, Instructor
BUDDY GENE KOZEN, JR., Instructor
TINA MARIE LATIMER, Instructor
MICHAEL R. MELIA, Instructor
RODNEY OMRON, Instructor
MICHAEL PERLINE, Instructor
KiEMANH PHAM, Instructor
RODICA RETEZAR, Instructor
MUSTAPHA SAHEED, Instructor
ESTEBAN SCHABELMAN, Instructor
MICHAEL A. SILVERMAN, Instructor
GABRIEL P. SIMON, Instructor
MARY WESTERGAARD
Instructor in Emergency Medicine (to 07/31/2011)
DONALD W. ALVES, Assistant
CHARLES ANDREW BERGMAN, Assistant
EMILY STREYER CARLISLE, Assistant
JAMES E. CORWIN, Assistant
TYLER C. DELANGE, Assistant
HAMID EHSANI, Assistant
CAREN EUSTER
Assistant in Emergency Medicine, Assistant in Medicine
ISADORE A. FELDMAN, Assistant
KAREN MARIE HLADIK, Assistant
NING HU, Assistant
MICHAEL E. HULL, Assistant
GAIL GLOTFELTY KRAMER, Assistant
SHANNON BANDY PUTMAN, Assistant
RICHARD G. S. SPENCER, Assistant
FREDERICK M. BURKLE, JR., Research Associate
LAUREN M. SAUER, Research Associate
JAMES J. SCHEULEN, Research Associate
JUDY B. SHAHAN, Research Associate
FACULTY ASSOCIATED WITH THE DEPARTMENT OF EMERGENCY MEDICINE HOLDING A PRIMARY APPOINTMENT IN:
The School of Medicine:
DAVID THOMAS EFRON
Associate Professor of Surgery
CHARLOTTE A. GAYDOS
Professor of Medicine
REQUIRED WORK

Emergency Medicine—Second, Third and Fourth Years

Basic Clerkship in Emergency Medicine. Offered all year except July; 4 1/2 weeks; 12 students per half quarter; one month drop.

This course is a required basic clerkship in the medical curriculum. During the clerkship, students work closely with Emergency Medicine faculty and resident staff focusing on the initial assessment, management, stabilization and resuscitation of patients presenting to the Emergency Department. Appropriate history-taking and physical diagnosis, recognition of life-threats, rationale for ordering ancillary laboratory and radiographic tests, and a systematic approach to evaluating and stabilizing acute medical and surgical emergencies are emphasized. The students will be expected to attend a comprehensive lecture series as well as a variety of small group sessions, and department conferences. Students will rotate through the Johns Hopkins Bayview and Johns Hopkins Hospital Emergency Department, where they will be encouraged to manage their own patients in the context of a supervised physician team. In this clerkship students can expect to develop the skills and knowledge to independently care for patients with a wide variety of emergency problems.

ELECTIVE OPPORTUNITIES—Curricular Consultant: Dr. Julianna Jung. Elective courses must be approved by the preceptor; any member of the department may act as preceptor.


Prerequisite: Basic Clerkships in Surgery, Medicine, and Emergency Medicine; Ob/Gyn strongly recommended.

Students in the third and fourth years who wish an in depth experience in emergency medicine may serve as sub-interns in the Adult Emergency Department. Further development of clinical reasoning/problem solving skills and selected procedural skills will be emphasized. Upon completion of this elective, students will demonstrate competency in the recognition and initial stabilization of life threats in trauma and non-trauma patients. Exposure to pre-hospital care can be made available. Sub-interns are required to attend departmental conferences. A formal case presentation may also be required.


This elective course is offered to any medical student with specific research interests in emergency medicine. Students are given the opportunity to participate in original or on-going research projects with a faculty member in the Department of Emergency Medicine. During the summer a specific course teaches the fundamentals of clinical research while engaging in a research project designed as part of the curriculum.

Research Interests:

DR. BAYRAM
Disaster medicine; surge capacity.

DR. CATLETT
Health system emergency preparedness and response; disaster education and training; expedition medicine.

DR. CHANMUGAM
Psychiatric emergencies.

DR. EPSTEIN
Agent-based computer modeling in Disaster Health, including emergency response and mass behavior.

DR. P. HILL
Clinical outcomes, focus on neurologic emergencies.

DR. HOFFMANN
Ultrasound.

DR. HSIEH
Infectious diseases epidemiology in ED settings.

DR. HSU
Disaster preparedness and disaster training; pharmaceutical preparedness.

DR. JENKINS
Epidemiology; disaster medicine.

DR. JUNG
Simulation in medical education.

DR. KIRCHE
Disaster medicine; infectious disease; epidemiology and health services research.

DR. KIRCH
Disaster management, response, and training; ED management.

DR. KORLEY
Acute cardiac care; resource utilization.

DR. LEVIN
Systems engineering in healthcare; research design and methods; patient safety; health services.

DR. F. LEVY
Patient safety; tort reform; bioethics.
DR. MILLIN
Development of EMS system; out-of-hospital resuscitations; wilderness medicine; emergency preparedness.

DR. PHAM
Quality of care in the emergency department; quality of care in the ICU; learning from medical errors.

DR. REGAN
Medical education; curriculum development, feedback, and evaluation.

DR. ROTHMAN
Complications of drug abuse; health services research; infectious diseases and rapid diagnostics.

DR. TANG
EMS; operational emergency medicine; tactical medicine; law enforcement medical support; special event medical preparedness.

DR. YANG
Rapid PCR-based lab diagnosis of emergent infection.
Epidemiology

The Department of Epidemiology is an academic department in the Johns Hopkins University Bloomberg School of Public Health and directs the Clinical Epidemiology Program in the School of Medicine. The department offers a required course, Clinical Epidemiology (described below), for first year students in the School of Medicine. In addition, elective opportunities, both formal courses and tutorials, are available. Interested students should consult the School of Public Health catalog for information on course offerings and areas of research represented in the department. Course information is also available on the Internet at http://commprojects.jhsph.edu/courses.

A combined M.D.-Ph.D. Program in Epidemiology is available. A valuable resource for students is the Welch Center for Prevention, Epidemiology and Clinical Research which is located on the second floor of 2024 East Monument Street. Interested students are invited to contact the center regarding additional educational and research opportunities in clinical epidemiology. The department offers a wide range of training opportunities in cancer epidemiology, cardiovascular diseases, aging and related disorders, vision and ophthalmology, genetics, infectious diseases, and occupational and environmental epidemiology, as well as extensive coursework in methodology.

DAVID CELENTANO
Professor and Chairman of the Department of Epidemiology, School of Public Health

TERRI H. BEATY
Professor and Deputy Chair of Epidemiology, School of Public Health

CHRIS BEYRER
Professor of Epidemiology, School of Public Health

CARLOS CASTILLO-SALGADO
Professor of Epidemiology, School of Public Health

JOSEF CORESH
Professor of Epidemiology, School of Public Health

CHRISTOPHER COX
Professor of Epidemiology, School of Public Health

ROSA CRUM
Professor of Epidemiology, School of Public Health

KAY DICKERSIN
Professor of Epidemiology, School of Public Health

MARGARET DANIELE FALLIN
Professor of Epidemiology, School of Public Health

HOMAYOON FARZADEGAN
Professor of Epidemiology, School of Public Health

STEPHEN J. GANGE
Professor of Epidemiology, School of Public Health

THOMAS GLASS
Professor of Epidemiology, School of Public Health

RONALD GRAY
Professor of Epidemiology, School of Public Health

LEON GORDIS
Professor Emeritus of Epidemiology, School of Public Health and Professor Emeritus of Pediatrics, School of Medicine

ELISEO GUALLER
Professor of Epidemiology, School of Public Health

MICHEL A. IBRAHIM
Professor of Epidemiology, School of Public Health

LISA JACOBSON
Professor of Epidemiology, School of Public Health

WEN HONG LINDA KAO
Professor of Epidemiology, School of Public Health

MICHAEL KLAG
Professor of Epidemiology, School of Public Health, Dean of the School of Public Health

GENEVIEVE M. MATANOSKI
Professor of Epidemiology, School of Public Health

CURTIS L. MEINERT
Professor of Epidemiology, School of Public Health

WILLIAM MOSS
Professor of Epidemiology, School of Public Health

ALVARO MUNOZ
Professor of Epidemiology, School of Public Health

KENRAD NELSON
Professor of Epidemiology, School of Public Health

ELIZABETH A. PLATZ
Associate Professor of Epidemiology, School of Public Health

DAVID L. SMITH
Professor of Epidemiology, School of Public Health

ALFRED SOMMER
Professor of Epidemiology, School of Public Health

MOYSES SZKLO
Professor of Epidemiology, School of Public Health and Joint Appointment in the Oncology Center, School of Medicine

TAHA TAHA
Professor of Epidemiology, School of Public Health

MARIA WAWER
Professor of Epidemiology, School of Public Health
CHRISTINE LADD-ACOSTA  
Assistant Scientist in Epidemiology, School of Public Health

KUNIHIRO MATSUSHITA  
Assistant Scientist in Epidemiology, School of Public Health

DARCY PHELAN  
Assistant Scientist in Epidemiology, School of Public Health

CATHERINE GAYLE SUTCLIFFE  
Assistant Scientist in Epidemiology, School of Public Health

CARLA ZELAYA  
Assistant Scientist in Epidemiology, School of Public Health

YIYI ZHANG  
Assistant Scientist in Epidemiology, School of Public Health

WENDY DAVIS  
Senior Research Associate in Epidemiology, School of Public Health

LISETTE JOHNSON-HILL  
Senior Research Associate in Epidemiology, School of Public Health

LEE MCCAFFREY  
Senior Research Associate in Epidemiology, School of Public Health

LOUISE WALSHE  
Senior Research Associate in Epidemiology, School of Public Health

CHRISTINE CARSON  
Research Associate in Epidemiology, School of Public Health

JEANNE CHARLESTON  
Research Associate in Epidemiology, School of Public Health

SUFIA SIMJEE DADABHAI  
Research Associate in Epidemiology, School of Public Health

ANDREA DELUCA  
Research Associate in Epidemiology, School of Public Health

PATTI EPHRAIM  
Research Associate in Epidemiology, School of Public Health

KATHERINE FOOTER  
Research Associate in Epidemiology, School of Public Health

TAMAKI KOBAYASHI  
Research Associate in Epidemiology, School of Public Health

SHARADA MODUR  
Research Associate in Epidemiology, School of Public Health

EFE SEZGIN  
Research Associate in Epidemiology, School of Public Health

SOL SU  
Research Associate in Epidemiology, School of Public Health

VORAVIT SUWANVANICHKIJ  
Research Associate in Epidemiology, School of Public Health

NICHOLAS THOMSON  
Research Associate in Epidemiology, School of Public Health

ALLYN ARNOLD  
Instructor in Epidemiology, School of Public Health

CORINNE E. JOSHU  
Instructor in Epidemiology, School of Public Health

JENNIFER A. SCHRACK  
Instructor in Epidemiology, School of Public Health

OTHER COURSES AND ELECTIVE OPPORTUNITIES

Research and Tutorials. (same as Epidemiology PH340.840, School of Public Health).
Students may undertake tutorials under the supervision of a member of the Department of Epidemiology faculty. These programs are individually planned and consist of reading in specific areas of epidemiologic and clinical interest or may comprise participation in research activities underway in the department.
Center for Functional Anatomy and Evolution

CHRISTOPHER B. RUFF
Professor of Functional Anatomy and Evolution, Professor of Orthopedic Surgery, Director of the Center for Functional Anatomy and Evolution

REBECCA Z. GERMAN
Professor of Physical Medicine and Rehabilitation, Professor of Functional Anatomy and Evolution

JEFFREY B. PALMER
Lawrence Cardinal Shehan Professor of Physical Medicine and Rehabilitation, Professor of Otolaryngology-Head and Neck Surgery, Professor of Functional Anatomy and Evolution

JOAN T. RICHTSMEIER, Visiting Professor

KATHLEEN D. ROSE, Professor

DAVID B. WEISHAMPEL, Professor

DONNA LYNN MAGID
Associate Professor of Radiology, Joint Appointment in Orthopaedic Surgery, Associate Professor of Functional Anatomy and Evolution

VALERIE BURKE DELEON, Assistant Professor

REQUIRED WORK FOR M.D. DEGREE

First Year —

130.600 Scientific Foundations of Medicine/Introduction to Human Anatomy. Dr. Christopher Ruff.

This course is organized around a series of lectures (anatomical, functional, and clinical), small group activities, and intensive laboratory experience in dissection, accompanied by regular readings in the text. Lectures emphasize important aspects of descriptive and functional anatomy, embryology, introductory medical imaging, and clinical applications, and are given by the anatomy faculty, as well as a number of clinicians. In addition, small group activities will often be centered on clinical case histories of relevance to human anatomy. They will emphasize both team-work and reiteration of key concepts from different perspectives. Students are assessed with three written knowledge tests, as well as participation in lab, lab presentations, and team-based learning.

REQUIRED WORK FOR Ph.D. DEGREE

Research interests represented in the Center for Functional Anatomy and Evolution are as follows:

DR. DELEON
Craniofacial development; quantitative morphology; morphological integration.

DR. PERRY
Functional morphology; primate ecology and evolution.

DR. ROSE
Mammalian evolution; functional anatomy; paleontology.

DR. RUFF
Biomechanics; human biological variation and evolution.

DR. WEISHAMPEL
Vertebrate paleobiology; functional and constructional morpholgy.

REQUIRED COURSE WORK FOR Ph.D. PROGRAM

130.600 Scientific Foundations of Medicine/Introduction to Human Anatomy. Dr. Christopher Ruff.

This course is organized around a series of lectures (anatomical, functional, and clinical), small group activities, and intensive laboratory experience in dissection, accompanied by regular readings in the text. Lectures emphasize important aspects of descriptive and functional anatomy, embryology, introductory medical imaging, and clinical applications, and are given by the anatomy faculty, as well as a number of clinicians. In addition, small group activities will often be centered on clinical case histories of relevance to human anatomy. They will emphasize both team-work and reiteration of key concepts from different perspectives. Students are assessed with three written knowledge tests, as well as participation in lab, lab presentations, and team-based learning.

130.700 FAE Advanced Study and Teaching. FAE Faculty. August-October each year. Third year FAE students only.

130.707 Mammals: Diversity, Structure, and Evolution. Dr. Rose. All year; two hours per week; offered in alternate years. Prerequisite: Consent of instructor.

A survey of the recent and fossil orders of mammals, focusing on comparative skeletal and dental anatomy. Readings will be supplemented by regular examination of recent and fossil specimens and weekly discussions. Research paper required.

130.708 Biomechanics of the Skeleton. Dr. Ruff. First quarter; offered in alternate years. Prerequisite: Consent of instructor.

Basic mechanical principles and their application to analysis of skeletal form. Bone material and geometric properties, structural remodeling and adaptation to the mechanical environment.

130.710 Evolutionary Biology. Dr. Weishampel. Third quarter; offered in alternate years.

This course covers a variety of topics in evolutionary biology: biotic variation and diversity, development, natural selection, speciation theory, systematics, and macroevolution, among other subjects.

130.716 Primate Evolution. Dr. Perry. Third and fourth quarters; offered in alternate years. By arrangement with instructor.

This course surveys the mammalian order primates beginning with the origin of the group and ending with a brief survey of modern primates. Topics include the definition of primates, archaic primates, the first modern primates, oligocene primates and the origin of monkey and apes, the miocene hominoid radiation, the plio-pleistocene radiation of old world monkeys, and human ancestors.

130.800 FAE Advanced Work and Research. FAE Faculty. All year. Third year and beyond FAE students only.
130.809 FAE Research Rotation in. FAE Faculty. All year. First year FAE students only.
This course is designed to provide first year students with research experience. The project is planned between one or more faculty members and a student. A research question or topic is chosen, appropriate data are collected, analysis is done and a report is written. Results of the study are presented at a seminar to the FAE faculty and students.

130.812 Predissertation Research. FAE faculty. All year. Second year FAE students only.

OTHER COURSES AND ELECTIVE OPPORTUNITIES—Elective courses must be approved by preceptor; any member of the center may be a preceptor.

130.724 Cladistics. Dr. Weishampel. First quarter; offered in alternate years.
Prerequisite: Consent of instructor.
This course covers the practical and theoretical basis for cladistics. This approach, otherwise known as the phylogenetic systematics, includes discussions of homology, the hierarchy of evolutionary common descent, parsimony, and computer algorithms that facilitate modern cladistic studies.

130.726 Advanced Studies of Dinosaurs. Dr. Weishampel. Three hours per week. Offered upon request.
This course provides a detailed review of the evolution of Mesozoic Ornithodira including dinosaurs, stressing their comparative and functional anatomy, systematics, stratigraphy, and biogeography.

130.727 Morphometrics. Dr. DeLeon. Fourth quarter; offered in alternate years.
Prerequisite: Consent of instructor.
In this course students will learn techniques that are used to quantify and compare shapes. A combination of lectures, discussion, and projects will give the students applied knowledge of these techniques. Different types of data will be discussed, including landmark coordinate data, outlines, and surfaces. The theory underlying different analytical approaches will be described and discussed.

Course will explore the anatomy and physiology of a number of sensory modalities including hearing, balance, olfaction, and vision. The course will focus on systems where the comparative anatomy and ecology are both well-known. Special attention will be given to osteological correlates used to reconstruct behavior in the fossil record.

130.816 Independent Study in Ornithology. Systems. Dr. Weishampel. Offered upon request and by consent of instructor.

130.819 Morphological Integration and Modularity. Dr. DeLeon. Offered upon request and by consent of instructor.
Readings and discussions in this course will cover theoretical concepts of covariation structure, statistical methodology, and a broad survey of the many ways in which morphological integration and modularity have been used.

130.735 Evo-Devo. Dr. German. Offered upon request and by consent of instructor.
This seminar will consider the intersection of evolution and developmental biology. We will start with reading historical papers on heterochrony. The remainder will read the current literature to understand how developmental biology is informing and changing the way evolutionary biology is studied.

GRADUATE PROGRAM—Students are accepted for graduate work leading to the degree of Doctor of Philosophy (see Graduate Programs)
McKusick-Nathans Institute of Genetic Medicine

CORE FACULTY*

DAVID L. VALLE
Professor of Pediatrics in Genetic Medicine, Professor of Ophthalmology, Joint Appointment in Medicine, Joint Appointment in Molecular Biology and Genetics, Henry J. Knott Director of the McKusick/Nathans Center for Medical Genetics

KARIN J. BLAKEMORE
Professor of Gynecology and Obstetrics in Genetic Medicine, Professor of Oncology

JOANN N. BODURTHA
Visiting Professor of Pediatrics in Genetic Medicine, Visiting Professor of Oncology

ARAVINDA CHAKRAVARTI
Professor of Medicine in Genetic Medicine, Professor of Pediatrics, Joint Appointment in Molecular Biology and Genetics

GARRY CUTTING
Aetna U.S. Healthcare Professor of Medical Genetics in the Department of Pediatrics, Professor of Medicine

HARRY C. DIETZ
Victor A. McKusick Professor of Medicine and Genetics in the Department of Pediatrics, Associate Professor of Medicine, Assistant Professor of Neurological Surgery, Joint Appointment in Molecular Biology and Genetics, Investigator of the Howard Hughes Medical Institute

ADA HAMOSH, Professor of Pediatrics in Genetic Medicine

HAIG KAZAZIAN
Professor of Pediatrics in Genetic Medicine, Professor of Molecular Biology and Genetics

BArBARA R. MIGEON
Professor of Pediatrics in Genetic Medicine

AKHILESH PANDEY, Professor of Biological Chemistry in Genetic Medicine, Professor of Oncology, Professor of Pathology

ROGER H. REEVES, Professor of Physiology in Genetic Medicine

STEVEN SALZBERG, Professor of Medicine in Genetic Medicine

GREGG L. SEMENZA
Professor of Pediatrics in Genetic Medicine, Professor of Radiation Oncology and Molecular Radiation Sciences, Professor of Oncology, Professor of Medicine, Professor of Biological Chemistry

KIRBY D. SMITH, Professor of Pediatrics in Genetic Medicine

DAN ARKING
Associate Professor of Medicine in Genetic Medicine

DIMITRIOS AVRAMOPOULOS
Associate Professor of Psychiatry in Genetic Medicine

VIRGINIA L. CORSON
Associate Professor of Gynecology and Obstetrics in Genetic Medicine, Associate Professor of Pediatrics

MERAL GUNAY-AYGUN, Associate Professor of Pediatrics in Genetic Medicine

JULIE ELIZABETH HOOVER-FONG, Associate Professor of Pediatrics in Genetic Medicine

ANDREW S. MCCALLION
Associate Professor of Molecular and Comparative Pathobiology in Genetic Medicine, Research Associate in Medicine

MARGARET B. PENNO, Associate Professor of Medicine in Genetic Medicine

ALAN F. SCOTT
Associate Professor of Medicine in Genetic Medicine, Associate Professor of Oncology

FORREST SPENCER
Associate Professor of Medicine in Genetic Medicine, Joint Appointment in Molecular Biology and Genetics

MICHAEL A. BEER
Assistant Professor of Biomedical Engineering in Genetic Medicine, Joint Appointment in Molecular Biology and Genetics

LILIANA FLOREA
Assistant Professor of Medicine in Genetic Medicine

GUSTAVO MAEGAWA
Assistant Professor of Pediatrics in Genetic Medicine

MIHAELA PERTEA, Assistant Professor of Medicine in Genetic Medicine

HILARY VERNON, Assistant Professor of Pediatrics in Genetic Medicine

TAO WANG, Assistant Professor of Pediatrics in Genetic Medicine

JOHN L. GOODIER, Instructor in Pediatrics in Genetic Medicine

*D core faculty hold a primary appointment in a School of Medicine department and hold full membership in the Institute.

Constituted in 1999, the McKusick-Nathans Institute of Genetic Medicine (IGM) is the focal point for patient care; basic, translational and clinical research; and education in human genetics and genomics at Johns Hopkins. The IGM is a national and international leader in genetic medicine - the integration of our rapidly expanding knowledge of genetics and genomics into the practice of medicine. The goal of genetic medicine is to tailor prevention, diagnosis and treatment in a manner appropriate for each individual patient. In pursuit of the goal of individualized medicine, the IGM catalyzes interactions between physicians and scientists with diverse and complementary expertise to promote the application of genetic discoveries to human disease and genetics education to the public. Each IGM faculty member has a co-primary appointment in another department in the School of
Medicine and serves to introduce and integrate genetics throughout the School and the University. Moreover, our faculty members have considerable strengths and expertise in the areas of genomics, developmental genetics, biochemical genetics, population genetics, computational biology and the genetics of complex disease. We aim to maintain Hopkins Medicine’s leadership role in the medicine of the 21st century, a medicine that increasingly individualized and focused on prevention.

RESEARCH INTERESTS

Research interests represented in the Institute are as follows:

**DR. ARMANIOS**
- Syndromes of telomere shortening which capture both the degenerative and cancer-prone phenotypes of aging.

**DR. ARKING**
- Genetics of complex disease; cardiovascular disease and sudden cardiac death; development and implementation of novel genotyping technologies.

**DR. AVRAMOPOULOS**
- Complex traits; neuropsychiatric disorders including schizophrenia and Alzheimer’s disease; linkage and association studies

**DR. BEER**
- Combinatorial gene regulation; computational molecular biology and genomics; Bayesian networks and machine learning.

**MS. BERGNER**
- Support and education for patients and families living with neurofibromatosis and schwannomatosis particularly on assessing healthcare delivery models for individuals and families with chronic disease.

**DR. BLAKEMORE**
- Prenatal diagnosis and genetic abnormalities of the fetus; intra partum maternal and fetal physiology; fetal therapy; in utero bone marrow transplantation red cell alloimmunization and platelet alloimmunization.

**MS. BOEHM**
- DNA-based diagnostics of genetic disorders; identification of genes involved in common disorders; high throughput genotyping services.

**DR. CHAKRAVARTI**
- Molecular basis of complex disease; genomics; population genetics; computational biology.

**MS. CORSON**
- In utero stem cell therapy; prenatal diagnosis of congenital anomalies.

**DR. CUTTING**
- Genetic variants that contribute to chronic lung disease; cystic fibrosis and CF modifiers.

**DR. DIETZ**
- Pathogenesis of Marfan syndrome; molecular basis of inherited disorders of vascular development and homeostasis; genetics of aging; nonsense mediated mRNA decay.

**DR. FLOREA**
- Development of algorithms and tools for cDNA and genomic sequence alignment; comparative and evolutionary genomics; gene annotation; alternative splicing and its regulation; miRNA genomics

**DR. GUNAY-AYGUN**
- Inborn errors of metabolism; ciliopathies; gray platelet syndrome.

**DR. HAMOSH**
- Genotype-phenotype correlations and modifier genes in cystic fibrosis; nonketotic hyperglycinemia; clinical implications of the human genome project.

**DR. HOOVER-FONG**
- Clinical genetics; fatty acid abnormalities in cystic fibrosis; skeletal dysplasia; twin and sibling study of modifier genes in CF.

**DR. KAZAZIAN**
- Biology of LINE-1 retrotransposons in humans and mice; Zebrafish models for understanding genetic factors in pancreatic cancer; development of the pancreas.

**DR. LEACH**
- Epithelial progenitor cells in developing, regenerating, and neoplastic pancreas, using both mouse and zebrafish model systems.

**DR. MAEGAWA**
- Lysosomal storage diseases.

**DR. MCCALLION**
- Applying functional genetics to human development and disease; transcriptional regulation in development and disease; genetics of neurological, neuropsychiatric, and neural crest disorders; genetic basis of congenital malformations.

**DR. MIGEON**
- Molecular basis of X chromosome inactivation; genomic imprinting in human cells; relevance to human disease; sex determination.

**DR. PANDEY**
- Signal transduction; proteomics; phosphorylation.

**DR. PARSONS**
- Using the zebrafish as a model system to study the endocrine pancreas, focusing on regulation of cellular differentiation and regeneration of the insulin producing beta cells.

**DR. PERTEA**
- Computational gene finding; splice site prediction; sequence motifs finding.

**DR. REEVES**
- Mechanisms of gene action in Down syndrome.

**DR. SCOTT**
- Genetic/genomic technology; SNP association studies for complex traits; genome annotation.

**DR. SALZBERG**
- Work emphasizes analysis of DNA and RNA sequenced with next-generation technology.

**DR. SEMENZA**
- Molecular mechanisms of oxygen homeostasis; gene and stem cell therapy for ischemic cardiovascular disease; role of HIF-1 in cancer; protection of the heart against ischemia-reperfusion injury.

**DR. SMITH**
- Genetic and pharmacologic modulation of inherited disease; X-linked adrenoleukodystrophy; genetics and treatment.
DR. SPENCER
DNA replication/repair and sister chromatid cohesion; genetic variation and genome evolution; synthetic lethal interaction analysis; genetic interaction map of yeast.

DR. STEINBERG
DNA diagnosis.

DR. VALLE
Clinical, biochemical and molecular basis of disease; genetic factors in neuropsychiatric disorders; inborn errors of metabolism; education; medical sequencing; genome sequencing and comparative genomics.

DR. VERNON
Molecular and metabolic pathogenesis of organic acidemias; molecular and metabolic pathogenesis of Barth Syndrome; clinical laboratory biochemical diagnosis.

DR. WANG
Molecular basis of X linked mental retardation and human cognitive development; pathogenesis and therapy of inherited metabolic diseases with CNS involvement.

GRADUATE PROGRAM—Students are accepted for graduate work leading to the degree of Doctor of Philosophy (see Graduate Programs in Human Genetics)

RESIDENCY PROGRAM—The Medical Genetics Residency Program is a two year program designed to train physicians to provide comprehensive diagnostic, management and counseling services for inherited diseases and the genetic factors pertinent to all diseases. The training experience also emphasizes the role of research in Medical Genetics so that trainees can pursue investigator-initiated research upon completion of the program.
Gynecology and Obstetrics

HAROLD EDWARD FOX  
Doctor Dorothy Edwards Professor of Gynecology and Obstetrics, Director of the Department of Gynecology and Obstetrics

JEAN R. ANDERSON  
Professor of Gynecology and Obstetrics, Joint Appointment in Medicine

JESSICA L. BIENSTOCK, Professor

KARIN J. BLAKEMORE  
Professor of Gynecology and Obstetrics in Genetic Medicine, Professor of Oncology

DAVID S. ETTINGER  
Alex Grass Professor of Oncology, Professor of Gynecology and Obstetrics, Professor of Medicine, Professor of Otolaryngology-Head and Neck Surgery, Professor of Radiation Oncology and Molecular Radiation Sciences

JOHN D. GEARHART, Adjunct Professor

VICTORIA L. HANDA, Professor

GEORGE R. HUGGINS, Professor Emeritus

HOWARD W. JONES, JR., Professor Emeritus

ROBERT J. KURMAN  
Richard W. Telinde Distinguished Professor of Gynecologic Pathology in the Department of Gynecology and Obstetrics, Professor of Oncology, Professor of Pathology

RICHARD B. S. RODEN  
Professor of Pathology, Professor of Gynecology and Obstetrics, Professor of Oncology

BRIGITTE MARIA RONNETT  
Professor of Pathology, Professor of Gynecology and Obstetrics

DOROTHY L. ROSENTHAL  
Professor of Pathology, Professor of Gynecology and Obstetrics

ANDREW J. SATIN, Professor

IE-MING SHIH  
Professor of Pathology, Professor of Gynecology and Obstetrics, Professor of Oncology

EDWARD E. WALLACH  
J. Donald Woodruff Professor of Gynecology and Obstetrics

FRANK R. WITTER, Professor

TZYY-CHOU WU  
Professor of Pathology, Professor of Gynecology and Obstetrics, Professor of Oncology

HOWARD A. ZACUR  
Theodore and Ingrid Baramki Professor of Reproductive Endocrinology in the Department of Gynecology and Obstetrics

JONATHAN M. ZENILMAN  
Professor of Medicine, Professor of Dermatology, Professor of Gynecology and Obstetrics

DEBORAH K. ARMSTRONG  
Associate Professor of Oncology, Associate Professor of Gynecology and Obstetrics

THEODORE A. BARAMKI  
Associate Professor Emeritus of Gynecology and Obstetrics, Joint Appointment Emeritus in Pediatrics

LINZHAO CHENG  
Associate Professor of Medicine, Associate Professor of Gynecology and Obstetrics, Associate Professor of Oncology

VIRGINIA L. CORSON  
Associate Professor of Gynecology and Obstetrics in Genetic Medicine, Associate Professor of Pediatrics

MARIAN D. DAMEWOOD, Associate Professor

JODI ANNE FLAWS, Adjunct Associate Professor

JAIRO E. GARCIA, Associate Professor

RENE R. GENADRY, Associate Professor

ERNEST MARSHALL GRAHAM, Associate Professor

EDITH DIAMENT GUREWITSCH  
Associate Professor of Gynecology and Obstetrics, Associate Professor of Biomedical Engineering

ANDREW PETER HARRIS  
Associate Professor of Anesthesiology and Critical Care Medicine (on leave of absence), Associate Professor of Gynecology and Obstetrics (on leave of absence)

CHIEN-FU HUNG  
Associate Professor of Pathology, Associate Professor of Gynecology and Obstetrics, Associate Professor of Oncology

WILLIAM G. KEARNS, Adjunct Associate Professor

SUHEIL JAMIL MUASHER, Associate Professor

J. COURTLAND ROBINSON, Associate Professor Emeritus

ANNE M. ROMPALO  
Professor of Medicine, Associate Professor of Gynecology and Obstetrics

RICHARD DAVID SCHULICK  
John L. Cameron Professor of Alimentary Tract Diseases in the Department of Surgery, Associate Professor of Biomedical Engineering, Associate Professor of Gynecology and Obstetrics, Professor of Oncology

DAVID B. SCHWARTZ, Visiting Associate Professor

LILLIE SHOCKNEY  
Associate Professor of Surgery, Associate Professor of Gynecology and Obstetrics, University Distinguished Service Associate Professor of Breast Cancer

SAMUEL SMITH, Associate Professor

GAIL STETTEN, Associate Professor Emerita

CORNELIA LIU TRIMBLE  
Associate Professor of Gynecology and Obstetrics, Associate Professor of Oncology, Associate Professor of Pathology

EDWARD LLOYD TRIMBLE  
Associate Professor of Gynecology and Obstetrics, Associate Professor of Oncology

RUSSELL VANG  
Associate Professor of Pathology, Associate Professor of Gynecology and Obstetrics
REQUIRED WORK

Gynecology and Obstetrics—Second, Third, or Fourth Year

Clinical Clerkship in Obstetrics and Gynecology. Dr. Hueppchen and staff of the Department of Gynecology and Obstetrics, 6 weeks. Course may be taken at any time from the fourth quarter of the second year through the third quarter of the fourth year. Students are encouraged to complete this clerkship during the second or third year. Clinical experience in obstetrics will include antepartum, labor and delivery, as well as postoperative postpartum care. Clinical experience in gynecology will include care of inpatients and outpatients.

ELECTIVE OPPORTUNITIES—Curricular Consultant: Dr. Hueppchen. Elective courses must be approved by the preceptor; any member of the department may act as preceptor.

Gynecology and Obstetrics E

E 1. Reproductive Endocrinology. Dr. Zacur. Four quarters. Open to fourth year students. In this clinical experience the student will function as a house officer at the first year level on the reproductive endocrinology service. The student will be responsible for providing inpatient and outpatient care to the patients who present to the respective services for care. A research component is encouraged.

E 2. Pathology. Drs. Kurman and Ronnett. Four quarters. Open to second, third, and fourth year students. Consideration is given to the gross and histologic pathology of lesions of the reproductive tract, with opportunity for special investigative work in areas such as papilloma virus, tumors of the female genital tract and gestational trophoblastic disease. Admission is by permission.

E 3. Advanced Work and Research. By arrangement with the staff. Research interests represented in the Department of Gynecology and Obstetrics are as follows: DR. AINA Maternal and fetal medicine. DR. ARGANI Maternal and fetal medicine. DR. ANDERSON Obstetrics/Gynecology infectious diseases; HIV. DR. BIENSTOCK Maternal and fetal medicine.
E 4. Subinternship in Gynecology and Obstetrics. Dr. Hueppchen. Specific times during the year; 3 or 4 weeks.
Prerequisite: Core Clerkship in Ob/Gyn.
This clinical experience consists of a subinternship in obstetrics and gynecology. The student will function as a house officer at the first year level. In this capacity, the student will be responsible for the provision of inpatient and outpatient care to the patients who present to the respective service for care.

E 5. Subinternship in Gynecologic Oncology. Dr. Diaz-Montes. Specific times during the year; 3 or 4 weeks.
Prerequisite: Completion of the Ob/Gyn Core Clerkship and an interview.
The student will function as a house officer at the first year level on the gynecologic oncology service. The student will be responsible for providing inpatient and outpatient care to the patients who present to the service for care.

E 6. Elective in HIV Infection in Women. Dr. Anderson. Specific times during the year; 3 or 4 weeks.
Prerequisite: Completion of Ob/Gyn Core Clerkship and interview.
Students will participate in the obstetric and gynecologic care of HIV-positive women. A research component is encouraged.

E 7. Subinternship in Obstetric/Maternal Fetal Medicine. Dr. Hueppchen and staff. Specific times during the year; 3 or 4 weeks.
Prerequisite: Completion of Ob/Gyn Core Clerkship.
This clinical experience consists of a subinternship in obstetrics. The student will function as a house officer at the first year level and will be responsible for the provision of inpatient and outpatient care to the patients who present to the respective services for care. A portion of each week can be spent in prenatal genetics, obstetrical sonography, and fetal assessment. This subinternship can be combined with the Gynecology Subinternship.

E 8. Subinternship in Gynecology. Dr. Anderson and staff. Specific times during the year; 3 or 4 weeks.
Prerequisite: Completion of Ob/Gyn Core Clerkship and interview.
This clinical experience consists of a subinternship in gynecology. The student will function as a house officer at the first year level and will be responsible for the provision of inpatient and outpatient care to the patients who present to the respective services for care. This subinternship can be combined with the Obstetrics Subinternship.

E 9. Subinternship in Obstetrics and Gynecology at Bayview Medical Center. Dr. Chou and staff. 3 or 4 weeks.
Prerequisite: Completion of Ob/Gyn Core Clerkship.
This clinical experience consists of a subinternship in General Obstetrics and Gynecology. The student will function as an intern with responsibility for both inpatient and outpatient care. The emphasis will be on management of common Ob/Gyn problems.
Health Sciences Informatics

NANCY K. RODERER
Professor of Health Sciences Informatics,
Associate Professor of Medicine, Director of the
Division of Health Sciences Informatics
LEE ALAN FLEISHER, Adjunct Professor
NINA W. MATHESON, Professor Emerita
WILLIAM A. YASNOFF, Adjunct Professor
HAROLD P. LEHMANN
Associate Professor of Health Sciences Informatics, Associate Professor of Pediatrics
ALLEN YIYEN TIEN, Adjunct Associate Professor
KATHERINE LIPSCOMB BALL, Visiting Assistant Professor
ALAN COLTRI, Assistant Professor
NKOSSI C. DAMBITA, Adjunct Assistant Professor
DEHUA HU, Visiting Assistant Professor
JOSEPH S. LOMBARDO, Assistant Professor
STEVEN F. MANDELL, Assistant Professor
EDUARDO ORTIZ, Visiting Assistant Professor
STEPHANIE L. REEL, Assistant Professor
P. ZOE STAVRI, Visiting Assistant Professor
EDWARD BENTLEY BUNKER, Research Associate
SCOTT FINLEY, Research Associate
GEORGE ROBERT KIM
Research Associate in Pediatrics, Research Associate in Health Sciences Informatics
DONGMING ZHANG, Research Associate
ROBERT THOMAS KAMBIC, Visiting Scientist

FACULTY ASSOCIATED WITH THE DIVISION OF HEALTH SCIENCES INFORMATICS HOLDING A PRIMARY APPOINTMENT IN:

The School of Medicine:
MICHAEL V. BOLAND
Assistant Professor of Ophthalmology
G. STEVEN BOVA
Assistant Professor of Pathology
JOHN ENG
Associate Professor of Radiology and Radiological Science
JOSEPH FINKEKLSTEIN
Associate Professor of Medicine
HARRY R. GOLDBERG
Assistant Professor of Biomedical Engineering
PETER SCHUYLER GREENE
Associate Professor of Cardiac Surgery
AYSE P. GURSES
Assistant Professor of Anesthesiology and Critical Care Medicine
ELIZABETH ANNE HUNT
Assistant Professor of Anesthesiology and Critical Care Medicine
CHRISTOPH ULRICH LEHMANN
Associate Professor of Pediatrics
ROBERT E. MILLER
Associate Professor of Pathology
DAVID EDWARD NEWMAN-TOKER
Associate Professor of Neurology
MICHAEL F. OCHS
Associate Professor of Oncology
GIOVANNI PARMIGIANI
Adjunct Professor of Oncology
JONATHAN PEVSNER
Associate Professor of Psychiatry
JAMES PHILBIN
Research Associate in Radiology
PETER J. PRONOVOST
Professor of Anesthesiology and Critical Care Medicine
STUART CAMPBELL RAY
Professor of Medicine
KAREN A. ROBINSON
Assistant Professor of Medicine
DAVID R. TIEMANN
Associate Professor of Medicine
RAIMOND L. WINSLOW
Raj and Neera Singh Professor of Biomedical Engineering

The Bloomberg School of Public Health
CARLOS CASTILLO-SALGADO
Professor of Epidemiology
MICHAELE CHRISTOPHER GIBBONS
Assistant Professor of Population, Family, and Reproductive Health
ANNA O. ORLOVA
Associate in Health Policy and Management
FERNANDO JAVIER PINEDA
Associate Professor of Molecular Microbiology & Immunology
DONALD M. STEINWACHS
Professor of Health Policy and Management
JONATHAN P. WEINER
Professor of Health Policy and Management
WILLIAM M. WEISS
Assistant Scientist in International Health

The School of Nursing:
PATRICIA A. ABBOTT
Associate Professor of Nursing
MARION J. BALL
Adjunct Professor of Nursing
CHERYL R. DENNISON
Associate Professor of Nursing
BARBARA L. VAN DE CASTLE
Instructor in Nursing

This interdisciplinary academic division brings together a wide range of resources and expertise in biomedical information management, communication and technology. Through the educational, research and service activities of its components, the Division of Health Sciences Informatics seeks to advance the development and use of electronic and other information resources for decision-making, research, health care delivery and individual...
academic growth and to increase the awareness of these resources among the Johns Hopkins medical community.

Basic research and development involving the application of informatics to a variety of medical and basic science disciplines is also being carried out by individual members of the division, and the results of these efforts are being applied to research and educational initiatives throughout the Johns Hopkins Medical Institutions. Current research areas include: medical informatics, genome informatics, information management, consumer health informatics, computer based documentation systems for point of care, informatics and evidence based medicine, biomedical editing and communication, and electronic publishing.

The service component of the division is the Welch Medical Library. In addition to providing access to the published literature (printed and electronic) and numerous scientific databases, the Welch Library offers educational and outreach programs to assist clinical and basic science faculty, staff and students in using electronic information resources to access critical scientific information and to analyze and communicate their research findings.

Research Activities

Research interests represented in the Division of Health Sciences Informatics are as follows:

DR. FLEISHER
Technology assessment.

DR. LEHMANN
Evidence-based medicine; decision modeling.

DR. MCCLELLAN
Medical and technical writing.

MS. OLIVER
Patient information; information professional roles; public health information need and services.

MS. RODERER
Information use, systems, management, and organization.

MR. ZHANG
UMLS applications in institutional repositories.


This course provides a framework for understanding the role of data, information, and knowledge in biomedicine and related domains. Fundamentals such as data structures, standards, and vocabularies, will be applied to the effects decisions in these areas have on the potential users of information and knowledge. Specific domains will be used to exemplify the underlying theoretical principles and issues and may include several of the following, depending upon the interests of the class: medicine, nursing, public health, consumer health, or biomedicine.

600.702 Health Science Informatics Knowledge Engineering and Decision Support. Dr. Lehm-ann. Third and fourth quarters.

This course provides a framework for understanding decision support in the workflow of the health sciences. The focus is on the types of support needed by different decision makers, and the features associated with those types of support. A variety of decision support algorithms is discussed, examining advantages and disadvantages of each, with a strong emphasis on decision analysis as the basic science of decision making. Students are expected to demonstrate facility with one algorithm in particular through the creation of a working prototype, and to articulate the evidence for efficacy and effectiveness of various types of decision support in health sciences and practice, in general.

600.705 Health Sciences Informatics Security, Confidentiality, and Privacy. Dr. Miller. Third quarter.

Security of health information is a central component of any information system in the health sciences. This course will address the security technologies, the confidentiality policies, and the privacy responsibilities in providing clinical care (e.g., HIPAA issues) and pursuing research (e.g., human subjects research).

600.711 Health Informatics for Disease Prevention and Management. Dr. Finkelstein. Third quarter.

Focusing on health information technology in ambulatory care, this course provides students with overview and theoretical underpinnings of health information systems supporting patient-centered primary care, health promotion, computer-guided disease management and prevention, telemonitoring and eHealth. Sample health information systems include ambulatory Electronic Medical Records, Disease Registries, Patient Portals, Provider Portals, secure patient-provider communication systems, home telemonitoring, teledicine applications, interactive health education and counseling, computerized tools for shared decision making, team-based care management tools, decision support for quality assurance, and clinical guidelines implementation, system interoperability.


This course will provide students the knowledge to match algorithms to data types and data types to clinical needs and uses, both in current use and in research. The course will address data types used in EMR, Pathology, Radiology, Physician Order Entry, among others, and will include a broad range of data: discrete controlled vocabularies, imaging, natural language, to name a few.

600.807 Informationist Seminar: Bringing Evidence to Practice. Ms. Oliver. Fourth quarter.

This course is designed for professionals seeking to develop core competencies needed for an informationist role in the fields of clinical medicine and public health. Students will analyze and present evidence to support decision-making in
case scenarios drawn from clinical or public health practice. A combination of lecture and laboratory exercises will teach the skills involved in finding, analyzing, and delivering evidence for clinical and public health decision-making: identifying a question embedded in a case presentation; developing effective search strategies for relevant evidence to address the question; evaluating and synthesizing the identified evidence; and effectively presenting that evidence. Evaluations will be based on participation in class, exercise completion, and final oral and written presentations of assigned cases.

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History of Medicine

RANDALL M. PACKARD
William H. Welch Professor of History of Medicine, Director of the Department of the History of Medicine

GERT H. BRIEGER
Distinguished Service Professor Emeritus in the Department of History of Medicine

ELIZABETH FEE, FEET
Professor

MARY E. FISSELL, Professor

ROBERT H. KARGON, Willis K. Shepard Professor of History of Science*

SHARON E. KINGSLAND, Professor*

STUART W. LESLIE, Professor*

GIANNA POMATA, Professor

LAWRENCE M. PRINCIPE, Professor*

DANIEL P. TODES, Professor

ARTHUR M. SILVERSTEIN
Odd Fellows Professor Emeritus of Ophthalmic Immunology in the Department of Ophthalmology

* Faculty, School of Arts and Sciences.

The department is organized to give instruction and opportunities for research in the history of medicine and kindred sciences, including the history of public health.

ELECTIVE OPPORTUNITIES—Curricular Consultant: Dr. Comfort.

History of Medicine

Independent study program on a topic to be agreed upon with appropriate faculty member.

Each year a number of electives on varying topics is offered.

Courses run thirteen weeks.

AS 140.601 Methods, Approaches, and Perspectives. Dr. Hanson.

AS 140.695 Topics in Early Modern Medicine. Dr. Fissell. Fall.

This course examines themes in the social and cultural history of early-modern medicine, includ-

150.701 History of Medicine I: Antiquity to the Scientific Revolution. Dr. Fissell. Fall.

This course will review the social, intellectual, and cultural history of Western medicine from ancient times to the seventeenth century, addressing in particular the following issues: a) the social definition of the physician’s role and the relationship between healers and patients as regulated by social custom and by law; b) cultural perceptions of the body and definitions of health and illness; c) the intellectual exchange between medicine and other disciplines, such as natural philosophy and natural history; and d) the varying relationship between medicine and religious belief.

150.702 History of Medicine II: Enlightenment to the Present. Dr. Todes. Spring.

This course will review the social, intellectual, and cultural history of Western medicine from the 18th century to the present. Emphasis is on Western medical as the result of Western political-economic and institutional structures, cultural values, and the rise and complexities of “scientific medicine”.

150.706 History of Public Health in China. Dr. Hanson.

The modern term for public health “weisheng” in China has changed in the past two centuries from the “safe-guarding life” practices of individuals to the state’s responsibility for the health of its citizens. This course will examine the history of public health from the earliest evidence of a state medical bureaucracy in Chinese antiquity to the modern problems of STDs, HIV/AIDS, and SARS.

150.711 History of Disease and Disease Control: Comparative Perspectives. Drs. Mooney and Packard.

This course examines the long history of disease and disease control from the 14th century plague to the 20th century campaign for smallpox eradication, drawing on historical materials from Europe, Asia, Africa, and Latin American. Emphasis is on the ways in which political, social, and economic institutions and practices influence the history of disease, its understanding, and its control.

150.713 Oral History Theory and Method. Dr. Comfort.

Interviewing is a powerful technique that should be in the toolkit of almost any historian working the middle of late twentieth century. In this seminar, you will be introduced to the range of techniques and uses for interviewing, some examples of effective historical writing that uses interviewing, and some of the theory behind oral history. A key theme course-long will be the interpretation of oral statements: what, if anything, can the historian take at face value, and how can you tell? The centerpiece of the course is each student’s planning, carrying out, transcribing, and interpreting an oral history interview. In addition, there will be weekly reading (tapering off toward the end of the semester) and in-class discussion.

150.714 History of Twentieth Century Biomedicine. Drs. Comfort and Todes.
This seminar-style course is intended for students in the basic sciences and in the history of science and medicine. We will study classic experiments in twentieth-century physiology, immunology, genetics, and neuroscience using both original research papers and historians’ accounts. Themes under discussion will include theory and experiment, styles of research, ethics of experimental work and scientific publishing, and the impact of social interactions on laboratory work. This course will appeal to any science students interested in understanding the origins of biomedicine and in exploring what makes biomedicine unique in the history of science and medicine.

150.715 History of Health and Development in Africa. Dr. Packard.

This course will examine the impact of colonial and post-colonial development on patterns of sickness, health, and health care in Africa. It will also focus on African responses to changing patterns of health care and disease. Topics include: patterns of disease and therapeutic responses in pre-colonial Africa; colonial epidemics; industrialization, urbanization, and disease; agrarian transformations, malnutrition, and the political economy of famine; sexuality, colonial control, and disease; Western medicine and the social construction of African identities; African reproductive health and family planning; recession, debt, and Africa’s health care crises; histories of AIDS in Africa.

150.716 History of Chinese Medicine. Dr. Hanson.

How did the Chinese conceptualize the human body, health and disease over the past 2,000 years? What were the range of responses from religious to therapeutic to disease in China? What are Chinese acupuncture, moxibustion, and herbal medicine? Who practiced medicine in China; what did they practice; and how do we know what we know about them? Students will engage these and other questions by discussing the latest historical and anthropological history of medicine in China. Students will be expected to attend the lectures of AS140.346, read relevant primary sources in Chinese, and write a research paper.

150.718 Analogy and Metaphor in Science and Medicine. Dr. Todes.

How do metaphors in science, technology, and medicine originate and how do they influence human thought? The course explores such examples as William Harvey’s analogy between the heart and a pump, Charles Darwin’s concepts of the struggle for existence and natural selection, military metaphors in the history of public health, the use of metaphors of production in medicine, and the comparison of the brain to a computer.

150.813 Medicine and Science in History: An Introduction to Historiography. Dr. Hanson.

Discussion of historiographical developments in, and various approaches to History of Medicine based on readings of important secondary works.

150.801 Research in the History of Medicine.

For doctoral candidates and other advanced students engaged in original research under faculty supervision.

150.802 Readings in the History of Medicine.

Available as an elective to both graduate and medical students.

Other Course offerings:

150.812 Introduction to the History of Public Health. Dr. Mooney. Fall.

SPH221.605 History of International Health and Development. Dr. Packard. Spring.

An examination of the history of western efforts to promote health and nutrition in the “developing world” from the beginnings of tropical medicine to recent efforts at disease eradication. The course will explore the various economic and political interests, as well as the cultural assumptions, that have shaped the development of ideas and practices associated with international health in “developing” countries. Topics include: history of international health organizations, strategies, and policies.

GRADUATE PROGRAM—Students are accepted for graduate work leading to the degrees of Master of Arts and Doctor of Philosophy (see Graduate Programs).
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<tr>
<td>MYRON L. WEISFELDT</td>
<td>William Osler Professor of Medicine, Director of the Department of Medicine</td>
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<tr>
<td>DARRELL R. ABERNETHY</td>
<td>Professor of Medicine, Professor of Pharmacology and Molecular Sciences</td>
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<td>Professor</td>
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<td>N. FRANKLIN ADKINSON, JR.</td>
<td>Professor</td>
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<tr>
<td>RICHARD FREDERICK AMBinder</td>
<td>James B. Murphy Professor of Oncology, Professor of Medicine, Professor of Pathology, Professor of Pharmacology and Molecular Sciences</td>
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<tr>
<td>REUBIN ANDRES</td>
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<td>THEODORE M. BAYLESS</td>
<td>Sherlock Hibbs Professor of Inflammatory Bowel Disease in the Department of Medicine</td>
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<td>STEPHEN B. BAYLIN</td>
<td>Virginia and Daniel K. Ludwig Professor Research in the Department of Oncology, Professor of Medicine</td>
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Janssen/Strauss-Halbreich Professor Emeritus of Digestive and Motility Disorders in the Department of Medicine, Joint Appointment Emeritus in Psychiatry

ALAN RICHARD SCHWARTZ, Professor
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<tr>
<th>Name</th>
<th>Title and Affiliations</th>
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<td>Professor of Medicine, Professor of Oncology</td>
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<td>C. Michael Armstrong Professor of Pediatrics, Professor of Biological Chemistry, Professor of Medicine, Professor of Oncology, Professor of Radiation Oncology and Molecular Radiation Sciences</td>
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<td>Wellcome Professor of Clinical Pharmacology in the Department of Medicine, Professor of Pharmacology and Molecular Sciences</td>
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<td>Professor of Medicine, Joint Appointment in Molecular Biology and Genetics, Professor of Pharmacology and Molecular Sciences, Investigator of the Howard Hughes Medical Institute</td>
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<td>MATTHIAS STUBER</td>
<td>Professor of Radiology (on leave of absence), Professor of Medicine (on leave of absence)</td>
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Victor A. McKusick Professor of Medicine and Genetics in the Department of Pediatrics, Joint Appointment in Molecular Biology and Genetics, Associate Professor of Medicine, Assistant Professor of Neurological Surgery, Investigator of the Howard Hughes Medical Institute
BURTON C. D’LUGOFF, Associate Professor Emeritus
THOMAS WALTER DONNER, Visiting Associate Professor
SUSAN ELIZABETH DORMAN, Associate Professor
JOSEPHINE MARY EGAN, Associate Professor
REBECCA D. ELON, Associate Professor
ERIC ANDREW ENGELS, Associate Professor
DAVID J. FELLER-KOPMAN, Associate Professor
ROBERT P. FERGUSON, Associate Professor
HARRY E. FESSLER, Associate Professor
JOHN HOWARD FETTING, III
Associate Professor of Oncology, Associate Professor of Medicine, Assistant Professor of Psychiatry
DEREK MICHAEL FINE, Associate Professor
MICHAEL I. FINGERHOOD, Associate Professor
TOREN FINKEL, Visiting Associate Professor
JOSEPH FINKELSTEIN
Associate Professor of Medicine, Joint Appointment in Health Sciences Informatics
JEROME L. FLEG, Adjunct Associate Professor
KEVIN ROBERT FONTAINE, Associate Professor
CLAIR ANN FRANCOMANO
Associate Professor of Medicine, Assistant Professor of Pediatrics
KELLY ANNE GEBO, Associate Professor
ALLAN CHARLES GELBER, Associate Professor
KHALIL GEORGES GHANEM, Associate Professor
EBEID REDA GIRGIS, Associate Professor
F. MICHAEL GLOTH, III, Associate Professor
DAVID B. K. GOLDEN, Associate Professor
SHERITA HILL GOLDEN, Associate Professor
JONATHAN E. GOLUB, Associate Professor
SHERDON H. GOTTLIEB, Associate Professor
JEREMY DAVID GRADON, Associate Professor
CONSTANCE A. GRIFFIN
Professor of Pathology, Associate Professor of Medicine, Professor of Oncology
LOUISE BARNETT GROCHOW
Associate Professor of Oncology, Associate Professor of Medicine
RICHARD J. GROSS, Associate Professor
SANDRA E. GUGGINO
Associate Professor of Medicine, Associate Professor of Physiology
AMITA GUPTA, Associate Professor
AHMET GURAKAR, Visiting Associate Professor
PAUL A. GURBEL, Associate Professor
W. DANIEL HALE, Adjunct Associate Professor
NADIA NATHALIE HANSEL
Associate Professor of Medicine, Professor of Medicine (from 10/01/2011), Assistant Professor of Medicine (to 09/30/2011)
H. FRANKLIN HERLONG, Associate Professor
CHARLES STEVEN HESDORFFER, Associate Professor
FELICIA HILL-BRIGGS
Associate Professor of Medicine, Associate Professor of Physical Medicine and Rehabilitation
MAUREEN RENEE HORTON, Associate Professor
TRACEY LYNN CHUNN, Instructor
JOHN MICHAEL CMAR, Instructor
JESSICA LEIGH COLBURN
  Instructor in Medicine (from 08/01/2011)
ROBERT L. CONNORS, Instructor
BARBARA G. COOK, Instructor
DAMIAN D. CRAWFORD, Instructor
NAOMI PAULA CUTLER, Instructor
HOLLY RYERSON DAHLMAN, Instructor
MAHENDRA DAMARLA, Instructor
PAUL DASH
  Instructor in Medicine, Instructor in Neurology
KISHA N. DAVIS, Instructor
MELISSA L. DELONG, Instructor
PANKAJ R. DESAI, Instructor
LEDYS JULIA DIMARSICO, Instructor
SUSAN J. DIRKS, Instructor
SHARON DLHOSH, Instructor
DEVON A. DOBROSIELSKI, Instructor
DEEPTI DRONAMRAJU, Instructor
JONATHAN DUBOIS DUBIN, Instructor
GWEN L. DUBOIS, Instructor
NORMAN M. DY, Instructor
MICHELLE NUTTALL EAKIN
  Instructor in Medicine (from 09/01/2011),
  Research Associate in Medicine (to 08/31/2011)
DEENA R. EBRIGHT, Instructor
AMAKA EDEANI
  Instructor in Medicine (from 10/01/2011)
ROLAND C. EINHORN, Instructor
DAVID LEE EISENBERG, Instructor
MYRNA T. ESTRUCH, Instructor Emerita
CHETE MARGARET EZE-NLIAW, Instructor
EDDY PAN, Instructor
ROBYN NEBLETT FANFAIR, Instructor
SCOTT A. FEESER, Instructor
DANIEL FEIRTAG, Instructor
NAOMI RUTH FELDMAN, Instructor
APRIL S. FITZGERALD, Instructor
JELLES N. FONDA, Instructor
PAUL N. FOSTER, Instructor
PHILLIP J. FRANKLIN, Instructor
HOWARD STEPHEN FREELAND, Instructor
NORMAN R. FREEMAN, JR., Instructor Emeritus
NANCY J. FRIEDLEY, Instructor
DHRUV ARVIND GADHIA, Instructor
LI GAO, Instructor
EVELYN WACHEKE GATHECHA, Instructor
ELIAS CAMILLE GHANDOUR, Instructor
KENNETH L. GLICK, Instructor
MICHAEL H. GOODMAN, Instructor
DENISE A. GONZALES, Instructor
EDUARDO J. GONZALEZ, Instructor
HELEN MINIFIE GORDON, Instructor
GENE W. GREEN, Instructor
DMITRY N. GRIGORYEV, Instructor
KENNETH S. GUMMERSOHN, Instructor
VENKAT PRADEEP GUNDAREDDY, Instructor
TAMMY DENISE HADLEY, Instructor
LUBA HAFIKIN, Instructor
CHARLES A. HAILE, Instructor
TIGIST HAILU, Instructor
SANDRA WATSON HAIRSTON, Instructor
CHERYLYN C. HALL, Instructor
JOHN CLAYTON HALL, Instructor
ELIZABETH A. HALLORAN, Instructor
F. CHRIS HANSEN, III, Instructor
KALEEM UL HAQUE, Instructor
DANIEL C. HARDESTY, Instructor
AYAZ M. HAROON, Instructor
ANTHONY J. HARRELL, Instructor
CHE M. HARRIS, Instructor
HILARY R. HATCH, Instructor
HOWARD W. HAUPTMAN, Instructor
TODD D. HELLER, Instructor
GEORGE HENNAWI, Instructor
RUBEN HERNANEAZ, Instructor
BONNIE L. HIAIT, Instructor
GEORGE MARTIN HOKE, Instructor
ROBERT Y. HSIAO, Instructor
SUSAN HUTFLESS, Instructor
CONSTANCE W. HWANG, Instructor
CHRISTOPHER ISH, Instructor
CHERYL ANNE JACKSON, Instructor
ALPA LAHERI JANI, Instructor
JASON SIMON JAVILLO, Instructor
FERN MARIE JEFFRIES, Instructor
GERALD J. JEROME, Instructor
JONATHAN C. JUN, Instructor
CHRISTINE KAJUBI, Instructor
IRA E. KAPLAN, Instructor
GEORGE JOHN KARGUL, Instructor
FREDERICK J. KARKOWSKI, Instructor
ROBERT NEIL KASS, Instructor
MIRAJUL HOQUE KAZI, Instructor
WALTER T. KEEES, Instructor Emeritus
GREGORY B. KELLY, Instructor
WASEEM KHALIQ, Instructor
ADNAN NAWAZ KIANI, Instructor
BO SOO KIM, Instructor
THOMAS J. KIM, Instructor
JASON PAUL KirKNESS, Instructor
VINAYAK KOTTOOR, Instructor
PALLAVI P. KUMAR, Instructor
OLIVER B. LAEYENDECKER, Instructor
UMASHANKAR LAKSHMANADDOSS, Instructor
KATHY L. LAMPL, Instructor
JEFFREY S. LANDMAN, Instructor
ERIKA ROSE LARSON, Instructor
JOHN G. LAVIN, Instructor
QUY HOA LE THI, Instructor
ROBERT I. LEVY, Instructor
SUSAN M. LEVY, Instructor
DANIEL J. FREEDENBURG
Instructor in Psychiatry
MARK R. GINSBERG
Assistant Professor of Psychiatry
ANN L. COX HUBBARD
Professor of Cell Biology
SHENGHAN LAI
Professor of Pathology
BETH L. LAUBE
Professor of Pediatrics
HOWARD M. LEDERMAN
Professor of Pediatrics
SRIDHAR NIMMAGADDA
Assistant Professor of Radiology and Radiological Science
RICHARD J. O’BRIEN
Associate Professor of Neurology
NAEL FAKHRY OSMAN
Associate Professor of Radiology and Radiological Science
JAMES B. POTASH
Arlene and Robert Kogod Professor of Mood Disorders in the Department of Psychiatry
PETER V. RABINS
Professor of Psychiatry
KAREN L. REDDY
Assistant Professor of Biological Chemistry
RICHARD E. ROTHMAN
Associate Professor of Emergency Medicine
PHILIP JOEL SPEVAK
Associate Professor of Pediatrics
SEAN DIXON TAVERNA
Assistant Professor of Pharmacology and Molecular Sciences
GEORGE H. THOMAS
Professor of Pediatrics in Genetic Medicine
ANNIE UMBRICH
Assistant Professor of Psychiatry
DAVID L. VALLE
Professor of Pediatrics in Genetic Medicine
FREDERIC E. WONDISFORD
Professor of Pediatrics

The Bloomberg School of Public Health:
MIRIAM H. ALEXANDER
Assistant Professor of Population and Family Health Sciences
CHERYL ANN MARIE ANDERSON
Assistant Professor of Epidemiology
GERARD F. ANDERSON
Professor of Health Policy and Management
BRAD C. ASTOR
Assistant Professor of Epidemiology
KAREN BANDEEN-ROCHE
Professor of Biostatistics
SHYAM SUNDAR BISWAL
Professor of Environmental Health Sciences
ROBERT E. BLACK
Professor of International Health
LEE R. BONE
Associate Professor of Health Behavior and Society

CHARLES E. BOULT
Professor of Health Policy and Management
PATRICK N. BREYSSE
Professor of Environmental Health Sciences
DONALD SCOTT BURKE
Professor of International Health
GILBERT M. BURNHAM
Professor of International Health
DAVID DUPUY CELENTANO
Professor of Epidemiology
JEANNE CHARLESTON
Research Associate in Epidemiology
LAWRENCE J. CHESKIN
Associate Professor of International Health
JOSEF CORESH
Professor of Epidemiology
ANNA PALMER DURBIN
Associate Professor of International Health
SYDNEY E. MORSS DY
Associate Professor of Health Policy and Management
RUTH R. FADEN
Professor of Health Policy and Management
MARGARET DANIELE FALLIN
Professor of Epidemiology
NANCY E. FINK
Senior Scientist in Epidemiology
ROBERT S. FITZGERALD
Professor of Environmental Health Sciences
JEAN G. FORD
Associate Professor of Epidemiology
TIFFANY L. GARY
Adjunct Associate Professor of Epidemiology
PEARL S. GERMAN
Professor of Health Policy and Management
M. DIANE E. GRIFFIN
Professor of Molecular Microbiology and Immunology
ELISEO GUALLAR
Associate Professor of Epidemiology
DAVID ROBERT HOLTGRAVE
Professor and Chair of Health Behavior and Society
RAFAEL A. IRIZARRY
Professor of Biostatistics
JEFFREY V. JOHNSON
Associate in Health Policy and Management
WEN HONG LINDA KAO
Associate Professor of Epidemiology
GREGORY D. KIRK
Associate Professor of Epidemiology
BRYAN LAU
Assistant Professor of Epidemiology
ROBERT SWAN LAWRENCE
Professor of Health Policy and Management
JOSEPH B. MARGOLICK
Professor of Molecular Microbiology and Immunology
The courses in medicine have been arranged for the student with three principal objects in view. First, students are given training in accepted technical methods so that they may employ these fundamental procedures for the intelligent examination of patients. Second, they are trained in the principles of diagnosis and are given opportunities to study disease in the human being, including its treatment and prevention. Third, their attention is directed to the patient as a problem, and they are required to study the special needs of particular human beings and the peculiar reactions to the disease from which they suffer. The work is essentially practical and the three objects are pursued simultaneously. While the students are following these courses they have an opportunity to spend their entire time in the laboratories, and the inpatient and outpatient units of the Osler Medical Service. In addition to the practical instruction students are expected to read textbooks and consult monographs and original articles for much of their information.

Those students who wish to seek their area of concentration within the Department of Medicine will be assigned to a preceptor who will guide their clinical work, research, reading, and study, on a tutorial basis. It is particularly in the use of “elective time” that the preceptor will advise the student. To fit the interests and ability of the student, considerable flexibility in the choice of elective program will be possible.

REQUIRED WORK

**Medicine—First Year**

**250.610 & 250.613 Genes to Society/Immunology I.** Dr. Jonathan Schneck.

**250.611 Genes to Society/Microbiology and Infectious Diseases.** Dr. Khalil Ghanem.

The goal of the GTS Micro/ID section is to provide an overview of the four major classes of microor-
An interdepartmental course in the clinical techniques of patient evaluation. Students working in small groups with an instructor from the clinical faculty, take histories and perform physical examinations on patients, then present their findings in verbal and written form. A differential diagnosis is formed. Whereas the major instruction is from Internal Medicine, also included is instruction given by the following departments or subspecialty groups: Pediatrics, Neurology, Ophthalmology, Urology, Dermatology, Otolaryngology, and Gynecology.

2. Advanced Clinical Skills.
This course is a prerequisite for all clinical clerkships and ordinarily will be taken between the third and fourth quarters of the second year. Its purpose is to prepare new clerks for the daily activities of patient care. Through a combination of lectures, laboratory exercises and small group discussions, students will learn practical aspects of relating to patients and their families; to provide care according to diagnostic probabilities and relative priorities; to recognize and manage common acute problems; and to order, perform and interpret the results of basic laboratory tests.

Medicine—Second, Third and Fourth Years
This required clinical course is repeated each quarter of the academic year and in the summer.

Medicine Core Clerkship. Dr. Cayea and Dr. Leff.
An eight-week clerkship that can be taken at any time from the final quarter of the second year through the third quarter of the fourth year. Prerequisite for admission is satisfactory completion of the first two years of the curriculum at Johns Hopkins School of Medicine.

CLINICAL WORK AT THE JOHNS HOPKINS HOSPITAL, Dr. Brian Garibaldi and staff; CLINICAL WORK AT JOHN'S HOPKINS BAYVIEW MEDICAL CENTER, Dr. David Hellmann and staff; and CLINICAL WORK AT SINAI HOSPITAL, Dr. Charles Albrecht, Dr. John Cmar, and staff.

Students serve full time as clinical clerks for 4 weeks on the medical service of The Johns Hopkins Hospital and 4 weeks at either Johns Hopkins Bayview Medical Center or Sinai Hospital. Students are assigned appropriate patients on whom they perform a complete history and physical examination, follow their clinical course, and participate in medical decision making and treatment with the assistance of the housestaff team. Students participate in teaching attending rounds, house staff work rounds, and both student and housestaff focused conferences.

ELECTIVE OPPORTUNITIES
Curricular Consultants: Drs. Thomas, Ashar, and Fessler. Registration in elective courses is subject to:
1. -satisfactory completion of prerequisites
2. -for individual study and research, approval of the preceptor
3. -for some courses as noted in this catalog, approval of the course director

organisms that cause diseases in humans: bacteria, viruses, fungi, and parasites. After completing the four week course, students will be able to describe the factors that render microorganisms virulent and correlate these factors with disease processes. They will also be able to describe factors associated with susceptibility, prevention, and treatment of infectious diseases and understand how individual variability impacts manifestations observed on a population level.

800.621 Clinical Foundations of Medicine. Dr. Robert Shochet.
This 16 week course runs concurrently with Anatomy and Scientific Foundations of Medicine. Students spend on average, 1.5 afternoons per week, usually working in groups of five with their college advisor, to learn and gain confidence in doctor-patient communication, and perform, organize, and communicate a patient’s medical history, and a multi-system physical examination. Students will be prepared for participation in the Longitudinal Clerkship beginning in January of Year 1. Resources to assist students in learning include volunteer outpatients, standardized patients, trained physical exam teaching associates, and actual hospital patients who agree to be interviewed and examined by beginning students. The small group format provides students with multiple opportunities to learn and practice these important skills in a safe environment, enriched by detailed feedback. Supplemental practice with standardized patients and physical exam teaching to allow individualized practice time for each student.

800.616 Longitudinal Clerkship. Dr. Maura McGuire.
The goal of the Longitudinal Clerkship is to integrate the learning of basic science and clinical sciences. Students are placed in a “home clinic” one half day per week beginning in January of Year 1 and remain through December of Year 2. Students are expected to practice and further develop clinical skills under the supervision of their preceptors, and experience first hand the professional, health system and ethical challenges in the practice of medicine. They record their reflections and structured patient exercises in an online Learning Portfolio. Once a month they return to the medical school for small group discussions and further instruction in clinical skills with their college faculty.

They are assessed by their preceptors and with structured observation of clinical skills in the Simulation Center, as well as for their written work, weekly quizzes, and a summative examination involving knowledge and standardized patients.

Medicine—Second Year
In quarters 1-3, students take an integrated curriculum including the Genes to Society course and the Longitudinal Clerkship. After spring break, students may elect to start clinical electives in Medicine.

1. Introduction to Medicine: Clinical Skills. Dr. Shochet (Course Director) and members of the clinical faculty. First and second quarters, M., or W., 2-5; Third quarter, Tu., Wed., and Th., 2-5.
The elective opportunities offered by the Department of Medicine are organized as follows:

E 1. Elective Clinical Clerkships
These courses generally involve clinical work in a medical subspecialty. The student participates in all clinical activities of the division, including consultations and outpatient clinics; there is a varying amount of initial evaluation and follow-up of patients admitted by faculty of the division. The Medicine Core Clerkship is often a prerequisite.

E 2. Advanced Clinical Clerkships
These courses involve direct management of patients to a degree expected of interns (hence the common appellation “subinternship”).

E 3. Lecture Courses, Tutorials, and Seminars
These courses have widely varying prerequisites and time commitments. Some are not for credit.

E 4. Individual Preceptorship
Each division has faculty and specialized clinical facilities for studying the diseases in its area of interest. Students have the opportunity to participate in the evaluation and management of patients in clinics and on the wards under the guidance of a preceptor. Opportunities exist for clinical investigations of various types, including the study of patients in a specialty clinic or in one of the clinical research centers, analysis of medical records, and literature review. There are also opportunities in most divisions for laboratory investigation. Depending on the background and interests of the student, he or she may participate in a current investigation or undertake independent investigation using the laboratory and clinical facilities of the department. Because of the fundamental nature of the laboratory research in some of the divisions, the student may find it advantageous to become identified with one of these research programs early in his or her medical school career.

DEPARTMENTAL COURSES

Medicine—Third and Fourth Years
This clinical course is repeated each quarter of the academic year and in the summer.

E 5. Advanced Clerkship in Internal Medicine
Dr. Ashar.
Prerequisite: Medicine Core Clerkship.
Students can serve as subinterns on one of the Osler firm services or the Polk unit (primarily HIV patients). On most of these services students work under the supervision and tutelage of interns, residents, and the admitting attending physician. Patients are assigned to each subintern, who fulfills the responsibilities of an intern by admitting and caring for patients on the medical services. Didactic sessions with the course directors are also part of the clerkship.

E 6. Clinical Clerkship in Medical Intensive Care
Dr. Brower. One student each one-half quarter. Not available in July and August.
Prerequisite: Medicine Core Clerkship and at least one other rotation in medicine or surgery.

Medical students learn an approach to the critically ill patient, enhance their knowledge of respiratory and circulatory physiology and pathophysiology, and build on their abilities to evaluate and manage medical patients in general. The medical team consists of an attending physician, the MICU nursing staff, five medical house officers, and a critical care fellow. Medical students may join the team, take night call with house staff, obtain histories and perform physical examinations, gather and integrate laboratory data and pertinent information from literature, participate in decision making, write admission and progress notes, etc. Students are encouraged to follow a few patients closely and report admission and progress information on daily morning rounds which are conducted from 8:30-11:00 a.m. The nursing staff will provide instruction in critical care skills such as endotracheal suctioning, management of multiple intravenous lines including Swan-Ganz and central venous catheters, proper administration of medications such as antibiotics and pressors, etc. The student will not be required to perform any laboratory tests except those associated with special procedures (such as a lumbar puncture) performed with, and under the direction of, the house officers.

E 7. Advanced Clinical Clerkship in Medicine
(Johns Hopkins Bayview Medical Center). Dr. Record and staff. Available September through June; 3 students. One-half quarter. Two month drop notice.
Prerequisite: Medicine Core Clerkship.
The student will have the responsibilities of a medicine intern under the supervision of an assistant resident and an attending physician on one of the medical units. The responsibilities are similar of those of an intern on the service, but with fewer patients and with even more direct resident supervision. The student will admit patients in rotation, evaluate these patients thoroughly, and directly supervise appropriate therapy. The student functions as part of a ward team which takes long call every fourth day and short call in-between. Typically, the subintern admits one to two patients on long call and one patient on short call, with a total service of about four patients. Students participate fully in the activities of the unit and attend conferences, including morning report, noon conference, and Grand Rounds.

E 8. Advanced Clinical Clerkship in Medicine
(Greater Baltimore Medical Center). Dr. Caccamese and staff. Available all year. One-half quarter.
Prerequisite: Medicine Core Clerkship.
Students are assigned to a medical unit and assume charge of patients in rotation under the supervision of the resident, visiting staff, and Chief of Medicine. On-call schedule is every fourth night. Students participate fully in all teaching activities of residency training, including twice weekly rounds with the Chief of Medicine, rounds with the visiting physician, pathology rounds and combined service rounds. The elective provides an opportunity to participate in the care of both hospitalized and ambulatory patients in a community hospital.

E 9. Advanced Clinical Clerkship in Medicine
(Sinai Hospital). Dr. John Cmar, Dr. Charles Albrecht, and staff. Available all year; arrange through Dr. Cmar. One-half or full quarter.
**Prerequisite:** Medicine Core Clerkship.

This course is offered to provide a comprehensive and meaningful patient care experience in a supervised teaching environment. The student is assigned to a housestaff team on one of the general medicine units and functions as an integral member of the team at a level expected of interns. Supplemental rotations in the Intensive Care Unit, the Emergency Room, or a subspecialty division are available. Teaching is centered on patient care and is supplemented by departmental conferences.

**CARDIOLOGY DIVISION**

**DR. TOMASELLI, DIRECTOR**
**DR. KASPER, CLINICAL DIRECTOR**
**DR. M.R. ABRAHAM**
- Clinical cardiology; stem cell engraftment in the heart.
**DR. T. ABRAHAM**
- Echocardiography.
**DR. ARBAB-ZADEH**
- Coronary circulation and disease; coronary/cardiac imaging; coronary risk prediction.
**DR. ACHUFF**
- Clinical cardiology.
**DR. ARNETT**
- Clinical and invasive cardiology.
**DR. BAROUCH**
- Molecular mechanisms of heart failure.
**DR. BECKER**
- Myocardial blood flow; nuclear cardiology.
**DR. BERGER**
- Cardiac electrophysiology; hemodynamics of cardiac pacing; autonomic influences on cardiovascular system.
**DR. BLUMENTHAL**
- Atherosclerosis progression and regression; medical and interventional management of coronary artery disease.
**DR. BRINKER**
- Angiography; angioplasty; myocardial function.
**DR. BUSH**
- Cardiac CT.
**DR. CALKINS**
- Clinical and cellular electrophysiology.
**DR. CHACKO**
- Coronary artery disease; peripheral arterial disease; carotid artery disease; valvular heart disease; structural heart disease; acute coronary syndromes; stents; cardiac critical care.
**DR. CHANDRA**
- Cardiopulmonary resuscitation.
**DR. CHENG**
- Clinical electrophysiology.
**DR. CINGOLANI**
- Heart failure; hypertension; cardiac remodeling and hypertrophy.
**DR. CORRETTI**
- Ultrasound assessment of endothelial function/vascular physiology; echocardiography; valve disease.
**DR. GEORGE**
- Cardiovascular CT; nuclear cardiology; myocardial perfusion imaging; non-invasive imaging of coronary atherosclerosis; subclinical atherosclerosis.
**DR. GERSTENBLITH**
- Age changes in cardiac function.

**DR. S. H. GOTTLIEB**
- Ischemic heart disease, diabetes and heart disease.
**DR. GRIFFITH**
- Clinical cardiology.
**DR. HALPERIN**
- Biomedical engineering and biomechanics, electrophysiology.
**DR. HAYS**
- Cardiac MR; proton spectroscopy; coronary endothelial function; diabetic cardiomyopathy; echocardiography.
**DR. HENRIKSON**
- Clinical electrophysiology.
**DR. HIRSCH**
- Clinical cardiology; cardiovascular MRI; ischemic heart disease; cardiovascular epidemiology.
**DR. JOHNSTON**
- Stem cell therapy; interventional cardiology; coronary disease.
**DR. JONES**
- Lipids and cardiovascular risk stratification.
**DR. JUDGE**
- Cardiac genetics; pathogenesis of Marfan Syndrome; identification of genes responsible for familial cardiomyopathies.
**DR. KASPER**
- Cardiomyopathy; heart transplantation; clinical cardiology.
**DR. KASS**
- Hemodynamics; left ventricular function.
**DR. KELEMAN**
- Exercise.
**DR. KOLANDAIVELU**
- MR imaging of intermingled arrhythmic and non-arrhythmic heartbeats.
**DR. KRAL**
- Genetic and biological mechanisms of premature coronary artery disease; noninvasive imaging of coronary atherosclerosis; stress myocardial perfusion imaging; cardiovascular and genetic epidemiology; association of mental stress and cardiovascular disease.
**DR. LARDO**
- Cardiovascular imaging.
**DR. LIMA**
- Left ventricular remodeling; mitral valve disease; transesophageal echocardiography; MRI, CT.
**DR. MARINE**
- Electrophysiology.
**DR. MAUGHAN**
- Trinidad and Tobago Cardiology Program.
**DR. MAYER**
- Echocardiography.
**DR. MCCLEAN**
- Beta receptor polymorphism and the pharmacogenics of beta blocker therapy; the treatment of cardiovascular disease in patients with chronic renal disease.
**DR. MICHOS**
- Preventive cardiology; heart disease in women; subclinical atherosclerosis imaging; vitamin D deficiency and cardiovascular risk.
DR. MILLER
Acute coronary syndromes; antiplatelet and antithrombotic therapy; microvascular obstruction; multidetector computed tomography angiography; novel therapies for myocardial infarction; angiogenesis; peripheral vascular disease; novel therapies for peripheral vascular disease; claudication; angiogenesis.

DR. NAZARIAN
Clinical electrophysiology.

DR. O’ROURKE
Cellular physiology; mitochondrial metabolism.

DR. OUYANG*
Cardiovascular pharmacology.

DR. PAOLOCCI
Molecular mechanisms of heart failure.

DR. POST
Echocardiography and hypertension.

DR. RADE
Vascular biology and interventional cardiology.

DR. RATCHFORD
Claudication/peripheral arterial disease; carotid stenosis.

DR. RESAR
Interventional cardiology.

DR. RILEY
Clinical cardiology.

DR. ROUF
Heart failure.

DR. RUSSELL
Heart failure; cardiac transplantation.

DR. SCHULMAN
Clinical trials; hypertension.

DR. SHAPIRO*
Echocardiography.

DR. SILBER*
Acute coronary care; MRI.

DR. SINHA
Clinical electrophysiology.

DR. SPRAGG
Clinical electrophysiology.

DR. STEWART*
Exercise training for cardiovascular disease and heart failure; exercise training for diabetes and hypertension; weight loss effects through diet and exercise on body composition and CV health; exercise for cancer patients; increasing physical activity in the community.

DR. STRAHAH
Echocardiography.

DR. TANDRI
Clinical electrophysiology.

DR. TANIO
Clinical cardiology.

DR. THIEMANN
Information systems; angioplasty.

DR. TOMASELLI
Cellular electrophysiology.

DR. TRAILL
Regional cardiac function; congenital heart disease.

DR. TROST
Interventional cardiology.

DR. J. L. WEISS
Ultrasound imaging; ventricular function.

DR. R. G. WEISS
Cardiac metabolism; NMR.

DR. M. WILLIAMS*
Platelets and acute coronary syndromes.

DR. WITTSTEIN
Heart failure, clinical trials.

DR. WU
Echocardiography; MRI.

DR. ZIEGELSTEIN*
Clinical cardiology; depression and its effects on cardiac diseases.

*Johns Hopkins Bayview faculty

Prerequisites: Medicine and Surgery Core Clerkships. The student participates in the activities of the Cardiovascular Division, particularly the clinical service. Through inpatient consultations, the inpatient service, and the outpatient clinics, the student gains experience in the cardiac examination, the use and interpretation of non-invasive studies (electrocardiography, exercise testing, ultrasound, nuclear, CT and MRI based imaging methods), and invasive procedures (angiography, revascularization and interventional procedures, electrophysiologic studies).

Prerequisites: Medicine and Surgery Core Clerkships. The student participates in the activities of the Cardiovascular Division, particularly the clinical service. Through inpatient consultations, the inpatient service, and the outpatient clinics, the student gains experience in the cardiac examination, the use and interpretation of both non-invasive and invasive studies.

Prerequisites: Medicine and Surgery Core Clerkships. The student participates in the daily activities of the Coronary Intensive Care Unit and works closely with the medical housestaff, cardiology fellow, and attending physician. The student gains experience in: the evaluation and management of critically ill cardiac patients; dysrhythmias; interpretation of electrocardiograms, echocardiograms, and other non-invasive studies; invasive procedures such as line placement, circulation assist devices, angiography, angioplasty; electrophysiologic studies; and hemodynamic monitoring. Prior significant background in cardiac physiology and hemodynamics is recommended.

E 4. Advanced Clinical Clerkship in Coronary Intensive Care. (Johns Hopkins Bayview Medical Center). Dr. Marlene Williams and staff. Available all year. One-half or full quarter; three students. 
Prerequisites: Medicine and Surgery Core Clerkships; Clerkship in Cardiology. The student functions as a member of the medical team at the level of an intern, with the close supervision by the senior housestaff, cardiology fellow, and attending physician. Experience is gained in: the evaluation and management of critically ill cardiac
patient; dysrhythmia diagnosis and management; the interpretation of non-invasive studies; invasive procedures such as line placement and hemodynamic monitoring; and cardiovascular pharmacology. A sound understanding of cardiac physiology and hemodynamics is desirable, and completion of a clerkship in medicine is required.

E 5. Advanced Clinical Clerkship in Cardiology. (Union Memorial Hospital). Drs. R. Ferguson, J. Quartner, and staff. Available all year. One-half quarter. Lottery; 2-month drop notice required. 

Prerequisite: Medicine Core Clerkship. The goal is to provide the student with a clinical experience in inpatient cardiology centered around the coronary care unit. Patients will be evaluated by the student as the primary physician functioning at an internship level. Patients will be followed into progressive care with the student participating in decisions relating to diagnosis and management as well as discharge planning. Emphasis will be placed upon daily teaching rounds, through which the student will be exposed to bedside teaching providing experience in auscultation and other means of diagnosis. An active laboratory, including cardiac catheterization, will provide adjunctive means of diagnosis. An active laboratory, including cardiac catheterization, will provide adjunctive information on hospitalized patients. These are four-week rotations. Hours of participation are full time, along the same schedule as housestaff, with every fourth night call. The day begins at 8:00 a.m. with morning report. On-call rooms, food tickets, free parking passes, and a full-service library with Medline search and photocopying privileges are provided.

E 6. Preventive Cardiology. Drs. Blumenthal, Kwiterovich, and Post. Available Quarter 4 and Summer. Elective requires permission of Dr. Blumenthal. Only one student can be accommodated per quarter.

Prerequisites: Medicine Core Clerkship and Clinical Epidemiology (Epidemiology 345.601) This unique elective involves inpatient and outpatient clinical experiences, including participation in the Preventive Cardiology Center Clinic, participation in the Lipid Clinic, and participation in interpreting tests measuring subclinical atherosclerosis. In addition to regular conferences, students will learn about clinical research methods and risk factor reduction. We also offer participation in a number of community-based risk factor screening programs and in ongoing or new research projects in preventive cardiology. Interested students are encouraged to contact us with questions.

E 7. Practical Experience in the Physiology of Cardiovascular Disease. Dr. Kass and staff. Available as arranged through Dr. Kass, one student per year will be supported by the Alan P. Trimakas Memorial Fund. Students are encouraged to initiate research work with faculty guidance within such clinical areas as the Coronary Care Unit, the Nuclear Cardiology Unit, the Heart Station and the Cardiac Catheterization Laboratory. There are outstanding opportunities for students to participate in basic research efforts. Students can productively engage in research activities dealing with left ventricular function, the physiology and biochemistry of ischemic heart disease, the pathophysiology of sudden death, and the pathophysiologic basis of cardiac disease.

ENDOCRINOLOGY AND METABOLISM DIVISION
DR. LADENSON, DIRECTOR
DR. BALL
Medullary thyroid carcinoma; multiple endocrine neoplasia; regulation of calcitonin gene expression.

DR. BROWN
Endocrine problems in HIV; diabetes mellitus; osteoporosis; hypogonadism.

DR. COOPER
Thyroid disorders; antithyroid drug pharmacology.

DR. DOBS
Hyperlipidemia and diabetes mellitus; gonadal disorders.

DR. DONNER
Diabetes mellitus.

DR. GOLDEN
Diabetes mellitus and lipid disorders.

DR. KALYANI
Diabetes mellitus.

DR. LADENSON
Thyroid disorders; thyroid hormone therapy; endocrine health economic analysis.

DR. MATHIODAKIS
Diabetes mellitus.

DR. SALVATORI
Neuroendocrine and pituitary disorders.

DR. WAND
Neuroendocrine and thyroid disease; cellular mechanisms of addiction.

DR. XING
Thyroid cancer; pituitary disorders.

E 1. Consultation Service in Endocrinology. Director, Dr. Ladenson, Drs. Ball, Brown, Cooper, Dobs, Donner, Golden, Kalyani, Mathiodakis, Salvatori, Wand, and Xing. Available all year. One-half or full quarter; 1 or 2 students. 

Prerequisite: Any Core Clerkship. This elective offers students an introduction to clinical endocrinology and metabolism by participating in the patient care and teaching activities of the division. Students see outpatients in daily ambulatory clinics (General Endocrine, Diabetes, Neuroendocrine—Pituitary, and Thyroid Clinics). They also perform inpatient endocrine consultations under supervision of a fellow and review them with the faculty on daily teaching rounds. In both settings, students perform the primary assessment.

In addition to attending all the division’s regular conferences (Endocrine Grand Rounds, Journal Club, and Research Conference, Endocrine Pathology, Endocrine Surgery and Thyroid Tumor Center Conferences), students participate in a special lecture series targeted to their needs. This Core Endocrine Concepts seminar series (two per week) covers a range of core topics in clinical endocrinology and metabolism.

All students will have the opportunity of participating in the educational program in the Diabetes Center (JHOC-2nd Floor) for patients with diabetes. By special arrangement, students may pursue a clinical or laboratory research project under the
preceptorship of a faculty member for a full quarter or longer.

Further details and application information can be found at www.jhu.edu/endocrinology.

GASTROENTEROLOGY DIVISION

DR. KALLOO, DIRECTOR

DR. ABRAHAM

Delivery of radioisotope to cancer cells by novel small peptides.

DR. AGARWAL

Understanding the molecular, cellular, and epigenetic features of esophageal and gastric adenocarcinomas.

DR. BAYLESS

Crohn's Disease; ulcerative colitis; genetics of inflammatory bowel disease.

DR. BRANT

Ulcerative colitis; genetics of inflammatory bowel disease; Crohn's Disease.

DR. CANTO

Endoscopic ultrasonography; therapeutic endoscopy; Barrett's esophagus; outcomes research in endoscopy.

DR. S. CHAKRAVARTI

Extracellular matrix changes in IBD, gene expression profiling using DNA microarray.

DR. CLARK

Swallowing disorders; esophageal disorders; gastroesophageal reflux disease; eosinophilic esophagitis; motility disorders.

DR. DONOWITZ

Diarrheal diseases; inflammatory bowel disease.

DR. DUDLEY-BROWN

Inflammatory bowel disease.

DR. GIARDIELLO

Colon cancer; polyps and colon cancer risk assessment.

DR. GURAKAR

Pre- and post-liver transplant; clinical and endoscopic management of liver diseases.

DR. HAMILTON

Acute and chronic viral, alcoholic, nonalcoholic, autoimmune, cholestatic, and drug-induced liver disease.

DR. KALLOO

Therapeutic endoscopy; pancreatitis; sphincter of Oddi motility disorders.

DR. KHASHAB

Pancreatitis; pancreatic cyst; endoscopic ultrasound; ERCP.

DR. KOTEISH

Liver regeneration with special focus on alcoholic liver disease and the role of hematopoietic stem cells in liver regeneration.

DR. KOVBASNJK

Ion transport properties of ionophores in artificial bilayer lipid membranes; analytical and qualitative optical microscopy; quantitative fluorescence microscopy.

DR. LEE

GI and liver complications following bone marrow transplantation; molecular genetics of hepatocellular carcinoma; transcriptional regulation of the c-Myc oncoprotein.

DR. LENNON

Pancreatitis; pancreatic cyst; endoscopic ultrason sound; ERCP.

DR. X. LI

Regulation of Na-H+ channels by lipid RAFTs; IBD research.

DR. Z. LI

Nutritional effects on hepatic innate immune system and their roles in liver injury and regeneration.

DR. MELTZER

Gastrointestinal cancer and precancer biomarker discovery, development, and validation; genomics, epigenomics, and bioinformatics; early detection of cancer; outcomes research in cancer and precancer.

DR. MEZERY

Alcoholic liver disease and fibrosis; liver transplantation.

DR. MORI

Identification and characterization of novel tumor suppressor genes in gastric and colon cancers utilizing systematic genome-wide genetic and epigenetic screening methods. Mismatch-repair deficiency-associate cancers including HNPCC.

DR. MULLIN

The role of early intervention of nutritional support in the hospitalized setting to improve outcomes.

DR. OKOLO

ERCP; endoluminal stenting; interventional and innovative endoscopy; outcomes and decision analyses in gastroenterology; clinical epidemiology.

DR. POTTER

Effect of ethanol and its metabolites on the x2(l) and x1(l) collagen promoters; role of leptin on fibrogenesis; role of Kupffer cells; cytokines, retinoic acid, and leptin in stellate cell activation (transdifferentiation) and collagen production; hormonal regulation of rat class I alcohol dehydrogenase; transcriptional regulation of rat class I alcohol dehydrogenase promoter.

DR. SARKAR

Signaling pathways of human intestinal Na+/H+ exchanger 2 (NHE3) regulation; transactivation of NHE3; knock-down NHE3 regulatory proteins by shRNA.

DR. TSE


DR. WU

Gene expression regulation; IBD research


Prerequisites: Medicine Core Clerkship.

Students participate in evaluating inpatients and out-patients with a wide variety of gastroenterologic complaints and problems. Interpretation of radiologic procedures, biopsies, and tests of physiologic function is an integral part of the course. Students participate in ward rounds, the Inflammatory Bowel Disease Center, the weekly GI clinical conference, the bi-weekly GI seminar, journal club, and research conference. Circumscribed clinical inves-
tigation and clinical-pathologic correlation are possible by arrangement.


Opportunities are available to participate in ongoing clinical and laboratory research projects and to participate in the design and execution of new projects. Areas of current research activity are molecular and cell biologic approaches to intestinal ion transport and epithelial cell differentiation, diarrheal disease mechanisms, inflammatory bowel disease, swallowing disorders, patch clamp studies of ion channels, fluorescence imaging of intracellular messengers, colonic control of gastric emptying, and experimental models of colon carcinogenesis, and differentiation.


Opportunities are available to participate in ongoing laboratory and clinical research projects and to assist in the design and development of new projects in the general field of hepatic metabolism of alcohol and drugs.


A year long, one hour a week journal club attended by faculty, fellows, and students with themes relating to regulation of absorption and secretion by intracellular intermediates.

GERIATRIC MEDICINE DIVISION

DR. DURSO, DIRECTOR
DR. ABADIR
  Basic research mitochondria/frailty.
DR. ARBAJE
  Health services research on care transition.
DR. AWAN
  Chronic hospital unit care of older adults with medical and psychiatric illness.
DR. BARRON
  Primary care of older adults.
DR. BELLANTONI
  Osteoporosis; postacute care.
DR. BOYD
  Primary care; research on multimorbidity.
DR. BURTON
  Primary care; continence evaluations; geriatrics education.
DR. CAYEA
  Primary care; educational outcomes research.
DR. CHRISTMAS
  Primary care; residency education.
DR. COLBURN
  Outpatient geriatric primary care.
DR. COLVIN
  Hip fracture geriatrics co-management service.
DR. DURSO
  Community-based geriatrics; consultation for complex medical
DR. FEDARKO
  Bone metabolism; tumor progression.
DR. FINKELESTEIN
  Chronic disease informatics program.

DR. FINUCANE
  Primary care; postacute care; ethical issues regarding health care decisions.
DR. GREENOUGH
  Chronic hospital care; wound care and hydration in the institutionalized elderly; ventilator care.
DR. HAYASHI
  House calls.
DR. LEFF
  Primary care; new approaches to treating elderly patients at home.
DR. LENG
  Postacute care; molecular biology of frailty.
DR. MCNABNEY
  Health care delivery in a capitated model; community-based long-term care.
DR. OH
  Clinical dementia care; biomarkers of Alzheimer’s disease research.
DR. ROTH
  Director, Johns Hopkins Center on Aging and Health.
DR. ROY
  Chronic inflammation and anemia.
DR. VARADHAN
  Multisystem disregulation in frailty.
DR. WALSTON
  Postacute care; genetics and clinical research applications to diabetes in the elderly.
DR. XUE
  Biostatistical models of frailty.
DR. YASAR
  Dementia clinical care and research.

E 1. Clinical Clerkship in Geriatric Medicine. Drs. Cayea (Director), Awan, Barron, Bellantoni, Boyd, Burton, Christmas, Colvin, Durso, Finucane, Greenough, and McNabney. Available all year; two students per period. One-half quarter or longer. 

Prerequisite: Medicine Core Clerkship.

The course is designed to provide an in-depth exposure to geriatric medicine and gerontology. The student will work closely with members of the faculty in the following programs:

Geriatric Rehabilitation Unit: The student will work directly in patient care gaining first-hand experience in managing patients with multiple health problems. The value of a multi-disciplinary approach to geriatric medicine will be emphasized, and the student will have ample opportunity to learn to evaluate and treat many of the important problems in patients in a long-term care institution. There is no night call.

Physician House Call Program: The student will evaluate and follow a selected group of patients who are home-bound because of illness. This involvement will permit the student further exposure to a multidisciplinary team, and sensitize the student to this important mode of geriatric health care delivery.

Ambulatory Care: The student may elect to spend a portion of the time working with a member of the faculty in the Beacham Ambulatory Care Center on the Johns Hopkins Bayview Medical Center campus, or a geriatrics specialty clinic such as those focused on memory, bone health, and continence.

Inpatient Care: Experiences are also available on the hip fracture co-management service.
Teaching Conference: The student will participate in the weekly clinical geriatrics rounds and seminars attended by faculty members, the clinical and research fellows, and the housestaff on geriatric medicine rotation.

Research Seminars: If interested, the student may participate in the divisional research seminars which often include presentations by visiting professors.

Each student may elect to emphasize one or more aspects of the program.


Electives are available providing participation in research projects utilizing molecular biology, cell biology, mechanisms of metastasis and clinical research tools to study type II diabetes, obesity, frailty, aphasia, dementia, osteoporosis, enteric infection and other areas of faculty research activity.

The Sol Goldman Student Award in Geriatric Medicine. A fund was established in 1986 by the Goldman family to honor the late Sol Goldman. An award is given annually at graduation to a student who has demonstrated a high level of commitment and sensitivity to the care of older adults.

HEMATOLOGY DIVISION
DR. BRODSKY, DIRECTOR

DR. BRODSKY
Bone marrow failure disorder.

DR. DANG
Oncogenes and cell proliferation.

DR. EMADI
Molecular pharmacology.

DR. GERBER
Leukemic stem cell biology.

DR. KICKLER
Immunohematology.

DR. LANZKRON
Anemias and other bleeding disorders, with emphasis on sickle cell disorders.

DR. MCDEVITT
Myeloproliferative and myelodysplastic disorders.

DR. MERCHANT
Cancer stem cells.

DR. MOLITERNO
Polycythemia vera.

DR. NESS
Transfusion practices.

DR. RESAR
Oncogenes and cell proliferation.

DR. SHANBHAG
General hematology and lymphoproliferative disorders.

DR. SPIVAK
Myeloproliferative disorders.

DR. STREIFF
Hemorrhagic and thrombotic disorders.

E 1. Clinical Clerkship in Hematology. Drs. Streiff (Course Director), Brodsky, Dang, Emadi, Gelber, Kickler, Lanzkron, McDevitt, Moliterno, Ness, Resar and Spivak. Available all year; limited to 3 students per half-quarter.

This course will provide the student with a broad exposure to clinical hematology. Students will evaluate inpatients and outpatients with a wide range of blood disorders under the direct supervision of the division faculty. Clinical experience is supplemented by regularly scheduled conferences and lectures. Formal instruction is provided in the preparation and interpretation of blood and marrow slides, performance of bone marrow examination aspiration and biopsy, with unlimited access to the division’s collection of pathology specimens, teaching slides, library and journal collection. Students may also engage in an independent project.

E 2. Clerkship in Clinical Hematology and Medical Oncology. (Johns Hopkins Bayview Medical Center). Drs. Merchant, Purtell, and Shanbhag. Available all year. 4 to 6 weeks; limited to one student.

Prerequisite: Medicine Core Clerkship.

Senior elective in Hematology/Oncology in an academically-oriented community hospital setting. Students will participate on the inpatient consultation service as well as rounds with faculty on the inpatient Cancer Center. Students will also see patients in attendings’ offices and in the ambulatory chemotherapy setting. Participation in weekly Tumor Board and weekly conferences are encouraged.

ALLERGY AND CLINICAL IMMUNOLOGY DIVISION
DR. BOCHNER, DIRECTOR

DR. AKINYEMI
Outcomes in drug allergy.

DR. ADKINSON*
Drug hypersensitivity.

DR. BARNES*
The genetic epidemiology and molecular genetics/genomics of complex lung inflammatory diseases.

DR. BINGHAM*
Clinical therapeutics in inflammatory arthritis; urticaria.

DR. BOCHNER*
Eosinophil and mast cell biology of Siglec-8 and its ligand.

DR. CANNING*
Innervation of the airways.

DR. L. GAO*
Genetic epidemiology and functional genomics of complex lung disease.

DR. P. GAO*
Molecular genetics of asthma.

DR. HAMILTON*
Humoral immune response in allergic disease.

DR. KOLLARIK*
Influence of inflammation on the visceral nervous system.

DR. MACGLASHAN*
Mechanism of signal transduction.

DR. MATHIAS*
Genetics of asthma, allergy, and cardiovascular disease.

DR. MYERS*
Airway inflammation and neurobiology.

DR. SAINI*
Mast cell and basophil biology in allergic disease.
DR. SCHROEDER*
Innate vs. adaptive immunity in regulating cellular responses.

DR. TVERSKY
Dendritic cells and immunotherapy.

DR. UNDEM*
Nerve inflammation interactions.

DR. VONAKIS*
Epithelial cell biology and eicosanoid receptors.

DR. ZHENG*
Molecular mechanisms in the pathogenesis of asthma, atopic dermatitis (eczema) and the “atopic march”: progression from eczema to asthma.

DR. ZHU*
Transgenic mouse models of asthma.

* Bayview faculty

**E 1. Clerkship in Allergy and Clinical Immunology.** Drs. Zheng, Saini, and staff. Available all year. Minimum of one-half quarter.

**Prerequisite:** Medicine Core Clerkship.

Students participate in the activities of the division, including: consultations requested on inpatients at the Johns Hopkins Bayview Medical Center and the Johns Hopkins Hospital; evaluation and management of inpatients at the Johns Hopkins Bayview Medical Center; evaluation of outpatients in the Asthma and Allergy Center; and training in the performance and interpretation of immunologic tests in clinical medicine. Students will attend divisional research and clinical conferences.

**E 2. Practicum in Clinical Immunology.** Drs. Bochner, Saini, and staff. Available all year. One-half quarter or longer.

**Prerequisite:** Second Year status.

Students may participate in short-term clinical or laboratory investigation projects under the supervision of one of the faculty. Students will attend divisional educational activities including research conferences, journal review sessions, and clinical rounds.

**INFECTIOUS DISEASES DIVISION**

DR. THOMAS, DIRECTOR

DR. ANDRADE
HIV medicine and pharmacology.

DR. AUWAERTER
Lyme disease; general ID clinical care.

DR. AVERY
Transplant and oncology infectious diseases.

DR. BALAGOPAL
HIV and HCV pathogenesis.

DR. BARTLETT
Anaerobic infections; antibiotic-associated diarrhea and colitis; HIV/AIDS.

DR. BERRY
HIV health outcomes.

DR. BISHAI
Tuberculosis.

DR. BLANKSON
HIV pathogenesis.

DR. BOLLINGER
Host defense in HIV; tropical infections.

DR. CHAISSON
Mycobacteria infections; HIV/AIDS.

DR. L. CHANG
International HIV.

DR. COSGROVE
Infection control and antibiotic control.

DR. COX
Pathogenesis of Hepatitis C.

DR. DORMAN
TB and atypical mycobacteria.

DR. FLEXNER
AIDS; Clinical pharmacology.

DR. GALLANT
Epidemiology of HIV.

DR. GAYDOS
Chlamydia pneumoniae and STDs.

DR. GEBO
HCV and HIV databases.

DR. GHANEM
Sexually transmitted infections.

DR. GROSHET
TB.

DR. GUPTA
HIV and co-morbidities management research in resource-limited settings.

DR. HOFFMANN
International HIV.

DR. HYNES
STD's; tropical medicine.

DR. KARAKOUSIS
Tuberculosis.

DR. KERULY
Epidemiology and service utilization in HIV management.

DR. LUCAS
HIV and substance abuse.

DR. MANABE
Tuberculosis.

DR. MARAGAKIS
Infection control.

DR. MARR
Transplant and oncology infectious diseases.

DR. MCKENZIE*
Travel medicine; HIV.

DR. MELIA
ID and HIV clinical care.

DR. NEOPYTOS
Transplant and oncology infectious diseases.

DR. NUERMBERGER
TB and pneumonia.

DR. OSBURN
Neutralizing antibody responses in HCV infection; role of CCR5 in clearance of HBV.

DR. PAGE
International and immigrant health.

DR. PERL
Hospital infection control.

DR. PHAM
Pharmacology.

DR. QUINN
Sexually transmitted disease; chlamydia; AIDS.

DR. RAY
Hepatitis C virology.

DR. ROMPALO*
Sexually transmitted diseases.

DR. SEARS
Mechanisms of diarrhea.

DR. SHAH
TB diagnosis.

DR. SHOHAM
Transplant and oncology infectious diseases.
E 1. Clinical Clerkship in Infectious Diseases. 
Drs. Auwaerter, Bartlett, Cosgrove, Maragakis, Nuermberger, Quinn, Ray and staff. Available all year. One-half quarter or longer; limited to 4 students per half quarter. Lottery elective. 
Prerequisite: Medicine and Surgery Core Clerkships. 
A rotation on the general ID inpatient consultation service provides the opportunity to participate in the evaluation and management of a wide range of ID problems. By working alongside our faculty, fellows, and clinical pharmacists, rotating residents and students experience a rich and educational introduction to the world of clinical ID. Students answer consultation requests, review findings with fellows, and present cases to the attending on afternoon rounds held daily. There is extensive interaction with the microbiology laboratory, including group teaching sessions held 3-5 hours per week in bacteriology, virology, parasitology and mycology. Group teaching sessions are held weekly with Dr. Bartlett to discuss clinically oriented topics such as intraabdominal sepsis, pneumonia, antibiotics, fever of obscure origin, and so forth. Goals of the elective are to provide guidelines to an approach to patients with established or suspected infections on the medical and surgical services. Methods to establish an etiologic diagnosis and rational use of antibiotics are emphasized.

Prerequisite: Medicine Core Clerkship. 
A subinternship on the inpatient AIDS service. Students will evaluate and manage inpatients with acquired immunodeficiency syndrome or advanced HIV infection. The inpatient AIDS service is a multidisciplinary geographic unit with strong support from neurology, dermatology, pulmonary, renal, nutrition, occupational and physical therapy, and other specialties. Rotation includes daily work rounds, twice-weekly educational seminars, and extensive readings. At the completion of the rotation, the student will be well acquainted with the diverse manifestations of HIV infection.
DR. CLARK
Obesity, diabetes, and related conditions, including nonalcoholic fatty liver disease (NAFLD).

DR. CLEVER
Patient-physician communication; medical education.

DR. CODORI
Improving history-taking skills for medical providers; teaching physicians to prescribe medications that are affordable and accessible to their patients; depression as an occupational hazard for physicians.

DR. COFRANCESCO
Medical education; HIV care and antiretroviral management; HIV lipodystrophy and metabolic complications.

DR. COOPER
Patient-physician relationship and communication; patient-centered care; race/ethnic disparities.

MS. DALCIN
Obesity; prevention and treatment of cardiovascular disease; health disparities.

DR. DAUMIT
Medical comorbidity; access to and quality of primary medical care of individuals with severe and persistent mental illness; health disparities.

DR. FELDMAN
Resident education; evidence-based medicine; consult medicine.

DR. FINKELSTEIN
Health informatics; telemedicine; primary and secondary prevention; disease management; health outcomes research.

DR. FITZGERALD
Medical education; leadership skills training; primary care; Johns Hopkins Medicine International patient care; health care disparities education.

DR. FLOREA
Algorithms and tools for cDNA and genomic sequence alignment; comparative and evolutionary genomics; gene annotation; alternative splicing and its regulation; miRNA genomics; peptide-based vaccine design.

DR. FLYNN
Arthritis; ambulatory education and the delivery of primary care in an academic setting.

DR. FORD
Primary care research; epidemiology and treatment of depression; internet health applications; physician health.

DR. GELLER
Communication and decision-making; ethics and professionalism; genetics; women's health; medical education; complementary and alternative medicine.

DR. GIBBS
Diversity in health.

DR. GORDON
Women's health; medical education; role of diet and exercise in wellness and chronic illness prevention.

DR. GOYAL
Effects of meditation on chronic pain and symptoms; stress and overall health; low-cost means to improve health in rural India; ethics.

DR. GREER
Chronic kidney disease; primary care; ethnic/race disparities.

DR. GUOZUNE
Obesity; patient-physician communication; social networks.

DR. HERZKE
Resident and student education; infectious diseases, notably infection control; quality improvement.

DR. HILL-BRIGGS
Chronic disease self-management; disability; behavioral intervention trials; health disparities; functional impairment and disability.

DR. HUGHES
Clinical bioethics, research ethics; palliative care; philosophy of medicine; ambulatory care.

MS. JENCKES
Bioterrorism; HIV/AIDS; behavioral interventions; qualitative research methods.

DR. KEBEDE
Health policy/management; global health; medical education; health literacy; health disparities; health service quality and patient satisfaction.

DR. KOTTOOR
Benefits of genetic principles in delivery of primary care; transition of patients and families from pediatric to adult medical care; internal medicine; pediatrics; medical genetics.

DR. LAZO
Nonalcoholic fatty liver disease; diabetes; epidemiological studies.

DR. LEVINE
Community-based prevention of cardiovascular disease; behavioral aspects of prevention.

DR. LEVY
General internal medicine; genetics.

MR. LICHTMAN
Medical procedures; hospitalist medicine.

DR. MARINOPoulos
Evidence-based medicine; university health; health care administration.

DR. MARKOWSKI
Anti-inflammatory agents and cancer incidence; prostate cancer; men's health; hospitalist medicine.

DR. MARUTHUR
Primary care; individualized medicine for the prevention and treatment of type 2 diabetes and obesity; pharmacogenomics of type 2 diabetes; comparative effectiveness.

DR. MATHIAS
Genetics of asthma, allergy, and cardiovascular disease.

DR. MICHITALIK
Quality improvement and systems management; patient safety issues especially as related to patient census; transitions of care from acute to primary care.

DR. E. MILLER
Hypertension; clinical trials; non-pharmacologic therapies; antioxidants.

DR. R. MILLER
Women's health; physician practice issues; medical education.

DR. MONROE
Cardiovascular disease risk reduction in HIV-infected patients; optimizing care of HIV-infected patients with medical comorbidities.
DR. R. MOORE
Pharmacoepidemiology; outcomes research in HIV treatment; epidemiology of substance abuse and alcoholism.

MS. MOY
Cardiovascular disease and community based CVD prevention.

DR. NIESSEN
Medical education; patient safety; quality improvement.

DR. ODUYEBO
Gastroenterology; liver disease.

DR. PAHWA
Hospitalist medicine.

DR. PEAIRS
Cancer survivorship and screening; medical education.

DR. PERTEA
Computational gene finding; splice site prediction; sequence motif finding.

DR. POLLACK
Cancer disparities; organization of cancer care; social determinants of health.

DR. PROKAPASA
Cardiovascular medicine and women's health; genetics and echocardiography in arrhythmogenic right ventricular dysplasia.

DR. PROKAPOWICZ
General internal medicine; medical informatics; hypertension.

DR. QAYYUM
Plaque biology; hemostasis and thrombosis; pharmacogenomics of anti-platelet agents; genetic epidemiology; systematic reviews; meta-analysis.

DR. RANASINGHE
Internal and preventive medicine; international health; health and wellness.

DR. ROBINSON
Evidence-based health care; health informatics.

DR. ROWLAND-SEYMOUR
Ambulatory care; prevention; integrative medicine; medical education.

DR. SALZBERG
Genomics; bioinformatics; gene finding; genome assembly; genome technology.

DR. SEGAL
Pharmacoepidemiology; comparative effectiveness research including evidence based review; advanced methods for using observational data; evaluation of diagnostic tests; diabetes; venous thrombosis and blood disorders.

DR. SHIHAB
Cardiovascular disease prevention and epidemiology; chronic disease in developing countries.

DR. SHOCHET
Patient-physician communication and skills assessment; patient-centered and relationship-centered care; behavior change and psychosocial issues in primary care; innovations in medical education; medical professionalism.

DR. SIDDIQUI
Clinical reasoning; preoperative medicine; international medicine.

DR. SINGH
Pharmaceutical outcomes research; drug safety; pharmacoepidemiology.

DR. SISSON
Ambulatory care; medical education; community outreach.

DR. SNYDER
Quality of life for cancer patients undergoing treatment; coordination of care for cancer survivors; patient-reported outcomes assessment; quality of medical care; cancer outcomes and health services research.

DR. STEWART
Medical education; preventive medicine; health outcomes; community outreach and advocacy.

DR. SUGARMAN
Philosophical and empirical research in biomedical ethics.

MS. SWARTZ
Project management; multi-center randomized controlled trials.

DR. THOMAS
Ambulatory care, prevention; medical education; curriculum development.

DR. VAIDYA
Mechanisms of vascular dysfunction; assessment of cardiovascular risk factors.

DR. WANG
Longitudinal data analysis; statistical and epidemiologic methods; randomized controlled trials; multicenter studies.

DR. WOOSTER
Healthcare management; quality clinical outcomes; preventive care in pulmonary diseases; medical economics; medical education integrated into clinical practice.

MS. YANEK
Cardiovascular disease in families and risk factor modification.

DR. YEH
Epidemiology; diabetes; obesity; cancer; lung function.

DR. J. H. YOUNG
Genetic epidemiology; novel risk factors for CVD, hypertension, and insulin resistance.

REQUIRED WORK

Health Care Disparities. Mandatory Course
The HCD course is designed to help students understand the social context of the patients they will care for while at medical school. The course is an inquiry into the existence and reasons for medical health care disparities, questions the meaning of culture and cultural competency, and explores the healthcare challenges in the local Baltimore community.

Restorative Medicine.
The Restorative Medicine Course is a required course for first year medical students that is designed to allow first year medical students to experience basic practices in mindfulness and creative expression and understand the relevance of these practices to their own well-being and to patient care.

ELECTIVE OPPORTUNITIES

E 1. Internal Medicine Consultation Service. Dr. Feldman and staff. Available all year; one-half or full quarter.
Prerequisites: Medicine Core Clerkship.
Students care for all types of patients seen in the Internal Medicine Consultation Service, including surgical, gynecological, and psychiatric patients with internal medicine problems. Particular emphasis is given to perioperative medicine and increasingly to ambulatory consultation in areas such as same day surgery, general internal medicine and ambulatory psychiatry service. The students evaluate the patients initially and then present the patient care problem(s) to the attending faculty and/or senior clinical fellows in internal medicine. Students follow the inpatients daily during their hospitalization and, with the attending or fellow, make additional recommendations for evaluation and management. Selected articles regarding assessment and consultation are provided. Near the end of the experience, the students present a case they have seen on the service and discuss the essential features of the case at the regular Consultation Service Rounds with all faculty and fellows. Students also spend up to 2 1/2 days each week in the faculty ambulatory care clinic seeing patients with the faculty. The clerkship is particularly appropriate for students interested in entering a field of surgery, anesthesiology, psychiatry, or internal medicine.

E 2. Advanced Clerkship in Internal Medicine.
Drs. Ashar and Ranasinghe. Available four quarters and summer (except July).
Prerequisite: Medicine Core Clerkship.
Students can serve as subinterns on one of the Carol Johns service, Osler firm services, the Polk unit (HIV), or the Hospitalist service. On most of these services students work under the supervision and tutelage of interns, residents, and the admitting physician. On the hospitalist service, students work directly with the attending hospitalist physicians. Patients are assigned to each subintern, who fulfills the responsibilities of a PGY-1. Didactic sessions with the course directors are also part of this clerkship.

E 3. Evidence Based Complementary and Alternative Medicine.
The Evidenced Based Complementary and Alternative Medicine Course is an elective interdisciplinary course for medical and nursing students that is designed to develop the basic knowledge and attitudes to communicate effectively with patients and the patient care team regarding Complementary and Alternative Medicine. Students participate in the clinical activities of the division. By evaluating patients with suspected occupational illness, students will expand their skills in medical history, physical assessment and differential diagnosis. The industrial setting from which the patient came will be evaluated and hazards quantified. The students will acquire new skills in clinical toxicology, industrial hygiene, and disability assessments. The emphasis during the course will be on a preventive approach to occupational medicine. Students may also participate in the clinical research activities of the division.

Students are invited to attend the regularly scheduled seminars and journal review sessions of the division.

See related courses in occupational medicine offered by the Department of Environmental Health Sciences in the School of Public Health.

CLINICAL PHARMACOLOGY DIVISION
DR. SHAPIRO, DIRECTOR
DR. DOOLEY
Anti-tuberculosis drugs; co-treatment of HIV and tuberculosis.
DR. FLEXNER
Anti-AIDS drugs.
MR. FUCHS
Topical HIV microbicides.
DR. HENDRIX
Drug development unit; phase I and II studies; antiviral drugs; chemophrophylaxis of infection; microbicides.
DR. HUBBARD
Mass spectrometric analysis of small molecules.
DR. LIETMAN
Antimicrobial chemotherapy; chemoprevention of infection.
DR. PARSONS
Qualitative analysis of drugs and metabolites in clinical samples.
DR. PETTY
Clinical pharmacology; phase I and II studies of new drugs.
DR. SCOCCA
Molecular studies of African trypanosomes.
DR. SHAPIRO
Antiparasitic chemotherapy.

E 1. 390.631.01 Principles of Drug Development.
Dr. Flexner. First quarter; Wednesdays, 1:30-2:50 p.m.
Present principles underlying the drug development process from discovery through pre-clinical to clinical phases. Regulatory issues (FDA faculty) and industry perspectives (pharmaceutical industry faculty) are included. The course describes and evaluates specific examples, and discusses legal and ethical regulations that apply to drug development. The course uses a case-based format. Students develop, write, and present a detailed drug development plan. Evaluation based on course project writing and presentations.

E 2. 330.807 Clinical Pharmacology Clinical Conference.
Dr. T. Shapiro, staff and visiting lecturers. First through fourth quarters; Wednesdays, 12:00-1:00 p.m.; one credit.
Journal club and research seminars explore contemporary issues in the discovery, development, development, students develop, write, and present a detailed drug development plan. Evaluation based on course project writing and presentations.
and rational use of drugs. Required course for Clinical Pharmacology fellows.

**E 3. 330.808 Principles of Clinical Pharmacology.** Dr. Shapiro. Dates and times TBA; 1.5 credits.

**Prerequisite:** Permission of the instructor.

A series of fourteen lectures in DVD format taught by experts from around the country form the basis for a presentation/discussion course that covers the spectrum of clinical pharmacology: pharmacokinetics, drug metabolism and transport, assessment of drug effects, and drug therapy in special populations. One and one half hours for each lecture/discussion. Required course for Clinical Pharmacology fellows.

**E 4. 330.809 Analytical Methods in Clinical Pharmacology.** Dr. Hendrix. Dates and time TBA; 1.5 credits.

**Prerequisite:** Permission of the instructor.

A series of sixteen intensive one and one half hour small group session covering fundamental methods for compartmental and non-compartmental analysis of pharmacokinetic and pharmacodynamic data. Each topic is introduced with a teach-do-review sequence focusing on skill building exercises. Introduction to pharmacokinetic data analysis using Pharsight's WinNonlin software. Required course for Clinical Pharmacology fellows.

**E 5. Clinical Pharmacology/Internal Medicine Elective.** Dr. Petty. Available all year; one half quarter.

**Prerequisite:** Medicine Core Clerkship.

This elective emphasizes the fundamentals of rational drug therapy in the context of a tertiary care hospital and primary care clinic. Students will participate in an outpatient primary care clinic at the Johns Hopkins Outpatient Center one half-day per week, as well as inpatient care of this clinic population when necessary. In addition, the student will participate in inpatient and outpatient consultations. Students will join in review sessions of questions posed to the Drug Information Center, and learn how to use various resources to answer these questions. Research conferences within the Clinical Pharmacology Division will be open to the student, and attendance at a weekly student journal club will be required. The student will be invited to attend the monthly Pharmacy and Therapeutics Committee meeting, and join the Hospital Pharmacologist and Drug Information Center staff in responding to questions and issues arising within the hospital.

**RENAL DIVISION**

**DR. SCHEEL, DIRECTOR**
**DR. CHOI, CLINICAL DIRECTOR**
**DR. ALACHKAR**
Kidney transplantation.

**DR. ATTA**
HIV Kidney disease; acute kidney injury; metabolic bone disease; hypertension

**DR. M. J. CHOI**
Electrolyte disorders; glomerulonephritis; nephrolithiasis.

**DR. CREWS**
Chronic kidney disease.

**DR. ESTRELLA**
HIV kidney disease; chronic kidney disease.

**DR. FINE**
Lupus nephritis; HIV kidney disease; rhabdomyolysis.

**DR. GIMENEZ**
Calcium metabolism in renal disease; renal replacement therapy.

**DR. KRAUS**
Kidney transplantation.

**DR. MYERS**
Diabetes and kidney disease; chronic kidney disease.

**DR. RABB**
Kidney transplantation.

**DR. SCHEEL**
Retroperitoneal fibrosis; renovascular disease; glomerulonephrisis; dialysis.

**DR. SCIALLA**
Chronic kidney disease; bone and mineral metabolism.

**DR. SHAFI**
Hypertension; home dialysis; chronic kidney disease.

**DR. SOZIO**
Chronic kidney disease; end stage kidney disease.

**DR. SPECTOR**
Renal physiology; peritoneal dialysis.

**DR. SPERATI**
Hypertension; glomerular disease; electrolyte disorders.

**DR. TURBAN**
Hypertension; chronic kidney disease; diet and kidney disease.

**DR. WATNICK**
Hereditary kidney disease.

**DR. WOMER**
Kidney transplantation.

* Bayview faculty


**Prerequisite:** Medicine Core Clerkship.

This clinical elective is designed to provide the student with practical clinical work in nephrology including: diagnostic evaluations on inpatients; participation in hemodialysis and the management of chronic kidney disease; management of renal transplantation. The student works closely with the fellow and attending physician on the renal service, rounds daily on inpatient consults (which average four per day), and follows patients.

**PULMONARY AND CRITICAL CARE MEDICINE DIVISION**

**DR. KING, DIRECTOR**
**DR. AKULIAN**
Interventional pulmonology.

**DR. AGGARWAL**
Acute lung injury; critical care; sepsis.

**DR. AURORA**
Pulmonary and sleep medicine.
DR. WISE*  
Cardiopulmonary physiology; autoimmune pulmonary disease; chronic obstructive pulmonary disease.

DR. YARMUS  
Interventional pulmonology.

DR. YUNG  
Diagnosis of and therapy for early and advanced cancer; aerosolized cytokines.

* Bayview faculty

E 1. Clinical Clerkship in Pulmonary Diseases and Clinical Pulmonary Physiology. Dr. Boyle and staff. Available all year. One-half quarter or longer by prior arrangement.

Prerequisite: Medicine Core Clerkship.

Students participate in the consultation service of the Respiratory Division at the Johns Hopkins Hospital. Students are responsible for evaluating, under the supervision of a fellow and an attending physician, patients with a wide variety of lung diseases, recommending diagnostic and therapeutic options, and following patients during the course of their pulmonary problems. Students attend radiology conferences and seminars of the division and may participate in the activities of the Pulmonary Function Laboratory.

RHEUMATOLOGY DIVISION

DR. ROSEN, DIRECTOR
DR. WIGLEY, ASSOCIATE DIRECTOR
DR. ANDRADE*  
Mechanisms of autoimmunity.

DR. BAER*  
Evaluation and management of Sjogren’s syndrome; metabolic myopathies and gout.

DR. BINGHAM*  
Clinical therapeutics of rheumatoid arthritis and osteoarthritis; oral health in rheumatic diseases; RA & OA clinical trial design.

DR. BIRNBAUM*  
Neurological manifestations of systemic rheumatic diseases with emphasis on Sjogren’s syndrome.

DR. BOIN*  
Translational research in scleroderma and related disorders.

DR. CASCIOLA-ROSEN*  
Mechanisms of autoimmunity, especially myositis and scleroderma.

DR. CHRISTOPHER-STINE*  
Epidemiology and therapy of inflammatory myositis.

DR. DARRAH*  
Mechanisms of autoimmunity.

DR. GELBER*  
Evaluation of arthritis and rheumatic disorders.

DR. GRADER-BECK*  
Translational research in systemic autoimmunity.

DR. HAQUE*  
Evaluation and management of inflammatory arthritis.

DR. HALL*  
Mechanisms of autoimmunity.

DR. HUMMERS*  
Epidemiology and treatment of scleroderma.

* Bayview faculty

E 1. Clinical Clerkship in Rheumatology. Drs. Gelber and Rosen. One student at a time; available for two, three, or four week period.

Prerequisite: Medicine Core Clerkship.

This elective teaches a general approach to the differential diagnosis of rheumatic diseases, the rheumatology physical exam, and principles of treatment of common rheumatic disorders. Students will actively participate on the in-patient consultation service at the Johns Hopkins Hospital by working with the fellows and attending rheumatology consultant. There will be significant opportunity for one-on-one teaching. Students will also attend journal clubs and teaching conferences.

E 2. Advanced Clinical Clerkship in Medicine/Rheumatology. (Rheumatology Service at Good Samaritan Hospital) Dr. Ziminski. Available all year. One-half or full quarter.

Prerequisite: Medicine Core Clerkship.

The student functions under the guidance of house-staff and attending physicians. Patients with multi-system connective tissue disorders and inflammatory joint disease are admitted to the Rheumatic Disease Unit with a broad array of problems including flare in the underlying disease process, complications of the disease and/or its therapy for intercurrent illnesses.

Students will also see patients in the Rheumatology Outpatient Department with faculty supervision. Students will be taught the approach/evaluation of patients presenting with musculoskeletal com-
plaints, the appropriate history and physical examination, use of diagnostic studies, and approach to management. Students may also see rheumatology patients who are on the Orthopaedic and Physical medicine and Rehabilitation services to provide a multidisciplinary experience. Students also participate in the in-patient consult service, working with residents, fellows, and attending rheumatologist faculty.

The curriculum includes teaching rounds and clinical and research conferences/seminars to complement the clinical experience.
Molecular and Comparative Pathobiology

M. CHRISTINE ZINK
Professor of Molecular and Comparative Pathobiology, Professor of Pathology, Director of the Department of Molecular and Comparative Pathobiology

JANICE E. CLEMENTS
Mary Wallace Stanton Professor for Faculty Affairs, University Distinguished Service Professor of Molecular and Comparative Pathobiology, Joint Appointment in Molecular Biology and Genetics, Professor of Neurology, Professor of Pathology

GENE M. SCHEARER, Adjunct Professor
ROBERT A. SQUIRE, Professor
ROBERT J. ADAMS, Associate Professor
SHEILA A. BARBER, Adjunct Associate Professor
CORY FLAGG BRAYTON, Associate Professor
KATHLEEN GABRIELSON
Associate Professor of Molecular and Comparative Pathobiology, Associate Professor of Pathology

DAVID L. HUSO
Associate Professor of Molecular and Comparative Pathobiology, Associate Professor of Oncology

DARA L. KRAITCHMAN
Associate Professor of Radiology, Associate Professor of Molecular and Comparative Pathobiology

JOSEPH LEONARD MANKOWSKI
Associate Professor of Molecular and Comparative Pathobiology, Associate Professor of Neurology, Associate Professor of Pathology

ANDREW S. MCCALLION
Associate Professor of Molecular and Comparative Pathobiology in Genetic Medicine, Research Associate in Medicine

MIKHAIL V. PLETNIKOV
Associate Professor of Psychiatry, Associate Professor of Neuroscience, Associate Professor of Molecular and Comparative Pathobiology

SARAH LOUISE POYNTON
Associate Professor of Molecular and Comparative Pathobiology, Associate Professor of Art as Applied to Medicine

R. MITCHELL BUSH, Assistant Professor

LUCY MINNICH CARRUTH, Adjunct Assistant Professor

DAVID R.M. GRAHAM
Assistant Professor of Molecular and Comparative Pathobiology, Assistant Professor of Medicine

BAKTIRI O. KARIM, Assistant Professor

RICHARD J. MONTALI, Assistant Professor

SRINIVAS S. RAO, Adjunct Assistant Professor

DAWN SHURESS RUBEN, Assistant Professor

DIANA GERARDI SCORPIO
Assistant Professor of Molecular and Comparative Pathobiology (to 07/05/2011)

JULIE WATSON, Assistant Professor

MICHAEL RILEY WEED
Adjunct Assistant Professor of Behavioral Biology, Adjunct Assistant Professor of Molecular and Comparative Pathobiology

LUCIO GAMA
Instructor in Molecular and Comparative Pathobiology (from 10/01/2011), Research Associate in Molecular and Comparative Pathobiology (to 09/30/2011)

ERIC KENNETH HUTCHINSON, Instructor
MARK EMORY CARTWRIGHT, Lecturer

DAVID R. COLOQUHOUN
Research Associate in Molecular and Comparative Pathobiology (from 10/01/2011)

ZHAOHAO LIAO, Research Associate
POLINA SYSA, Research Associate

YI XU, Research Associate

NORIKO TSUCHIYA, Visiting Scientist

The Department of Molecular and Comparative Pathobiology provides instruction and consultation in animal medicine, experimental techniques and comparative pathology, with emphasis on the study of disease processes in animals which relate to human health and biomedical research. Postdoctoral training is offered in laboratory animal medicine, comparative pathology and in retrovirus biology. The department is equipped with medical, surgical, pathology, diagnostic and research laboratories as well as a research farm with domestic and exotic animal species.

ELECTIVE OPPORTUNITIES—Curricular Consultant: Dr. Zink. Elective courses must be approved by the preceptor; any member of the department may act as preceptor.

680.800 Research Activities:
Research interests represented in the Department of Molecular and Comparative Pathobiology are as follows:

DR. ADAMS
Primatology; laboratory animal medicine.

DR. CLEMENTS
Molecular biology of lentiviruses; molecular basis of simian immunodeficiency virus disease.

DR. CRANFIELD
Zoo medicine.

DR. GABRIELSON
Cardiovascular toxicology.

DR. HUSO
Neurovirology; comparative pathology.

DR. MANKOWSKI
Viral pathogenesis; comparative pathology.

DR. POYNTON
Parasitology; protozoology; aquatic animal medicine.
DR. SCORPIO
Tick-borne infections; laboratory animal medicine.

DR. ZINK
Neurovirology; comparative pathology; viral pathogenesis.

680.700 Comparative Medicine Research Seminar Series. Dr. Zink and staff. One hour seminar; Fridays 1:00 p.m.; September through June.
One hour seminars given by faculty throughout the institution and outside guest speakers dealing with naturally occurring diseases of animals that relate to medical research and human disease, and with animal models of human disease.

680.701 Comparative Pathobiology and Genetically Engineered Mice. Dr. Huso and staff. Fourth quarter; alternate years. Lecture and laboratory 4 credits total.
Prerequisites: Courses in biology, histology and physiology or permission from course director.
Lectures and laboratory (microscopy) introduction to comparative pathobiology of the major organ systems. Pathology and pathophysiology themes that are shared across many species are covered, particularly those relevant to mouse genetic models and human disease.

680.702 LAM/PATH Integrated Problem Solving. Dr. Scorpio. All quarters; Fridays, 10:00-11:45 a.m.
A survey of the use of animals in research with emphasis on biologic, nutritional and disease factors which may interfere with interpretation of research data, cause loss of experiments or serve as hazards to public health. Humane and ethical aspects receive consideration also.

680.703 Animal Pathology Laboratory. Throughout the year. Credit to be arranged. Dr. Zink and staff.
Prerequisite: 680.701, or Pathology 300.600, or their equivalents.

A limited number of persons may serve as prosecutors on the animal pathology diagnostic service. This entails responsibility for gross and microscopic examination of diseased animals and tissues submitted for diagnosis by investigators within the Institutions, by practicing veterinarians, and by the Baltimore Zoo. Complete necropsy and histopathology laboratories are available and prosecutors work under close faculty supervision. Rotational assignments may vary according to schedules.

680.710 Clinical Conference in Laboratory Animal Medicine. Staff. All year; Fridays.
Weekly conferences in clinical laboratory animal medicine and clinical pathology. Attendance by comparative medicine and comparative pathology fellows is expected. The course is open to all other students, fellows and faculty.

680.711 Comparative Pathology Conference. Dr. Zink and Staff. One hour seminar, Fridays, 12:00; all four quarters.
This is a weekly one hour diagnostic slide conference which focuses on the discussion of histologic and electron microscopic examples of unknown cases drawn from a wide variety of animal species. Cases are available for study during the week preceding the conference. Participants describe the cases, give differential diagnoses, and discuss etiology and pathogenesis with the guidance of faculty members.

680.802 Journal Club for Laboratory Animal Medicine Board Review. Dr. Scorpio. All quarters; Friday 10:00 am.

680.803 Journal Club for Pathology Board Review. Dr. Zink and Staff. All quarters; Tuesday 12:00

680.804 Clinical Rounds Conference. Dr. Adams. All quarters.
Molecular Biology and Genetics

CAROL WIDNEY GREIDER
Daniel Nathans Professor and Director of Molecular Biology and Genetics, Professor of Oncology

WILLIAM RAMSES BISHAI
Professor of Medicine, Professor of Molecular Biology and Genetics, Joint Appointment in Pathology

JEF D. BOEKE
Professor of Molecular Biology and Genetics, Professor of Oncology

JEFFRY L. CORDEN, Professor
BRENDAN P. CORMACK, Professor
NANCY L. CRAIG
Professor of Molecular Biology and Genetics, Investigator of the Howard Hughes Medical Institute

STEPHEN VINCENT DESIDERIO, Professor
RACHEL GREEN
Professor of Molecular Biology and Genetics, Investigator of the Howard Hughes Medical Institute

HAIG H. KAZAZIAN, JR.
Professor of Pediatrics in Genetic Medicine, Professor of Molecular Biology and Genetics

THOMAS J. KELLY, JR.
Professor of Molecular Biology and Genetics (on leave of absence)

SE-JIN LEE, Professor
JEREMY NATHANS
Professor of Molecular Biology and Genetics, Professor of Neuroscience, Professor of Ophthalmology, Investigator of the Howard Hughes Medical Institute

DUOJIA PAN
Professor of Molecular Biology and Genetics, Professor of Oncology, Professor of Pharmacology and Molecular Sciences

RANDALL R. REED
Professor of Molecular Biology and Genetics, Professor of Neuroscience, Professor of Otolaryngology-Head and Neck Surgery

GERALDINE SEYDOUX
Professor of Molecular Biology and Genetics, Investigator of the Howard Hughes Medical Institute

HYUN S. SHIN, Adjunct Professor

HAMILTON O. SMITH
American Cancer Society Distinguished Research Professor Emeritus of Molecular Biology and Genetics

ALLAN C. SPRADLING, Adjunct Professor

YIXIAN ZHENG, Adjunct Professor

PAUL H. HARDY, JR., Associate Professor Emeritus

SINISA URBAN, Associate Professor

ELIZABETH H. CHEN, Assistant Professor

NICHOLAS T. INGOLIA, Adjunct Assistant Professor

SARAH JO WHEELAN
Assistant Professor of Oncology, Assistant Professor of Molecular Biology and Genetics

ROSANNA P. BAKER, Research Associate

THANH V. HUYNH, Research Associate

PAMELA BERNADETTE MELUH, Research Associate

TAMMY MORMISH
Research Associate in Molecular Biology and Genetics (from 08/15/2011)

AMIR RATTNER, Research Associate

KAREN A. WEHNER, Research Associate

KAREN I. ZELLER
Research Associate in Molecular Biology and Genetics (from 08/01/2011), Research Associate in Medicine (to 07/31/2011)

CHAO LU, Visiting Scientist

GUY-FRANCK RICHARD, Visiting Scientist

FACULTY ASSOCIATED WITH THE DEPARTMENT OF MOLECULAR BIOLOGY AND GENETICS HOLDING A PRIMARY APPOINTMENT IN:

The School of Medicine:

MICHAEL A. BEER
Assistant Professor of Biomedical Engineering in Genetic Medicine

ARAVINDA CHAKRAVARTI
Professor of Medicine in Genetic Medicine

JANICE E. CLEMENTS
University Distinguished Service Professor of Molecular and Comparative Pathobiology

CHI VAN DANG
Johns Hopkins Family Professor for Oncology Research in the Department of Medicine

HARRY C. DIETZ
Victor A. McKusick Professor of Medicine and Genetics in the Department of Pediatrics

ANDREW P. FEINBERG
King Fahd Professor of Molecular Medicine in the Department of Medicine

GREGORY G. GERMINO
Adjunct Professor of Medicine

ALEX LEO KOLODKIN
Professor of Neuroscience

PAULA M. PITHA-ROWE
Professor of Oncology

ROBERT F. SILICIANO
Professor of Medicine

MARK J. SOLOSKI
Professor of Medicine

FORREST SPENCER
Associate Professor of Medicine in Genetic Medicine

DAVID L. VALLE
Professor of Pediatrics in Genetic Medicine

BERT VOGELSTEIN
Clayton Professor of Oncology

DONALD J. ZACK
Guerrieri Family Professor of Ophthalmology

The programs of instruction and training in the Department of Molecular Biology and
Genetics are designed to meet the needs of: (a) students of Medicine, (b) candidates for doctoral degrees in Molecular Biology and Genetics and related medical sciences, and (c) postdoctoral students wishing to prepare for careers in teaching and research.

REQUIRED COURSE WORK FOR M.D.
PROGRAM

First Year —

800.619 Scientific Foundations of Medicine. Dr. Jon Lorsch. M.-F., 8:00-1:00; Clinical Correlations, F., 2:00-3:30 p.m.

Biochemistry, Cell Biology, Genetics, and Pharmacology are fully integrated into a combined course of study presented by the basic science departments. The course provides a comprehensive, fully integrated coverage of the molecular basis of cellular metabolism and function. The course will emphasize small group learning and problem solving. The student will participate in "Journal Club," in which important papers in the front-line biomedical literature will be discussed. Clinical Correlations related to basic science concepts will be held at various days and times. Enrollment of non-medical students requires approval from the course director.

Prerequisites: Elementary courses in inorganic chemistry, organic chemistry, general biology, and general physics. At least one upper-level course in Biochemistry or Cell Biology is strongly recommended.

OTHER COURSES AND ELECTIVE OPPORTUNITIES—Curricular Consultant: Dr. Carol Greider. Elective courses must be approved by the course director; any member of the department may act as preceptor.

Molecular Biology and Genetics E

The elective courses described below are open to medical students in the second, third and fourth years, as well as to predoctoral and postdoctoral students. (For other elective courses in microbiology, immunology, or molecular biology, see catalogues of the School of Public Health and the School of Arts and Sciences.)

100.804 Topics in Macromolecular Structure and Function. Drs. Leahy, Amzel, Wade, and Lorsch. One hour per week throughout the academic year. W., 9:30-10:30. (Same as Biophysics 100.804)

This is a seminar course covering a variety of topics involving the structure and function of proteins and nucleic acids. Recent topics have included: protein folding, evolutionary significance of introns, protein-DNA interactions, solution structure of peptides, prospects for designing novel proteins, and two-dimensional NMR.

260.708 Fundamentals of Genetics. Drs. G. Seydoux and staff. Second quarter; 17 lectures; Tues & Thurs 9:00-10:30 a.m.

Prerequisite: Molecular Biology.

This short lecture course will cover fundamental principles of genetics, focusing primarily on model eukaryotes. Problem sets will be an integral learning tool in this course.


This interdisciplinary course covers the structure and properties of genes and genomes, the mechanism of fundamental biological information transfer (replication, transcription, processing, and translation), the RNA world, chromosome structure and function, and mechanisms of genome instability. Open to students who have had course in organic chemistry, Biochemical and Biophysical Principles (100.710), and are taking Macromolecular Structure and Analysis (100.709) concurrently, or by special permission.

260.802 Special Studies and Research.

Opportunities to carry out special studies and research in various branches of molecular genetics, immunology, and microbiology will be made available not only to candidates for advanced degrees but also to other qualified students. Arrangements for such work must be made with individual members of the staff.


In this course, we will read approximately 20 classic papers in the biological sciences. The course aims to expose students to some of the great experiments from 1700 to the present, and the creative thinking that inspired them. Authors include Benjamin Franklin, Robert Koch, Selig Hecht, Stephen Kuffler, Lubert Stryer, Alec Jeffreies, and Avram Hershko.

Research interests represented in the Department of Molecular Biology and Genetics are as follows:

DR. BOEKE
Retrotransposition; silent chromatin; genomics.

DR. CHEN
Molecular mechanisms of myoblast fusion; drosophila developmental genetics.

DR. CORDEN
Regulation of eukaryotic gene expression.

DR. CORMACK
Microbial pathogenesis; chromatin silencing.

DR. CRAIG
Mechanism of transposition; protein-nucleic acid interactions.

DR. DESIDERIO
Signal transduction in lymphocytes; immunoglobulin gene rearrangement; genetic basis of innate immunity.

DR. GREEN
Ribosome function; molecular mechanisms of translation.

DR. GREIDER
Chromosome structure and function; telomere synthesis and length regulation.

DR. LEE
Growth and differentiation factors in mammalian development.

DR. J. NATHANS
Molecular biology of vision; developmental neurobiology.

DR. PAN
Molecular genetics of tumor suppressor genes and oncogenes.
MOLECULAR BIOLOGY AND GENETICS

DR. REED
Molecular basis of olfaction; mechanisms of neurogenesis.

DR. SEYDOUX
Establishment of embryonic polarity and germ cell fate.

DR. URBAN
Proteolysis in membrane bilayers; cell signaling and malaria invasion.

Prerequisite: Basic knowledge of molecular and cellular biology. 
Presents basic principles of molecular virology and viral diseases, such as structure, replication, and virus-host cell interactions for the major virus families, as well as viral pathogenesis, immune responses, transformation, and epidemiology. Studies molecular biology of selected human pathogens in detail as examples of virus-induced diseases. Student evaluation based on mid-term and final exams.

Prerequisite: PH 260.623. 
Lectures and student presentations cover a wide range of current research areas, including the molecular biology and pathogenesis of herpes viruses, hepatitis viruses, emerging viruses, and unconventional agents. Discusses bacteriophage and baculoviruses and their use in vector biology, as well as viral vectors in gene therapy and antiviral agents. Student evaluation based on class participation and exams.

250.603 Principles of Immunology. Dr. Siliciano and staff; 8:00 a.m. - 1:00 p.m. M., Tu., Th., F.; 8:00-11:00 a.m. W.
This course, a required part of the first year medical school curriculum, provides an introduction to the genetics, biochemistry, and cellular and developmental biology of the immune system. Medical relevance is highlighted through clinical correlations, and basic principles are demonstrated in teaching labs. The course also includes small group discussions and a journal club. The lecture portion of this course is repeated as part of Graduate Immunology (250.703).

250.702 Advanced Topics in Molecular Immunology. Drs. Desiderio and Sadegh-Nasiri. First quarter, T., Th., 9:00-10:30 a.m. Third and fourth quarters, every other year. 
An advanced lecture course addressing current experimental findings related to the molecular aspects of development, recognition and effector functions of the immune system. Open to students who have had Medicine 250.603 or equivalent, or by special permission.

250.703 Graduate Immunology. Dr. Scheherazade Sadegh-Nasri. Fourth quarter; T., Th., 9:00-10:30 a.m. 
This is an introductory course designed to provide graduate students with a comprehensive survey of modern cellular and molecular immunology. The course consists predominantly of lectures but also includes discussion sessions focusing on important recent research papers. This course is open to all graduate students and postdoctoral fellows.

440.707 Molecular Mechanisms in Synaptic Transmission. Drs. Huganir, Worley, and Bergles. Third quarter, every other year. (Same as Neuroscience 440.707) 
Prerequisite: Consent of course director. 
An advanced seminar and reading course devoted to the molecular and cellular mechanisms underlying synaptic transmission and the regulation of synaptic plasticity. The molecular and cellular mechanisms involved in neurotransmitter release, postsynaptic signal transduction, and modulation of synaptic efficacy will be covered. The role of these processes in higher brain function, including learning and memory and synaptic development will be discussed.

GRADUATE PROGRAM—Students are accepted for graduate work leading to the degree of Doctor of Philosophy (see Graduate Programs).
Neurology

JUSTIN C. McARTHUR
Professor of Neurology, Professor of Pathology, Director of the Department of Neurology

Marilyn S. Albert
Professor of Neurology, Professor of Neuroscience, Professor of Psychiatry

Gregory Kent Bergey, Professor

Dana Boatman
Professor of Neurology, Professor of Otolaryngology-Head and Neck Surgery

Jason Brandt
Professor of Psychiatry, Professor of Neurology

Thomas M. BrusHart
Thomas M. BrusHart Professor of Hand Surgery in the Department of Orthopedic Surgery, Professor of Neurology, Professor of Plastic and Reconstructive Surgery

Peter W. Kaplan, Professor

Vinay Chaudhry, Professor

Janice E. Clements
University Distinguished Service Professor of Molecular and Comparative Pathobiology, Joint Appointment in Molecular Biology and Genetics, Professor of Neurology, Professor of Pathology, Mary Wallace Stanton Professor for Faculty Affairs

David R. Cornblath
Professor of Neurology, Professor of Neurological Surgery

Ted M. Dawson
Leonard and Madlyn Abramson Professor of Neurodegenerative Diseases in the Department of Neurology, Professor of Neuroscience

Valina L. Dawson
Professor of Neurology, Professor of Neurology, Professor of Physiology

Martha Bridge Denckla
Professor of Neurology, Professor of Pediatrics, Joint Appointment in Psychiatry

Daniel B. Drachman
W.W. Smith Charitable Trust Professor of Immunology in the Department of Neurology, Professor of Neuroscience

Christopher J. Earley, Professor

John M. Freeman
Professor Emeritus of Neurology, Professor Emeritus of Pediatrics

Gary W. Goldstein
Professor of Neurology, Professor of Pediatrics

BARRY GORDON
The Therapeutic Cognitive Neuroscience Professor of Neurology

Daniel F. Hanley
Jeffrey and Harriet Legum Professor of Acute Neurological Medicine in the Department of Neurology, Professor of Anesthesiology and Critical Care Medicine, Professor of Neurological Surgery

Argye Elizabeth Hillis
Professor of Neurology, Professor of Physical Medicine and Rehabilitation

Ahmet Hoke
Professor of Neurology, Professor of Neuroscience

Richard T. Johnson
University Distinguished Service Professor of Neurology, Professor of Neuroscience

Michael V. Johnston
Professor of Neurology, Professor of Pediatrics, Professor of Physical Medicine and Rehabilitation

Peter W. Kaplan, Professor

Walter Erwin Kaufmann
Professor of Pathology, Professor of Neurology, Professor of Pediatrics, Professor of Psychiatry, Professor of Radiology

Vassilis E. Koliatsos
Professor of Pathology, Professor of Neurology, Associate Professor of Psychiatry

John W. KRAKAUER
Professor of Neurology, Professor of Neuroscience

Gregory Lewis Krauss, Professor

John J. Laterra
Professor of Neurology, Professor of Neuroscience, Professor of Oncology

Ronald P. Lesser
Professor of Neurology, Professor of Neurological Surgery

Russell Louis Margolis
Professor of Psychiatry, Professor of Neurology

Una Deirdre McCann
Professor of Psychiatry, Professor of Neurology

Gary W. Goldenstein
Professor of Neurology, Professor of Pediatrics

Marek A. Z. Mirski
Professor of Anesthesiology and Critical Care Medicine, Professor of Neurology, Professor of Neurological Surgery

Mark E. Molliver
Professor Emeritus of Neuroscience, Professor Emeritus of Neurology

Hamilton Moses, III, Adjunct Professor

Sakkubai Naidu
Professor of Neurology, Professor of Pediatrics

Avindra Nath, Adjunct Professor

Ernst F.L. Niedermeyer
Professor Emeritus of Neurological Surgery, Professor Emeritus of Neurology

Donald L. Price
Professor Emeritus of Pathology, Professor Emeritus of Neurology, Professor Emeritus of Neuroscience

Srinivasa Naga Raja
Professor of Anesthesiology and Critical Care Medicine, Professor of Neurology

Gerald V. Raymond, Professor

George A. RICAURTE, Professor
GABRIELE VALERIA RONNETT
Professor of Neuroscience, Professor of Biological Chemistry, Professor of Neurology

CHRISTOPHER A. ROSS
Professor of Psychiatry, Professor of Neurology, Professor of Neuroscience, Professor of Pharmacology and Molecular Sciences

JEFFREY D. ROTHSTEIN
John W. Griffin Professor of the Brain Science Institute, Professor of Neurology, Professor of Neuroscience

NED CHARLTON SACKTOR, Professor
OLA A. SELNES, Professor

HARVEY S. SINGER
Haller Professor of Pediatric Neurologic Diseases in the Department of Neurology, Professor of Pediatrics

HONGJUN SONG
Professor of Neurology, Professor of Neuroscience

NITISH V. THAKOR
Professor of Biomedical Engineering, Professor of Neurology

KLAUS VIKTOR TOYKA, Adjunct Professor
GEORGE R. UHL
Adjunct Professor of Neurology, Adjunct Professor of Neuroscience

JOHN A. ULATOWSKI
Professor of Anesthesiology and Critical Care Medicine, Professor of Neurology, Professor of Neurological Surgery

EILEEN P.G. VINING
Lederer Professor of Pediatric Epilepsy in the Department of Neurology, Professor of Pediatrics

PAUL ALLAN WATKINS
Professor of Neurology, Joint Appointment in Biological Chemistry, Professor of Oncology

PAUL F. WORLEY
Professor of Neuroscience, Professor of Neurology

DAVID S. ZEE
Professor of Neurology, Professor of Neuroscience, Professor of Ophthalmology, Professor of Otolaryngology-Head and Neck Surgery

ERIC MATTHEW ALDRICH
Associate Professor of Neurology, Joint Appointment in Physical Medicine and Rehabilitation

RICHARD P. ALLEN, Associate Professor

AMY J. BASTIAN
Associate Professor of Neuroscience, Associate Professor of Neurology, Associate Professor of Physical Medicine and Rehabilitation

MARY ELIZABETH BLUE
Associate Professor of Neurology, Associate Professor of Neuroscience

KAREN I. BOLLA
Associate Professor of Neurology, Joint Appointment in Psychiatry

DAVID BUCHHOLZ, Associate Professor

JUAN RICARDO CARHUAPOMA
Associate Professor of Neurology, Associate Professor of Anesthesiology and Critical Care Medicine, Associate Professor of Neurological Surgery

PABLO ARIEL CELNIK
Associate Professor of Physical Medicine and Rehabilitation, Associate Professor of Neurology

ANNE MARIE COMI
Associate Professor of Neurology, Associate Professor of Pediatrics

KATHERINE CONANT, Adjunct Associate Professor

ANDREA M. CORSE
Associate Professor of Neurology, Associate Professor of Neurological Surgery

BARBARA J. CRAIN
Associate Professor of Pathology, Associate Professor of Neurology, Associate Professor of Oncology

THOMAS O. CRAWFORD
Associate Professor of Neurology, Associate Professor of Pediatrics

NATHAN E. CRONE, Associate Professor

LAURIE E. CUTTING, Adjunct Associate Professor

JOHN E. DESMOND
Associate Professor of Neurology, Associate Professor of Neuroscience

EARL RAY DORSEY, Associate Professor

DIANA M. ESCOLAR, Associate Professor

PIOTR J. FRANASZCZUK
Associate Professor of Neurology (on leave of absence)

NICHOLAS ROGER GAIANO
Associate Professor of Neurology, Associate Professor of Neuroscience, Associate Professor of Oncology

PHILIPPE EDMOND GAILLOUD
Associate Professor of Radiology, Associate Professor of Neurology, Assistant Professor of Neurological Surgery

DHEERAJ GANDHI
Associate Professor of Radiology, Associate Professor of Neurology, Associate Professor of Neurological Surgery

SUZANNE GARTNER, Adjunct Associate Professor

ROMERGRYKO GUANCE GEOCADIN
Associate Professor of Neurology, Associate Professor of Anesthesiology and Critical Care Medicine, Associate Professor of Neurological Surgery

ROBERT D. GERWIN, Associate Professor

REBECCA FRAN GOTTESMAN, Associate Professor

NORMAN JAMES HAUGHEY
Associate Professor of Neurology, Joint Appointment in Psychiatry

S. DIANE HAYWARD
Professor of Oncology, Associate Professor of Neurology, Professor of Pharmacology and Molecular Sciences

MIR AHAMED HOSSAIN, Associate Professor
SHUO WANG  
Visiting Scientist in Neurology (to 07/31/2011)
YUN ZHOU, Visiting Scientist

FACULTY ASSOCIATED WITH THE DEPARTMENT OF NEUROLOGY HOLDING A PRIMARY APPOINTMENT IN:

The Bloomberg School of Public Health:
M. DIANE E. GRIFFIN  
Professor of Molecular Microbiology and Immunology
J. MARIE HARDWICK  
Professor of Molecular Microbiology and Immunology

REQUIRED COURSE WORK FOR M.D. PROGRAM

First Year —  

1. Nervous System and Special Senses  
   Director: Dr. Nicole Schiess. Faculty from multiple departments. Offered fourth quarter (final 7 weeks).
   This section of the new Genes to Society course integrates content across several clinical disciplines (neurology, neuropathology, neuroradiology, neurosurgery, ophthalmology, otolaryngology) with the fundamentals of basic neuroanatomy, neurophysiology, neuropharmacology, and molecular neuroscience. The section emphasizes the integration of content related to normal and abnormal functions of the nervous system and special sense organs focusing on the complex interplay between individuals and their environment (exploring links between genetic and individual human variation and societal influence on neurologic function).

Second, Third or Fourth Year —  

1. Neurology Clerkship. Co-Directors: Dr. Charlene Gamaldo & Dr. Rachel Salas. Offered as part of the required Psychiatry/Neurology Clerkship. Four quarters and summer.
   Each student will spend four weeks on Clinical Neurology and four weeks on Clinical Psychiatry. Examination of the nervous system, formulation of clinical problems, and initial triage and management of patients with neurologic symptoms are stressed. Teaching occurs at the Johns Hopkins Hospital and Johns Hopkins Bayview Medical Center. All rotations include experiences in outpatient, inpatient consult, and inpatient ward neurology. Pediatrics may be requested as a focus for the inpatient ward experience at the East Baltimore campus.

ELECTIVE OPPORTUNITIES—Curricular Consultant: Dr. Rachel Salas. Elective courses must be approved by the preceptor and the student’s faculty advisor; any member of the department may act as preceptor.

Neurology E

The elective courses offered below are given in part for the instruction of house officers and fellows in Neurology. All courses are also open to students of the third and fourth years who wish more experience in clinical
and basic neurology, and for students who propose ultimately to become neurologists.

E 1. Neurology Sub-Internship. Director: Dr. Rachel Salas, 4-6 weeks, offered year round. Coordinator: Nancy Woodey (nlippi1@jhmi.edu, 410-502-7393)
   Prerequisite: Basic Clerkships in Medicine and Neurology.
   The Sub-internship in Adult Neurology is an elective rotation for students wishing additional experience in Clinical Neurology beyond the clerkship level. The rotation can be tailored to the specific interests of the student with rotation on the inpatient team, consult service, or specific outpatient clinics, or any combination of the three.

E 2. Pediatric Neurology Sub-Internship. Director: Dr. Rachel Salas, 4-6 weeks, offered year round. Coordinator: Nancy Woodey (nlippi1@jhmi.edu, 410-502-7393)
   Prerequisite: Basic clerkships in Neurology and Pediatrics.
   An elective clerkship in Pediatric Neurology is offered on both inpatient and outpatient Pediatric Neurology services.

E 3. Pediatric Epilepsy Elective. Director: Dr. Adam Hartman, 4 weeks, offered year round.
   Coordinator: Nancy Woodey (nlippi1@jhmi.edu, 410-502-7393)
   Prerequisite: Basic clerkships in Neurology and Pediatrics.
   An elective clerkship in Pediatric Neurology is offered on both inpatient and outpatient Pediatric Neurology services.

E 4. Neuro Critical Care Elective. Director: Dr. J. Ricardo Carhuapoma, 4 weeks, offered year round.
   Coordinator: Nancy Woodey (nlippi1@jhmi.edu, 410-955-7481)
   Prerequisite: Basic clerkship in Neurology.

E 5. Research Electives.
   Research interests represented in the Department of Neurology are as follows:
   DR. ALBERT  
   Alzheimer's disease.
   DR. CORNBATH  
   Neurology peripheral nerve disease and electromyography.
   DR. T. DAWSON  
   Molecular mechanisms of neurodegenerative disease; neuronal cell death and survival.
   DR. V. DAWSON  
   Molecular mechanisms of neurodegenerative disease.
   DR. DRACHMAN  
   Neuromuscular diseases; neuroimmunology; gene transfer strategies for therapy of Myasthenia and ALS.
   DR. EARLEY  
   Sleep-related disorders; sleep-wake dysfunctions; restless leg syndrome; circadian rhythm disorders.
   DR. GAIANO  
   Molecular mechanisms regulating mammalian neural stem cells.
DR. GARTNER
Virologic studies of HIV infections of nervous system.

DR. GORDON
Neuropsychology.

DR. HANLEY
Brain injury outcomes; stroke; experimental neurosurgery.

DR. HILLIS
Neural basis of cognitive impairment and recovery after stroke.

DR. HOKE
Peripheral neuropathies; nerve regeneration and drug development for neuroprotection.

DR. JOHNSTON
Excitatory amines in cerebral anoxia.

DR. KOSSOFF
Ketogenic diet; hemispherectomy; infantile spasms; migraines; intractable epilepsy.

DR. LATERRA
Studies of brain tumors; neuro-oncology.

DR. LESSER
Epilepsy and electroencephalography.

DR. LLOYD
Neuroimmunology.

DR. McARTHUR
Therapies for HIV-associated dementia and sensory neuropathies; cutaneous innervation in diverse neuropathic states; multiple sclerosis, neurological infections.

DR. NEWMAN-TOKER
Clinical and health services research related to diagnosis and misdiagnosis of neurological symptoms and disorders in frontline healthcare settings such as the emergency department.

DR. SINGER
Pediatric movement disorders; neuroimmunology.

DR. SONG
Regulation and application of adult neural stem cells.

DR. SUMNER
Inherited motor neuron and peripheral nerve diseases.

DR. WITYK
Cerebrovascular disease; stroke; neuroradiology; critical care neurology.

DR. YING
MRI of cerebellar control of eye movements in hereditary ataxias.

DR. ZEE
Oculomotor and vestibular disorders.
The Solomon H. Snyder Department of Neuroscience

RICHARD L. HUGANIR
Professor of Neuroscience, Joint Appointment in Biological Chemistry, Investigator of the Howard Hughes Medical Institute, Director of the Department of Neuroscience

Marilyn S. Albert
Professor of Neurology, Professor of Neuroscience, Professor of Psychiatry

JAY M. BARABAN
Professor of Neuroscience, Professor of Psychiatry

Dwight Edward Bergles
Professor of Neuroscience, Assistant Professor of Otolaryngology-Head and Neck Surgery

Antonello Bonci, Adjunct Professor

Joseph V. Brady
Professor of Behavioral Biology (to 07/29/2011), Professor of Neuroscience (to 07/29/2011)

Peter Anthony Camacho
George S. and Dolores D. Eccles Professor of Ophthalmology, Professor of Neuroscience

Michael Jerry Caterina
Professor of Biological Chemistry, Professor of Neuroscience

Charles Edward Connor, Jr., Professor

Ted M. Dawson
Leonard and Madlyn Abramson Professor of Neurodegenerative Diseases in the Department of Neurology, Professor of Neuroscience

Valina L. Dawson
Professor of Neurology, Professor of Neuroscience, Professor of Physiology

Daniel B. Drachman
W.W. Smith Charitable Trust Professor of Immunology in the Department of Neurology, Professor of Neuroscience

Paul Albert Fuchs
John E. Bordley Professor of Otolaryngology-Head and Neck Surgery, Professor of Biomedical Engineering, Professor of Neuroscience

David D. Ginty
Professor of Neuroscience, Investigator of the Howard Hughes Medical Institute

Roland R. Griffiths
Professor of Behavioral Biology, Professor of Neuroscience

Stewart H.C. Hendry, Professor

Ahmet Hoke
Professor of Neurology, Professor of Neuroscience

Steven Shih-Ting Hsiao
Professor of Neuroscience, Professor of Biomedical Engineering

Richard T. Johnson
University Distinguished Service Professor of Neurology, Professor of Neuroscience

Alex Leo Kolodkin
Professor of Neuroscience, Joint Appointment in Molecular Biology and Genetics, Investigator of the Howard Hughes Medical Institute

John W. Krakauer
Professor of Neurology, Professor of Neuroscience

John J. Laterra
Professor of Neurology, Professor of Neuroscience, Professor of Oncology

Frederick A. Lenz
A. Earl Walker Professor of Functional Neurosurgery, Professor of Neuroscience

Min Li
Professor of Neuroscience, Professor of Physiology

David J. Linden, Professor

Lee J. Martin
Professor of Pathology, Professor of Neuroscience

Mark P. Mattson, Adjunct Professor

Guy Mead Mckhann
Professor of Neurology, Professor of Neuroscience

Lloyd B. Minor
University Distinguished Professor of Otolaryngology-Head and Neck Surgery, Professor of Biomedical Engineering, Professor of Neuroscience

Mark E. Molliver
Professor Emeritus of Neuroscience, Professor Emeritus of Neurology

Craig Montell
Professor of Biological Chemistry, Professor of Neuroscience

Vernon B. Mountcastle
University Professor Emeritus of Neuroscience

Jeremy Nathans
Professor of Molecular Biology and Genetics, Professor of Neuroscience, Professor of Ophthalmology, Investigator of the Howard Hughes Medical Institute

Donald L. Price
Professor Emeritus of Pathology, Professor Emeritus of Neurology, Professor Emeritus of Neuroscience

Randall R. Reed
Professor of Molecular Biology and Genetics, Professor of Neuroscience, Professor of Otolaryngology-Head and Neck Surgery

David A. Robinson
University Distinguished Service Professor Emeritus of Ophthalmology, University Distinguished Service Professor Emeritus of Biomedical Engineering, University Distinguished Service Professor Emeritus of Neuroscience

Gabrielle Valeria Ronnett
Professor of Neuroscience, Professor of Biological Chemistry, Professor of Neurology

Christopher A. Ross
Professor of Psychiatry, Professor of Neurology, Professor of Pharmacology and Molecular Sciences
MARY ANN WILSON
Associate Professor of Neurology, Associate Professor of Neuroscience

JIN ZHANG
Associate Professor of Pharmacology and Molecular Sciences, Associate Professor of Neuroscience, Associate Professor of Oncology

SOLANGE P. BROWN, Assistant Professor

MICHAEL R. DEANS
Assistant Professor of Otolaryngology-Head and Neck Surgery, Assistant Professor of Neuroscience

ANGELIKA DOETZLHOFER, Assistant Professor

DAVID FOSTER, Assistant Professor

THOMAS E. LLOYD
Assistant Professor of Neurology, Assistant Professor of Neuroscience

NICHOLAS MARSH-ARMSTRONG
Assistant Professor of Neuroscience, Joint Appointment in Ophthalmology

MOLLIE K. MEFFERT
Assistant Professor of Biological Chemistry, Assistant Professor of Neuroscience

DANIEL H. O’CONNOR
Assistant Professor of Neuroscience (from 05/01/2012)

CHRISTOPHER J. POTTER, Assistant Professor

MARSHALL G. HUSSAIN SHULER, Assistant Professor

KECHEN ZHANG
Assistant Professor of Biomedical Engineering, Assistant Professor of Neuroscience

FENG-QUAN ZHOU
Assistant Professor of Orthopaedic Surgery, Assistant Professor of Neuroscience

ANUTOSH CHAKRABORTY, Instructor

SUSAN M. AJA, Research Associate

ROXANNE K. BARROW, Research Associate

LYNDA D. HESTER, Research Associate

JIANG HU, Research Associate

NATASHA HUSSAIN, Research Associate

SHIN HYEOK KANG, Research Associate

SEYUN KIM, Research Associate

ZHILI, Research Associate

DONG-GEN LUO, Research Associate

OWEN B. MCMANUS, Research Associate

SUSAN MEDGHALCHI, Research Associate

JOO MIN PARK, Research Associate

MARTIN PAUKERT, Research Associate

BINDU DIANA PAUL, Research Associate

MICHELE PUCAK, Research Associate

BALAKRISHNAN SELVAKUMAR, Research Associate

NILKANTHA SEN, Research Associate

KAMAL DEEP SHARMA, Research Associate

ADELE M. SNOWMAN, Research Associate

SRINIVASA SUBRAMANIAM, Research Associate

JING WU, Research Associate

MENG WU, Research Associate

BO XIAO, Research Associate

DESHENG XU, Research Associate

TIAN XUE, Research Associate

YE YAN, Research Associate

HAI-HUA BAI
Visiting Scientist in Neuroscience (to 08/25/2011)

SE-YONG CHOI, Visiting Scientist

ALICIA LAURA DEGANO, Visiting Scientist

ANN M. FERRIE, Visiting Scientist

SOO KYEONG JEON, Visiting Scientist

EUN-KYOUNG KIM, Visiting Scientist

SHIZHANG LING, Visiting Scientist

CHEIL MOON, Visiting Scientist

MIN SUNG SUH
Visiting Scientist in Neuroscience (from 08/22/2011)

HAIYAN SUN, Visiting Scientist

ELIZABETH TRAN, Visiting Scientist

JIAN CHENG TU, Visiting Scientist

FACULTY ASSOCIATED WITH THE DEPARTMENT OF NEUROSCIENCE HOLDING A PRIMARY APPOINTMENT IN:

The Bloomberg School of Public Health:

JIOW WANG
Assistant Professor of Biochemistry and Molecular Biology

The School of Arts and Sciences:

GREGORY F. BALL
Professor of Psychology

SUSAN COURTNEY
Professor of Psychology

HOWARD ELLIOTT EGETH
Professor of Psychology

ERIC FORTUNE
Associate Professor of Psychology

MICHELA GALLAGHER
Professor of Psychology

SAMER S. HATTAR
Associate Professor of Biology

PETER C. HOLLAND
Professor of Psychology

REJJI KURUVILLA
Associate Professor of Biology

BARBARA LANDAU
Dick and Lydia Todd Faculty Development Professor of Cognitive Science

MICHAEL MCCLOSKEY
Professor of Cognitive Science

BRENDA RAPP
Professor of Cognitive Science

AMY LYNNE SHELTON
Associate Professor of Psychology

JEAN CHENG TU
Associate Professor of Psychological and Brain Studies

STEVAN YANTIS
Professor of Psychology

The Department of Neuroscience investigates the nervous system using a variety of...
approaches, including molecular biologic, biophysical, biochemical, neurophysiological, and anatomical strategies.

REQUIRED COURSE WORK FOR PH.D. PROGRAM

Neuroscience

ME440.712 Science, Ethics, and Society. Dr. Marsh-Armstrong. Offered annually, one Wednesday per month, October-May.

Prerequisite: Consent of course director.

Science as a profession has undergone radical changes in the last decade. Central issues include mentoring, misconduct in science, preparedness of graduate students and postdoctoral fellows for careers in science, and the career choices currently available. To this end, this course will focus on mentoring and issues of ethics and scientific misconduct. Preparedness for a career in science issues will be discussed in the context of funding currently available to scientists and preparation strategies involved in grant writing. In addition, methods of oral presentation and slide preparation will be discussed.

ME440.800 Neuroscience Research.

Research interests represented in the Department of Neuroscience are as follows:

DR. ALBERT
Cognitive processes in aging and neurodegenerative disorders.

DR. BALL
Behavioral neuroendocrinology and neuroethology.

DR. BARABAN*
Molecular mechanisms of neuronal plasticity.

DR. BASTIAN
Mechanisms of human movement disorders.

DR. BERGLES*
Synaptic physiology; glutamate transporters and glial involvement in neuronal signaling.

DR. BLACKSHAW*
Molecular basis of cell specification in vertebrate retina and hypothalamus.

DR. BLUE*
Neurotransmitter mechanisms in development and activity-dependent plasticity.

DR. BONCI
Synaptic plasticity, dopamine and substance use disorders.

DR. BOSMANS
Molecular organization and pharmacological properties of the voltage-gated sodium channel signaling complex.

DR. BROWN*
Functional organization of local circuits of the neocortex.

DR. CAMPOCHIARO
Molecular aspects of retinal repair and regeneration.

DR. CATERINA
Molecular mechanisms of thermosensation and nociception.

DR. CELNIK
Neurophysiological mechanisms underlying human motor learning.

DR. CONNOR*
Object synthesis in higher level visual cortex.

DR. COURTNEY-FARUQUEE
Functional organization of the neural system for human working memory.

DR. T. DAWSON
Molecular mechanisms of neuronal cell death and signaling.

DR. V. DAWSON
Molecular mechanisms of neuronal death and survival.

DR. DEANS
Mechanisms of sensory system development and cellular morphogenesis.

DR. DESMOND
Cognitive neuroscience: cerebro-cerebellar circuits in learning and memory.

DR. DOETZLHOFER
Cell fate specification and differentiation in the mammalian auditory system.

DR. DONG
Molecular and genetic studies of pain-sensing neurons.

DR. DRACHMAN
Nerve muscle interactions in health and disease.

DR. DUAN
Translational neurobiology research.

DR. EGETH
Preception and cognition; attention and attentional selectivity; eyewitness testimony.

DR. FARAH
Axonal regeneration in the peripheral nervous system.

DR. FORTUNE
Neural basis of behavior; sensory processing; neuroethology.

DR. FOSTER*
Neural ensemble mechanisms of learning and memory.

DR. FUCHS
Excitability and synaptic function in cochlear hair cells.

DR. GAIANO
Molecular regulation of stem cell maintenance, proliferation, and differentiation in the mammalian brain.

DR. GALLAGHER
Neural mechanisms of memory and attention.

DR. GINTY*
Growth and survival signals controlling nervous system development.

DR. GLOWATZKI*
Synaptic transmission at hair cell synapses in the inner ear.

DR. GRIFFIN
Cellular neurobiology of the peripheral nervous system.

DR. GRIFFITHS
Behavioral pharmacology of drugs of abuse.

DR. HATTAR
Physiological effects of light on mammals: role of the novel melanopsin containing retinal ganglion photoreceptors.

DR. HENDRY*
Functional organization of primate visual system.

DR. HOKE
Neurobiology of peripheral neuropathies; development and regeneration of the peripheral nervous system.
DR. HOLLAND
Neural systems in learning, motivation, and attention.

DR. HSIAO*
Neurophysiology of the central nervous system.

DR. HUGANIR*
Molecular mechanisms in the regulation of synaptic plasticity.

DR. KIRKWOOD
Mechanisms of cortical modification.

DR. KNIERIM*
Behavioral neurophysiology of the hippocampal formation.

DR. KOLODKIN*
Molecular mechanisms of growth cone guidance.

DR. KRAKAUER
Mechanisms of human sensorimotor learning and motor recovery after brain injury.

DR. KURUVILA*
Signaling and trafficking of growth factors in neuronal development.

DR. LATTERRA
CNS tumor biology and blood-brain barrier.

DR. LEE
Disease modeling of peripheral neuropathies with human pluripotent stem cells.

DR. LENZ
Neurophysiology and psychophysics of sensory and motor processing in the human forebrain.

DR. LI*
Signal transduction in the mammalian nervous system; structure and function of cell surface proteins.

DR. LINDEN*
Cellular substrates of memory.

DR. LLOYD
Vesicle trafficking in neurons; axonal and synaptic degeneration in disease.

DR. MARGOLIS
Molecular mechanisms of synapse formation in development and disease.

DR. MARSH-ARMSTRONG*
Gene regulation; development and disease of the vertebrate retina.

DR. MATTSON*
Cellular and molecular mechanisms of brain aging and neurodegenerative disorders.

DR. MEFFERT
Transcriptional regulation of neuronal function in health and disease.

DR. MING
Molecular mechanisms of neuronal navigation during development and in adulthood.

DR. MINOR
Neurophysiology of the vestibular system.

DR. MONTELL
Sensory signaling and TRP channels.

DR. NATH
Mechanisms of neurodegeneration in dementia due to HIV infection.

DR. NATHANS
Molecular biology of the visual system.

DR. NIEBUR*
Computational neuroscience.

DR. NIELSON
Neural circuits underlying object recognition.

DR. O'BRIEN
Molecular aspects of synapse formation in the brain.

DR. O'CONNOR
Neural circuits underlying object recognition.

DR. PEVSNER*
Molecular basis of neurological disorders.

DR. PLETNIKOV
Gene-environment interactions in neurodevelopmental disorders.

DR. POTTER*
Neural circuits required for drosophila olfaction.

DR. PRICE
Neurobiology of degenerative brain diseases in animals and man.

DR. QUINONES-HINOJOSA
Neural stem cells: their role in neurogenesis and pathogenesis.

DR. REED
Molecular mechanisms of signal transduction and neurogenesis in the olfactory system.

DR. RETI
Behavioral neuroscience and its clinical applications.

DR. RONNETT*
Mechanisms of signal transduction in neuronal differentiation and olfaction.

DR. ROSS
Biology of neuropsychiatric disorders.

DR. ROTHSTEIN
Molecular mechanisms of neurodegeneration and transporters and their role in neurological disease.

DR. RYUGO
Anatomy and physiology of the auditory nervous system.

DR. SAWA
Neurobiology of psychiatric illnesses.

DR. SCHNAAR
Cell surface molecules in neural cell-cell recognition; myelin maintenance; axon regeneration.

DR. SCHRAMM
Regulation of sympathetic neurons.

DR. SHADMEHR
Computational motor control and learning.

DR. SHELTON
Cognitive neuroscience; spatial cognition; learning and memory.

DR. SHULER*
Neural mechanisms of reward dependent learning.

DR. SNYDER*
Neurotransmitters, second messengers and drug action in the nervous system.

DR. SOCKANATHAN*
Cell fate specification in the central nervous system.

DR. SONG
Mechanisms of regulating adult neural stem cells of mammalian CNS.

DR. STUPHORN
Neurophysiological mechanisms of decision making and self-control.

DR. SUMNER
Genetic and cellular mechanisms of motor neuron diseases.
DR. UHL
Molecular biology and genetics of drugs of abuse.

DR. VON DER HEYDT*
Neurophysiology of the visual system.

DR. WAGNER
Muscle growth and regeneration.

DR. J. WANG
Mechanisms of neurodegeneration and protein quality control.

DR. X. WANG
Neural basis of auditory perception and learning.

DR. WILSON
Mechanisms of development, plasticity, and injury in the immature brain.

DR. D. WONG
In vivo neurochemistry with PET, SPECT, and MRI.

DR. P. WONG
Molecular mechanism and experimental therapeutic of neurodegerative diseases.

DR. WORLEY*
Molecular mechanisms of neuronal plasticity.

DR. WU
Genetic mechanisms and neuronal circuitry underlying sleep in drosophila.

DR. YANTIS
Cognitive neuroscience of vision.

DR. YAU*
Visual and olfactory sensory transduction.

DR. YOUNG
Auditory perception and neurophysiology; organization of central auditory system.

DR. YUE
Molecular physiology of calcium channels and calcium signaling.

DR. ZACK
Molecular approaches to the study of retinal development and disease.

DR. ZEE
Regulation of eye movements.

DR. J. ZHANG
Spatiotemporal regulation of protein kinases and second messengers.

DR. K. ZHANG
Theoretical neuroscience.

DR. ZHOU
Molecular mechanisms of axon growth and guidance during development CNS regeneration.

* Holds primary appointment in Neuroscience; all others hold primary appointments in another department.

**ME440.801 Readings in Neuroscience.** Dr. Dong. Tuesday, 1:00 all year.
Prerequisite: Consent of course director.
This course can be taken instead of ME440.811.
A weekly lunchtime talk on current literature topics of special interest. Graduate students receive close faculty guidance in preparing presentations.

**ME440.802 Current Topics in Neuroscience.** Dr. Foster. Thursday, 1:00; all year.
Prerequisite: Consent of course director.
Weekly lecture on current research by active researchers. Topics are chosen so that an overall balance of subjects in neuroscience are covered in the course of a year. Students receive a reading list before the seminar and will be given an opportunity to meet with outside speakers.

**ME440.803 Teaching in Neuroscience.** Staff. All quarters.
Prerequisite: Consent of instructor.
Designed for preparation to become a teaching assistant in any Neuroscience Course. When registering for this course, please indicate the course number for which you will serve as a teaching assistant.

**ME440.810 Readings in Systems Neuroscience.** Drs. Stuphorn, and Niebur. All year; yearly.
This course can be taken instead of ME440.801.
The course will focus on neural mechanisms of perception, attention, learning and memory from the perspective of systems neuroscience and will be based on the current original literature.

**ME440.811 Neuroscience and Cognition I.** Dr. Blackshaw. First and second quarters yearly
Prerequisites: Basic Cell and Molecular Biology (may be taken concurrently) or permission from course directors.
This is the first half of a four-quarter course on the cellular and molecular basis of neural function and the neural basis of perception, cognition, and behavior. Topics covered in this half include (1) development and structure of the nervous system, (2) cellular neurophysiology, (3) neural signaling and coding, and (4) audition, vocalization, and language. Lectures will be presented by faculty in the Neuroscience, Neurology, Biomedical Engineering, Psychology, and Cognitive Science departments. The course will also include discussion sections based on current literature and several neurotechniques sessions designed to familiarize students with current experimental approaches in cellular, systems, and molecular neuroscience. This course is required of all students in the Neuroscience Graduate Program. Students outside the program may take this course independent of Neuroscience and Cognition II.

**ME440.812 Neuroscience and Cognition II.** Dr. Bastian. Third and fourth quarters yearly.
Prerequisites: Basic Cell and Molecular Biology (may be taken concurrently) or permission from course directors.
This is the second half of a four-quarter course on the cellular and molecular basis of neural function and the neural basis of perception, cognition, and behavior. Topics covered in this half include (1) perception of objects, space, and self, (2) movement and balance, (3) learning and memory, (4) neurologic and psychiatric disorders, and (5) global function in the nervous system. Lectures will be presented by faculty in the Neuroscience, Neurology, Biomedical Engineering, Psychology, and Cognitive Science departments. The course will also have a laboratory component. This course is required of all students in the Neuroscience Graduate Program. Students outside the program may take this course independent of Neuroscience and Cognition I with permission from course directors.
Classical studies elucidating the mechanisms of action of psychoactive substances led to seminal discoveries about how the brain works. Conversely, our ability to exploit modern advances in molecular neurobiology to treat neurological and psychiatric diseases will depend on successful development of new drugs based on these findings.

The instructors present an overview of the mechanisms of action of several, widely used drug classes and the broad range of methods used to elucidate their effects on the brain. Furthermore, students present papers describing recent advances in this dynamic field of research.

Prerequisite: Completion of Neuroscience Cognition I or consent of course directors.

This is a state-of-the-art course on molecular mechanisms of cell death. A multi-disciplinary approach spanning multiple organ systems will be utilized to illustrate key features of cell death programs. The course will highlight research ongoing at Johns Hopkins University as well as additional current advances in the molecular biology of cell death. Each week will be composed of a lecture reviewing critical features of a cell death pathway followed by journal review of recently published seminal papers. Topics will include anti-apoptotic proteins, intracellular proteases, p53, c-myc, excitotoxicity, free radicals, Fas, TNFa death programs, ER stress response and developmental programmed cell death.

ME440.711 Cellular and Molecular Basis of Neuronal Development II: Regulation of Neural Connectivity. Drs. Ginty, Kolodkin, and Sockanathan. Fourth quarter; every other year.
Prerequisite: Completion of Neuroscience Cognition I or consent of course directors prior to registering for this course.

A seminar and reading course devoted to the discussion of the cellular and molecular processes underlying neuronal development. Topics include cell proliferation and migration, nervous system patterning, differentiation of neurons and glia, morphogen and growth factor signaling mechanisms, neuronal polarity, among others. Examples from vertebrate and invertebrate model systems will be covered. This course is designed to complement The Cellular and Molecular Basis of Neurodevelopment II: Axon Guidance and Synaptogenesis, offered alternate years.

ME440.715 Trends in the Neurobiology of Aging. Dr. Mattson. First quarter every other year.
As the average lifespan of humans increases, age-related dysfunction of the nervous system, and neurodegenerative disorders such as Alzheimer’s and Parkinson’s diseases, are becoming major concerns in our society. Recent advances in understanding the molecular and cellular underpinnings of nervous system aging and neurodegenerative disorders will be the focus of this course. Emerging findings of genetic and environmental factors that either promote successful brain aging or predispose to age-related neurological disorders, and elucidation of their underlying molecular and cellular mechanisms, will be emphasized. The course
ME440.720 The Retinal Ganglion Cell. Dr. Marsh-Armstrong. Fourth quarter every other year. The course will focus on one cell type: the retinal ganglion cell (RGC). From the perspective of cell biology, developmental biology, physiology, and pathobiology, RGCs share many features with other projection neurons, including a susceptibility to disease. Thus, this course will be directed not only at students who study the retina, but also to neurobiologists who want to understand how the visual system works. ME440.722 Visual System. Drs. Kolodkin, Schramm, and Sockanathan. Summer; every other year. The course will cover the structure and function of RGCs: anatomy, morphology, and physiology of RGCs, focusing on the diversity of RGC subtypes and their interaction with various glial cells. Second, the course will cover the development of RGCs: how they are specified; how they differentiate; how they sprout processes; how their axons reach central targets; and RGC dependence on trophic support for survival. The third part of the course will focus on diseases affecting retinal ganglion cells, focusing principally on glaucoma, but also covering other optic neuropathies as well as the response of RGCs to axotomy. The disease section will draw similarities to other neurodegenerations, and will integrate information regarding the structure/function as well as development parts of the course. The course will have the format of lectures on Mondays by experts in the field, followed by student-led discussions on Wednesdays. The discussions will encourage students to critically evaluate the literature, to assess the strength and weaknesses offered by various hypotheses, and to identify important gaps in our current knowledge about these important cells.

ME440.721 Development and Function of Spinal Cord Circuitry. Drs. Kolodkin, Schramm, and Sockanathan. Summer; every other year. This is a special topics course centered around understanding the generation, logic of neuronal connectivity in the spinal cord. Previous topics included an in-depth assessment of the corticospinal tract (CST), and used the CST as a focus for examining broader issues of axon guidance, axon sprouting and regeneration, and synaptic specificity. Future topics will include development and function of neuronal subtypes in the spinal cord, regeneration and degeneration of spinal circuitry, and integration of spinal circuits in the context of CNS and PNS function.

ME440.722 Visual System. Dr. Hendry. First and second quarter every year. From outer segments of photoreceptors to the Fusiform Face Area of the cerebral cortex we have come to understand how the visual system works at each of many fundamental levels. This course examines the basis for perception of visible objects at each of these levels. We will use the secondary literature (scientific reviews) to accent the hard-won truths about visual system functional organization and to highlight ongoing controversies. Students will be lead through carefully chosen reviews in a series of lectures and written summaries prepared by faculty. Three exams and a final exam will test students on their memorization of minutiae but on their understanding of fundamental principles.

ME440.723 Writing About the Brain. Dr. Linden. Third quarter; every other year. The goal of this course is to train neuroscientists to effectively and clearly communicate ideas about nervous system function to a general audience. Students shall read and analyze writings about neuroscience and shall interact with established science writers. More importantly, they shall develop, research and write both news and feature-length stories that shall be presented, critiqued and revised each week in a workshop format. Enrollment limited to 10 students. Prerequisites: Neuroscience and Cognition I and approval of instructor.

ME440.724 Neuroscience Career Skills. Dr. Ginty. Third and fourth quarter; every other year. This course is intended for Neuroscience Program graduate students who are in their fourth year or beyond. There will be ten sessions, and each session we will include one or more invited discussion leaders. This is a pass/fail course and every participant is required to take it for credit. A grade of pass or fail will be decided based on attendance.

ME440.725 Neurobiology of Substance Use Disorders. Drs. Bonci, Cadet, and Strain. Third and fourth quarter; every other year. Recent progress in basic and clinical neurobiology has helped to identify specific cellular and molecular mechanisms that are involved in the development and maintenance of drug-taking behaviors. Similarly, clinical studies have identified behavior patterns and brain structures that are relevant to drug addiction. The purpose of this course is to provide an overview of the neural circuitries and of the molecular and cellular mechanisms involved in the addictive process. The lecturers will also provide an overview of the clinical presentations and course of substance use disorders. Lectures will be primarily provided by senior addictions researchers from the National Institute on Drug Abuse’s Intramural Research Program. The course will consist of 13 lectures given over a period of 8 weeks, with 2 hourly lectures per week. Topics will include the amphetamines, cocaine, heroin, marijuana, and designer drugs. Grading will be primarily based upon a mid-term and final examination.

ME440.803 Teaching in Neuroscience. Staff. All quarters. Prerequisite: Consent of instructor. Designed for preparation to become a teaching assistant in any Neuroscience Course. When registering for this course, please indicate the course number for which you will serve as a teaching assistant.

ME440.804 Directed Reading in Neuroscience. Staff. All quarters. Directed, independent reading and discussion of current neuroscience literature in a personalized tutorial.
ME440.807 Topics in Somatosensory Research. Dr. Hsiao. Fourth Quarter; offered every year.

Prerequisite: Students must have completed a basic neuroscience course such as Neuroscience A or have permission from one of the instructors.

A seminar and reading course devoted to current research in information processing in the nervous system. Neural coding, the neural representation of images and information, and the neural mechanisms of pattern recognition, association, perception, memory and attention will be discussed. The investigation of information processing depends equally on psychophysical, neurophysiological and computational approaches; the course will draw from the literature in each of these areas.

ME440.808 Physiology of Sensory Transduction. Drs. Fuchs and Yau. Second quarter every other year

Prerequisite: Consent of instructor.

A seminar and reading course that covers current research in sensory transduction from a physiological perspective. Visual, chemical and auditory transductions will be covered.


Prerequisites: Neuroscience A or Neuroscience & Cognition II or permission from course directors.

Must be taken concurrently with Readings in Systems Neuroscience, ME440.810.

The brain is an information processing system without parallel. It excels at recognizing objects and substances, reconstructing space, analyzing sound environments, controlling complex behaviors, and storing a lifetime’s worth of events and experiences. The neural mechanisms underlying these abilities are studied by a large community of systems and cognitive neuroscientists. This research has generated a rapidly evolving field of high-profile discoveries and lively debates between competing laboratories. This course aims to convey a clear sense of this field by focusing on current experimental and conceptual controversies regarding organization and function in the vertebrate nervous system. Each week will focus on a different topic represented by two or more recent papers (selected by an instructor) reflecting opposing points of view. Students will present the papers informally and direct a debate over the relative merits of the conflicting viewpoints. The quarter-long course will be divided into 2-3 week sections covering different sensory, motor, or cognitive systems, in addition to computational neuroscience. There will be one 2-hour debate each week, and participation in the 1-hour Systems Journal Club (Readings in Systems Neuroscience, ME440.810) will also be required.

ME440:814 Stem cells: Unit of Development and Unit of Regeneration. Drs. Ming and Song. Third quarter; bi-annually.

This is a seminar and reading course devoted to the discussion of different type of stem cells. The course is designed to give a broad view of mammalian stem cells. The topics will range from pluripotent stem cells (embryonic stem cells and embryonic germ cells) to multipotent somatic stem cells (in brain, heart, blood, etc.) during development as well as in adult. We will cover the basic biology of these stem cells as well as bioengineering and application of these stem cells to potential treatments of human diseases. This elective course is limited to 20 (25) students.


Experience-dependent changes in cortical synapses and circuits are critical for proper development of the nervous system and for memory storage. This course will focus on recent findings on fundamental mechanisms of plasticity from synapses to circuit level through discussions of recent research papers. Grades will be based on student presentations and participation.

Elective Course Co-Sponsored by Wilmer Eye Institute and the Department of Neuroscience.

ME280.700 Cellular and Molecular Biology of Photoreceptors in Health and Diseases. Dr. Zack. Third quarter every year.

The course will present a multidisciplinary approach to the biology and pathology of photoreceptor cells. The first block of lectures will discuss the development, organization, cell biology and biochemistry of photoreceptor cells, and the metabolic bases of their susceptibility to injury; emphasis will be on vertebrate photoreceptors, but contributions from studies on invertebrates will also be included. The next block will be devoted to the photoreceptor microenvironment, including retinal pigment epithelial and Muller cells, the interphotoreceptor matrix, trophic factors and retinoids, light, oxygen and neuromodulators. The third block will be devoted to photoreceptor physiology, including the visual cycle, phototransduction, dark adaptation, spectral sensitivity and color mixture, electroretinography, and rod and cone response dynamics. The next section, dealing with pathology of photoreceptors and related outer retinal structures, will cover some hereditary diseases of known genetic origin, such as retinitis pigmentosa, gyrate atrophy, and abnormalities of color vision, as well as hereditary photoreceptor dystrophies of unknown origin. One lecture will be devoted to strategies for the search for genetic defects responsible for these diseases. After a discussion of macular degeneration and retinal detachment, the last block of lectures will review recent progress in the search for preventive and therapeutic approaches for these diseases, including the development of animal models, gene therapy, transplantation techniques, possible uses of stem cell therapy, and growth factor administration.
Oncology Center

WILLIAM G. NELSON
Marion I. Knott Director and Professor of Oncology, Professor of Medicine, Professor of Pathology, Professor of Pharmacology and Molecular Sciences, Professor of Radiation Oncology and Molecular Radiation Sciences, Professor of Urology

RICHARD FREDERICK AMBINDER
James B. Murphy Professor of Oncology, Professor of Medicine, Professor of Pathology, Professor of Pharmacology and Molecular Sciences

ROBERT J. ARCECI
King Fahd Professor of Pediatric Oncology, Professor of Pediatrics

PEDRAM ARGANI
Professor of Pathology, Professor of Oncology

J. THOMAS AUGUST
University Distinguished Service Professor of Pharmacology, Professor of Oncology

CHARLES M. BALCH
Professor of Surgery, Professor of Dermatology, Professor of Oncology

PETER B. BARKER
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Samsung Professor of Medicine, Professor of Oncology

HENRY BREM
Harvey Cushing Professor of Neurosurgery, Professor of Biomedical Engineering, Professor of Oncology, Joint Appointment in Ophthalmology

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JOHN L. CAMERON
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MARCIA IRENE FOO CANTO
Professor of Medicine, Professor of Oncology

MICHAEL A. CARDUCCI
AEGON Professor of Prostate Cancer Research in the Department of Oncology, Professor of Urology

BENJAMIN S. CARSON
Benjamin S. Carson, Sr. M.D. and Dr. Evelyn Spiro, RN Professor of Pediatric Neurosurgery, Professor of Oncology, Professor of Pediatrics, Professor of Plastic and Reconstructive Surgery

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Rainey Professor of Pediatric Hematology in the Department of Pediatrics, Professor of Oncology

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PAUL M. COLOMBANI
Robert Garrett Professor of Pediatric Surgery, Professor of Oncology, Professor of Pediatrics

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Professor of Pathology, Professor of Oncology, Professor of Urology

SAMUEL RAY DENMEADE
Professor of Oncology, Professor of Pharmacology and Molecular Sciences, Professor of Urology

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Professor of Medicine, Professor of Oncology

ROSS C. DONEHOWER  
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Lewis J. Ort Professor of Ophthalmology, Professor of Biomedical Engineering, Professor of Neurological Surgery, Professor of Oncology

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JAMES GORDON HERMAN, Professor

ALLAN D. HESS  
Professor of Oncology, Professor of Pathology

RALPH HARVEY HRUBAN  
Professor of Pathology, Professor of Oncology

JOHN T. ISAACS  
Professor of Oncology, Professor of Urology

WILLIAM B. ISAACS  
William Thomas Gerrard, Mario Anthony Duhon and Jennifer and John Chalsty Professor of Urology, Professor of Oncology

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Daniel Alexander Laheru
Associate Professor of Oncology, Occupying the Ian T. MacMillan Chair in Clinical Pancreatic Cancer Research

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Ben Ho Park, Associate Professor

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Duane Thomas Smoot, Associate Professor

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VERED STEARNS
Associate Professor of Oncology, Occupying the Breast Cancer Research Chair in Oncology

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ANTONIO CARLOS WOLFF, Associate Professor

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NILOFER SABA HUSAIN AZAD, Assistant Professor

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STEPHEN J. CHANOCK
Assistant Professor of Oncology, Lecturer in Pediatrics

STEVE YOON-HO CHO
Assistant Professor of Radiology, Assistant Professor of Oncology

AKHIL CHOPRA, Assistant Professor

GARY IRVIN COHEN, Assistant Professor

ROISIN M. CONNOLLY, Assistant Professor

BARISH H. EDIL
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Sonia Franco
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NILANJAN GHOSH, Assistant Professor

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HANS JOERG HAMMERS, Assistant Professor

MATTHIAS HOLDHOFF, Assistant Professor

MOHAMMAD OBAIDUL HOQUE
Assistant Professor of Otolaryngology-Head and Neck Surgery, Assistant Professor of Oncology, Assistant Professor of Urology

FRANCK HOUSSEAU, Assistant Professor

WEN-SON HSIEH, Assistant Professor

TAMARO HUDSON, Adjunct Assistant Professor

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Associate Professor of Surgery, Assistant Professor of Oncology

SANJAY RAJ JAIN, Adjunct Assistant Professor

YOON-YOUNG JANG, Assistant Professor

DANIJELA JELOVAC
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Adjunct Assistant Professor of Oncology, Adjunct Assistant Professor of Medicine

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Assistant Professor of Radiation Oncology and Molecular Radiation Sciences, Assistant Professor of Oncology

YOSHINORI KATO
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RONAN JOSEPH KELLY
Assistant Professor of Oncology (from 08/29/2011)

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Assistant Professor of Otolaryngology-Head and Neck Surgery, Assistant Professor of Oncology

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Assistant Professor of Orthopaedic Surgery, Assistant Professor of Oncology

GEOFFREY Y. KU, Assistant Professor

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JOSH DAVID LAURING, Assistant Professor

DUNG THI LE, Assistant Professor

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J. CAMERON MUIR, Assistant Professor

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ARVIND P. PATHAK
Assistant Professor of Radiology, Assistant Professor of Oncology

IDO PAZ-PRIEL, Assistant Professor

CRAIG DOUGLAS PEACOCK, Assistant Professor

KIMBERLY SUE PEARIS
Assistant Professor of Medicine, Assistant Professor of Oncology (from 08/01/2011)

CRAIG POLLACK
Assistant Professor of Medicine, Assistant Professor of Oncology

KEITH WILLIAM PRATZ, Assistant Professor

MICHAEL J. PURTELL, Assistant Professor

ZESAAN AHMED RASHEED, Assistant Professor
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ROBERT B. SCHARPF, Assistant Professor

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STUART E. SELONICK
Assistant Professor of Medicine, Assistant Professor of Oncology

SATISH SHANBHAG
Assistant Professor of Medicine, Assistant Professor of Oncology

HEATHER JILL SYMONS, Assistant Professor

SEAN DIXON TAVERNA
Assistant Professor of Pharmacology and Molecular Sciences, Joint Appointment in Medicine, Assistant Professor of Oncology

STEPHANIE ALICIA TEREZAKIS
Assistant Professor of Radiation Oncology and Molecular Radiation Sciences, Assistant Professor of Oncology

KATHERINE ANNE THORNTON, Assistant Professor

PHUOC T. TRAN
Assistant Professor of Radiation Oncology and Molecular Radiation Sciences, Assistant Professor of Oncology

ERIK JOHN TRYGGESTAD
Assistant Professor of Radiation Oncology and Molecular Radiation Sciences, Assistant Professor of Oncology

LI-HUI TSENG, Visiting Assistant Professor

CHRISTOPHER BENEDICT UMBRICHT
Assistant Professor of Surgery, Assistant Professor of Oncology, Assistant Professor of Pathology

CHENGUANG WANG
Assistant Professor of Oncology (from 07/21/2011)

HAO WANG, Assistant Professor

STANLEY P. WATKINS, JR., Assistant Professor

ASHANI TANUJA WEERARATNA, Adjunct Assistant Professor

KATHARINE ASHLEY WHARTENBY
Assistant Professor of Neurology, Assistant Professor of Oncology

SARAH JO WHEELAN
Assistant Professor of Oncology, Assistant Professor of Molecular Biology and Genetics

ELIZABETH C. WICK
Assistant Professor of Surgery, Assistant Professor of Oncology

BRIGITTE C. WIDEMANN
Assistant Professor of Oncology, Assistant Professor of Pediatrics

SIMON ALEXANDER WILLIAMS
Assistant Professor of Urology, Assistant Professor of Oncology

XIAOBU YE
Assistant Professor of Neurological Surgery (from 09/01/2011), Assistant Professor of Oncology (from 09/01/2011), Research Associate in Oncology (to 08/31/2011)

SRINIVASAN YEGNASUBRAMANIAN, Assistant Professor

REX CHIN-WEI YUNG
Assistant Professor of Medicine, Assistant Professor of Oncology

CYNTHIA ANN ZAHNOW, Assistant Professor

ELIAS THOMAS ZAMBITDIS
Assistant Professor of Oncology, Assistant Professor of Pediatrics

LEI ZHENG
Assistant Professor of Oncology, Assistant Professor of Surgery

HENG ZHU
Associate Professor of Pharmacology and Molecular Sciences, Assistant Professor of Oncology

MARTIN JOSEPH ANKRAH ARYEE, Instructor

ILENE STEPHANIE BROWNER
Instructor in Oncology, Joint Appointment in Medicine

JASON ELI FARRAR, Instructor

ELANA JUDITH FERTIG, Instructor

JENNY J. KIM, Instructor

MARSHALL A. LEVINE
Instructor in Oncology, Instructor in Otolaryngology-Head and Neck Surgery

EVAN JACOB LIPSON, Instructor

CHRISTIAN FREDERICK MEYER, Instructor

RAJESH KUMAR NV, Instructor

TATIANA MICHELLE PROWELL, Instructor

W. THOMAS PURCELL, Instructor

ERIC HUTTON RAABE, Instructor

RACHEL ELIZABETH RAU, Instructor

P. GREGORY RAUSCH, Instructor

KRISTIN ANN REDMOND
Instructor in Radiation Oncology and Molecular Radiation Sciences, Instructor in Oncology

KATHRYN RUBLE, Instructor

ERIC STEPHEN SCHAFER, Instructor

MEIR SHAMAY, Instructor

MARGARET M. SHOWEL, Instructor

ABDE M. ABUKHDEIR, Research Associate

JONATHAN KIMBALL ALDER, Research Associate

RAVI KUMAR ANCHOORI, Research Associate

TODD D. ARMSTRONG, Research Associate

JENNIFER E. AXILBUND, Research Associate

ROBERT MCFADDIN BEATY, Research Associate

BARBARA ANNE BIEDRZYCKI, Research Associate

DAMING CHEN, Research Associate

CHUANG-JIUN CHIOU, Research Associate

MICHAEL I. COLLECTOR, Research Associate

YING CUI, Research Associate

JANICE M. DAVIS-SPROUL, Research Associate
FRANCESCO PAOLO DI CELLO, Research Associate
HARIHARAN P. EASWARAN, Research Associate
MARY JO FACKLER, Research Associate
DEXUE FU, Research Associate
AMY LYNEE GOODRICH, Research Associate
CRAIG M. HOOKER, Research Associate
LANQING HUANG, Research Associate
CHRISTINE G. JOSEPH, Research Associate
VARALAKSHMI KATURI, Research Associate
CAROL KOBRIN, Research Associate
HIROYUKI KONISHI, Research Associate
FERDYNAND J. KOS, Research Associate
M. VICTOR LEMAS, Research Associate
Li Li, Research Associate
GANGLING LIAO, Research Associate
FARIDEH MAJIDI, Research Associate
HELAI MOHAMMAD
Research Associate in Oncology (to 09/02/2011)
TRACY R. MURRAY-STEWART, Research Associate
SUZANNE AMS NEBKIT, Research Associate
KIMBERLY ANN NOONAN, Research Associate
HEATHER MAUREEN O’HAGAN, Research Associate
JONG MYUN PARK, Research Associate
KLAUS BERND PIONTEK, Research Associate
LU QIN, Research Associate
GORDON R. SANDFORD, Research Associate
VICTORIA J. SINIBALDI, Research Associate
SUROJIT SUR, Research Associate
JIANCHAO ZONG, Research Associate
ABEER ABD ELMONEIM, Visiting Scientist
SONGMEI WANG, Visiting Scientist
QUN ZHOU, Visiting Scientist

FACULTY ASSOCIATED WITH THE ONCOLOGY CENTER HOLDING A PRIMARY APPOINTMENT IN:
The School of Medicine:
PAUL M. NESS
Professor of Pathology

The Bloomberg School of Public Health:

DAVID BRIAN ABRAMS
Professor of Health, Behavior, and Society

TERRI H. BEATY
Professor of Epidemiology

SHYAM S. BISWAL
Professor of Environmental Health Sciences

THOMAS A. BURKE
Professor of Health Policy and Management

GYPSY AMBER D’SOUZA
Assistant Professor of Epidemiology

SYDNEY MORSS DY
Associate Professor of Health Policy and Management

JEAN G. FORD
Associate Professor of Epidemiology

KEVIN D. FRICK
Professor of Health Policy and Management

PATTI E. GRAVITT
Associate Professor of Epidemiology

JOHN D. GROOPMAN
Professor of Environmental Health Sciences

J. MARIE HARDWICK
Professor of Molecular Microbiology and Immunology

DAVID ROBERT HOLTGRAVE
Professor and Chair of Health, Behavior and Society

HEE-SOOK JUN
Associate Professor of Health, Behavior and Society

NORMA KANAREK
Associate Professor of Environmental Health Sciences

THOMAS W. KENSLER
Professor of Environmental Health Sciences

GREGORY D. KIRK
Associate Professor of Epidemiology

ANN CARROLL KLASSEN
Associate Professor of Health Policy and Management

THOMAS A. LAVEIST
Professor of Health Policy and Management

ANA NAVAS-ACIEN
Associate Professor of Environmental Health Sciences

ELIZABETH A. PLATZ
Professor of Epidemiology

RAJIV N. RIMAL
Associate Professor of Health, Behavior and Society

DEBRA L. RONER
Professor of Health, Behavior and Society

KEERTI V. SHAH
Professor of Molecular Microbiology & Immunology

KATHERINE CLEGG SMITH
Associate Professor of Health, Behavior and Society

FRANCES STILLMAN
Associate Professor of Epidemiology

PAUL T. STRICKLAND
Professor of Environmental Health Sciences
The Oncology Center is concerned with research and education in cancer and related disorders and the application of new knowledge to improve the care of patients with these diseases. Multidisciplinary approaches are emphasized.

REQUIRED COURSEWORK FOR M.D. PROGRAM

First Year

250.612 Genes to Society/Hematology and Oncology. Dr. Michael Borowitz

ELECTIVE OPPORTUNITIES—Curricular Consultants: Drs. Ambinder, Baylin, Cohen, Donehower, Isaacs, Nelson, and Pardoll. Elective courses must be approved by the preceptor; any member of the Center faculty may act as preceptor.

E1. Seminar Course: Biology of Cancer. Drs. Hans-Joerg Hammers and Christine Han (course directors). Fourth quarter, two hours per week. Offered every other year; alternates with E2. Selected timely topics are considered in some detail. Emphasis is placed on the fundamental processes underlying oncogenesis in man, the pathophysiologic mechanisms responsible for clinical manifestations, and factors affecting the course of neoplastic diseases.


E3. Translational Research Conference. Drs. Dipali, Matsui, and Zahnow (course directors.) Four quarters. Wed., 12:00-1:00 p.m. Lectures by the faculty and visiting oncologists focus on topics of current interest.

E4. Introduction to Cancer Research. All year; minimum of four weeks (for Johns Hopkins students; nine weeks for visiting students.) Research experiences are offered on a space available basis to U.S. and international trained medical students who submit appropriate application materials to the Registrar’s Office. Positions are based on limited availability and not guaranteed. Interested and properly qualified students are encouraged to collaborate in clinical and laboratory research projects with members of the staff. Students will participate in research seminars and related teaching sessions. Interviews will be arranged with staff members to develop a mutually agreed-upon plan of study and research. Visiting students should not contact the department directly as the application process must be coordinated through the Registrar’s Office.

DR. AMBINDER
Molecular virology; lymphoma.

DR. ANTONARAKIS
Urologic oncology; prostate cancer; clinical trials; outcomes research.

DR. ARCECI
Molecular and developmental biology; cytokine signaling and chromatin structure; epigenetics, leukemia/histiocytosis.

DR. ARMANIOS
Biology of aging; telomere syndromes; pulmonary fibrosis; solid tumors.

DR. ARMSTRONG
Gynecologic cancer, breast cancer; high dose therapy.

DR. AZAD
Phase I studies and drug development; GI cancers (colon & liver).

DR. BAYLIN
Epigenetic abnormalities in cancer.

DR. BOLANOS-MEADE
Graft-versus-host disease; bone marrow transplant.

DR. BORRELLO
Multiple myeloma immunotherapy; myeloid derived suppressor cells; marrow infiltrating lymphocytes.
DR. BRAHMER  
Lung cancer; novel therapeutics; mesothelioma; lung cancer prevention.

DR. BROWN  
Molecular targeted therapies for childhood leukemias.

DR. BROWNER  
Geriatric and general oncology.

DR. CARDUCCI  
Urologic cancer; novel therapies.

DR. CARRAWAY  
Epigenetic therapy of leukemias.

DR. CASERO  
Polyamine metabolism; molecular pharmacology and drug development.

DR. CHAN  
Diagnostic markers for lung cancer.

DR. CHEN  
Bone marrow transplantation; immunotherapy.

DR. COHEN  
Pediatric neuro-oncology.

DR. COPE  
Methods for analysis of gene expression data.

DR. COSGROVE  
GI cancer (hepato-biliary); drug development; Phase 1 studies

DR. DENMEADE  
Novel therapies for prostate cancer; urologic oncology.

DR. DESAI  
Molecular genetics of herpes simplex virus assembly and morphogenesis.

DR. DIAZ  
GI cancers; novel therapies.

DR. DONEHOWER  
Early clinical trials of cancer therapies; G-I.

DR. DRAKE  
Vaccines; T cell tolerance; prostate cancer.

DR. EISENBERGER  
Urologic oncology, prostate cancer.

DR. EMENS  
Breast cancer; tumor immunotherapy; targeted therapy.

DR. ETTINGER  
Investigational new drug studies; lung cancer; sarcoma.

DR. FARRAR  
Molecular basis of inherited bone marrow failure syndromes; epigenetic abnormalities in cancer.

DR. FETTING  
Breast cancer.

DR. FORASTIERE  
Head and neck cancer; esophageal cancer.

DR. FRIEDMAN  
Hematopoiesis; leukemogenesis; inflammation and cancer.

DR. FUCHS  
Tumor immunology, T-cell activation and tolerance; immunotherapy.

DR. N. GHOSH  
Myeloma, lymphoma, and leukemia.

DR. GORE  
Epigenetics in cancer therapeutics; drug development in hematologic malignancies; adult leukemia and myelodysplastic syndrome.

DR. GROSSMAN  
Neuro-oncology.

DR. HANN  
Lung cancer; novel therapeutics.

DR. G. HAYWARD  
Viral oncology; cytomegalovirus; Kaposi's sarcoma.

DR. S. HAYWARD  
Viral oncology; Kaposi's sarcoma associated herpes virus; Epstein-Barr virus.

DR. HERMAN  
Abnormal DNA methylation of tumor suppressor genes.

DR. HESS  
Bone marrow transplantation, graft versus host disease, immunological reconstitution.

DR. HOUSSEAU  
Dendritic cell and innate immunity.

DR. HUFF  
Multiple myeloma.

DR. ISAACS  
Experimental therapeutics for prostate cancer.

DR. JAFFEE  
Develop vaccine approaches that bypass mechanisms of immune tolerance in mice and patients.

DR. JANG  
Stem cells and microenvironment.

DR. JONES  
Bone marrow transplantation; hematopoiesis.

DR. KACHHAP  
DNA repair; metastasis; prostate cancer.

DR. KARP  
Experimental therapy of leukemias; modulation cell cycle kinetics; infection management in compromised hosts.

DR. KASAMON  
Lymphoma and immunotherapy.

DR. KERN  
Genetics of pancreatic cancer.

DR. J. KIM  
Non prostate (with RCC focus).

DR. KINZLER  
Molecular genetics of human cancer.

DR. KLEIN  
Genetic epidemiology; pancreatic cancer; cancer epidemiology; statistical genetics

DR. LAHERU  
G-I; drug development.

DR. LAURING  
Breast cancer genetics; drug target identification; somatic cell knock outs

DR. LE  
GI cancers; immunotherapy.

DR. LEVIS  
Molecular biology of leukemia, molecularly targeted cancer therapy.

DR. LOEB  
Transcriptional regulation; translational research related to sarcoma therapy.

DR. LUZNIK  
Adaptive immunotherapy of cancer; allogeneic bone marrow transplantation.

DR. MARCHIONNI  
Cancer genomics and computational biology.

DR. MARUR  
VAD oncology (head and neck).

DR. MATSUI  
Hematologic malignancies and cancer stem cells.
Dr. McDevitt
Genetics and epigenetics of myeloid malignancies and myeloproliferative disorders; hematology.

Dr. Nelkin
Molecular biology of endocrine tumors.

Dr. Nelson
Molecular mechanisms of drugs for urological cancer prevention and treatment.

Dr. Nicholas
Signal transducing cytokines and receptors of human herpesvirus-8.

Dr. Pan
T cell biology; cellular therapy.

Dr. Papadopoulos
Molecular genetics of human neoplasia.

Dr. Pardoll
Dedritic cell biology; T cell regulation.

Dr. Park
Breast cancer genetics drug target identification; somatic cell knockouts.

Dr. Peacock
Lung development and cancer.

Dr. Powell
T-cell activation and tolerance; BMT immunotherapy.

Dr. Pratz
Leukemia.

Dr. Purtell
Lung cancer, particularly in the elderly.

Dr. Ravi
Apoptosis; signal transduction.

Dr. Rudek
Drug development; clinical pharmacology.

Dr. Rudin
Lung cancer; novel therapeutics; apoptotic regulation.

Dr. Schaffer
Epigenetic biology and treatment of pediatric leukemias.

Dr. Sharifman
Malignant melanoma; general oncology.

Dr. Shanks
Regenerative medicine; stem cell biology.

Dr. Showel
Leukemia.

Dr. Small
Molecular biology of leukemia; development of molecularly targeted therapy for cancer.

Dr. Smith
Myeloid malignancies (AML, CML, MOS); cancer stem cell biology.

Dr. Stearns
Breast cancer.

Dr. Sukumar
Molecular genetics of breast cancer.

Dr. Swinnen
Lymphoma; viral oncology; neoplasia and immunodeficiency; EBV.

Dr. Symons
Immunobiology of bone marrow transplantation.

Dr. Velculescu
Molecular genetics of colorectal cancer.

Dr. Vogelstein
Genomic alterations in human cancer.

Dr. Wolff
Breast cancer; novel therapies.

Dr. Yegnasubramanian
Molecular genetics and epigenetics of cancer; DNA methylation.

Dr. Zahnnow
Molecular biology of mammary gland development and breast cancer.

Dr. Zambidis
Developmental biology of hematopoietic stem cells; embryonic stem cell biology; leukemia stem cells.

Dr. Zheng
GI cancers (pancreatic; colon, and liver); vaccines and immunotherapy; molecularly targeted therapies.

Dr. Zhou
Combination bacteriolytic therapy for cancer.

E5. Advanced Clinical Study.
A limited number of opportunities are available for advanced study. Students will participate in the evaluation, care and follow-up of selected patients under the guidance of a preceptor and attend ward rounds, case conferences and other related teaching sessions. Students are encouraged to undertake a circumscribed investigative project of their own choosing.

Clinical clerkships on inpatient and consultation services are available to medical students who have completed their basic clinical courses. Postdoctoral fellowships are available to physicians who have completed two or more years of general house staff training and desire subspecialty education in oncology.

(a) Medical Oncology. Dr. Donehower
A half-quarter elective is offered to acquaint students with the principles and practice of oncology. Each student will serve as an advanced clinical clerk on an inpatient unit. Students make rounds with the attending physician daily. Appropriate readings are recommended. Attendance is required at Oncology Center Grand Rounds and the Translational Research Conference.

(b) Hematologic Malignancies. Dr. Ambinder
A half-quarter elective is offered to acquaint students with the diagnosis and treatment of leukemia, lymphoma, and myeloma. Students will serve as advanced clinical clerks on an inpatient unit and make rounds with an attending physician daily. Appropriate readings are recommended.

(c) Pediatric Oncology. Drs. Small and Cohen.
Special opportunities are available for the study of leukemia and the combined clinical management of a wide variety of solid neoplasms of childhood.

(d) Surgical Oncology.
A broad spectrum of neoplasms is seen in the general hospital setting. Special opportunities exist for the study of breast cancer and the changing role of surgery in the multidisciplinary management of neoplastic diseases.

E6. Oncology Center Grand Rounds. Drs. Lauring and Tran (course directors). Four quarter; Fri., 8:00 a.m. - 9:00 a.m.
Case presentations are emphasized that illustrate the principles of diagnosis and management of cancer-related problems. Monthly morbidity and mortality review of recent cases.
510.706 Fundamentals of Cancer Course: Cause to Cure. Dr. Leisha Emens. August-December; Mondays and Wednesdays, 8-9 a.m.

The Fundamentals of Cancer Course is offered by the Department of Oncology. This course is designed to be highly translational, covering fundamental cancer molecular biology to the processes of transformation and metastases, and how targeted therapies emerge from new scientific knowledge. The course is intended for clinically-oriented people (primarily fellows) and laboratory-oriented people (primarily graduate and post-doctoral students) to provide clinically-oriented people with a perspective on basic science, and laboratory-oriented people with a perspective on clinical issues as they pertain to research, bridging the gap between clinic and lab. The course will include projects where the students will be assigned a clinical/lab faculty team who will provide guidance in developing a new targeted therapy or prevention for a disease indication based on principles learned in the lectures.

There will be 4 modules: 1) Origins of Cancer (genes/carcinogenesis, etc), 2) Progression of Cancer (transformation, metastasis, stem cells, angiogenesis/tumor microenvironment, and how people become sick from cancer), 3) Treatment (traditional and new approaches to treatment including surgery, radiation, chemo, targeted therapy, immunotherapy, clinical trial design from bench to bedside, and managing patient symptoms), and 4) Prevention (primary and secondary prevention, high risk families and prevention, disparities). The case components will be part of the treatment and prevention modules.
Ophthalmology

PETER JOHN MCDONNELL, III
William Holland Wilmer Professor of Ophthalmology, Director of the Department of Ophthalmology

J. FERNANDO AREVALO, Adjunct Professor
NEIL MICHAEL BRESSLER
James P. Gills Professor of Ophthalmology

SUSAN BETH BRESSLER
Julia G. Levy, Ph.D., Professor of Ophthalmology

PETER ANTHONY CAMPOCHIARO
George S. and Dolores D. Eccles Professor of Ophthalmology, Professor of Neuroscience

DEEPAK PAUL EDWARD, Visiting Professor

JENNIFER H. ELISSEEFF
Visiting Professor of Ophthalmology, Joint Appointment in Orthopaedic Surgery

DANIEL FINKELSTEIN, Professor

DAVID L. GUYTON
Zarvyl Krieger Professor of Pediatric Ophthalmology

JAMES TAHARA HANDA
Robert B. Welch M.D. Professor of Ophthalmology

JUSTIN SCOT HANES
Lewis J. Ort Professor of Ophthalmology, Professor of Biomedical Engineering, Professor of Neurological Surgery, Professor of Oncology

BARBARA S. HAWKINS, Professor Emerita

NICHOLAS TAYLOR ILIFF
Charles E. Iliff, III M.D. Professor of Ophthalmology, Professor of Plastic and Reconstructive Surgery

HENRY D. JAMPEL
Odd Fellows Professor of Ophthalmology

ROBERT W. MASSOF, Professor

NEIL RICHARD MILLER
Frank B. Walsh Professor of Neuro-ophthalmology in the Department of Ophthalmology, Professor of Neurology, Professor of Neurological Surgery

JEREMY NATHANS
Professor of Molecular Biology and Genetics, Professor of Neuroscience, Professor of Ophthalmology, Investigator of the Howard Hughes Medical Institute

IRVIN P. POLLACK, Professor Emeritus

ROBERT A. PRENDERGAST
Professor Emeritus of Ophthalmology, Professor Emeritus of Pathology

HARRY ALAN QUIGLEY
A. Edward Maumenee Professor of Ophthalmology

KANNAN RANGARAMANUJAM
Visiting Professor of Ophthalmology (from 08/01/2011)

MICHAEL X. REPKA
Robert and Maureen Feduniak Professor of Ophthalmology, Professor of Pediatrics

DAVID A. ROBINSON
University Distinguished Service Professor Emeritus of Ophthalmology, University Distinguished Service Professor Emeritus of Biomedical Engineering, University Distinguished Service Professor Emeritus of Neuroscience

OLIVER DOUGLAS SCHEIN
Burton E. Grossman Professor of Ophthalmology

HENDRIK P.N. SCHOLL, Visiting Professor

RICHARD D. SEMBA
W. Richard Green Professor of Ophthalmology

ARTHUR M. SILVERSTEIN
Odd Fellows Professor Emeritus of Ophthalmic Immunology in the Department of Ophthalmology, Joint Appointment Emeritus in History of Medicine

ALFRED SOMMER
Professor of Ophthalmology, Dean Emeritus of the Johns Hopkins Bloomberg School of Public Health

WALTER J. STARK, JR.
Boone Pickens Professor of Ophthalmology

KHALID FUAD TABBARA, Adjunct Professor

MARK O. M. TSO
Robert and Maureen Feduniak Professor of Ophthalmology, Professor of Pediatrics

DAVID A. ROBINSON
University Distinguished Service Professor Emeritus of Ophthalmology, University Distinguished Service Professor Emeritus of Biomedical Engineering, University Distinguished Service Professor Emeritus of Neuroscience

SHEILA WEST
El-Maghraby Professor of Preventive Ophthalmology

CHARLES PAT WILKINSON, Professor

KING-WAI YAU
Professor of Neuroscience, Professor of Ophthalmology

DONALD J. ZACK
Guerrieri Family Professor of Ophthalmology, Joint Appointment in Molecular Biology and Genetics, Professor of Neuroscience

DAVID S. ZEE
Professor of Neurology, Professor of Neuroscience, Professor of Ophthalmology, Professor of Otolaryngology-Head and Neck Surgery

RAN ZEIMER
Morton F. Goldberg Professor of Ophthalmology

ESSEN KARAMURSEL AKPEK
Associate Professor of Ophthalmology, Associate Professor of Medicine
KAI SUN, Research Associate
ZHENHUA XU, Research Associate
ZHIYONG YANG, Research Associate
WALID KALED BARBOUR
Visiting Scientist in Ophthalmology (to 08/31/2011)
DONALD L. CHAMPAGNE, Visiting Scientist
BHAJA KRUSHNA PADHI, Visiting Scientist
JESUS SANTIAGO VIDAURRI LEAL, Visiting Scientist

FACULTY ASSOCIATED WITH THE DEPARTMENT OF OPHTHALMOLOGY HOLDING A PRIMARY APPOINTMENT IN:

The School of Medicine:
SETH BLACKSHAW
Associate Professor of Neuroscience
HENRY BREM
Harvey Cushing Professor of Neurological Surgery
NICHOLAS MARSH-ARMSTRONG
Assistant Professor of Neuroscience
DAVID EDWARD NEWMAN-TOKER
Associate Professor of Neurology

The Bloomberg School of Public Health:
MARIE DIENER-WEST
Professor of Biostatistics
KEVIN D. FRICK
Professor of Health Policy and Management
JOANNE KATZ
Professor of International Health
JAMES M. TIELSCH
Professor of International Health
KEITH PARKER WEST, JR.
Professor of International Health

The School of Arts and Sciences:
PHILIPPE MARTIN BURLIA
Assistant Research Professor of Computer Science

ELECTIVE OPPORTUNITIES—Curricular Consultant: Dr. Quan Nguyen. Elective courses must be approved by the preceptor; any member of the department can act as preceptor.

Ophthalmology E

The elective courses offered below are given in part for the instruction of house officers and fellows in Ophthalmology. All courses are also open to students of the third and fourth years who wish more experience in clinical and medical ophthalmology, and for students who propose ultimately to become ophthalmologists. Elective E5 is open to students of the second, third, and fourth years.

E 1. Staff Conference. Dr. Peter McDonnell and staff. Th., 7:45-8:45 a.m.
Presentation and discussion of cases in Patz Lecture Room.

Prerequisites: Preferably neurology (or neurosurgery) and ophthalmology general electives; special considerations will be made for some students who have only taken one of the above.
Patients with neuro-ophtalmological disorders are evaluated. Literature concerning specific syndromes encountered will be discussed.

E 3. Ophthalmic Pathology. Dr. Eberhart. Time to be arranged.
Students will participate in the routine operations of the eye pathology laboratory. The basics of ocular anatomy and histology and clinico-pathologic correlation of ocular diseases and ocular manifestations of systemic diseases are stressed.

Reading assignments about patients examined each day, attendance at daily lectures, and reading to prepare for daily tutorial sessions. Supervised clinical experience in retinal vascular disease, macular disease, cataract, corneal disease, strabismus, glaucoma, neuromedical ophthalmology, contact lenses, ophthalmic plastic surgery, refractive surgery and general eye clinic. Attendance at private offices of part time Wilmer faculty. Library research and oral report on topic of choice. Tutorial sessions with faculty members.

E 5. Advanced Work and Research. By arrangement with the staff.
Research interests represented in the Department of Ophthalmology are as follows:
DR. AKPEK
Allergic and immunologic eye diseases mostly associated with systemic problems.

DR. BREM
Angiogenesis research and controlled drug delivery research.

DR. N. BRESSLER
Clinical research of macular disease.

DR. S. BRESSLER
Clinical research in retinal vascular and macular diseases, fluorescein angiography, OCT, laser photo-coagulation, photodynamic therapy, and anti-VEGF treatment. Opportunity to become proficient in ophthalmoscopy and to carry out a clinical research project on some aspect of retinal disease.

DR. CAMPOCHIARO

DR. DAGNELIE
Retinal prostheses and vision test development.

DR. EBERHART
Ophthalmic pathology.

DR. GEHLBACH
Retinal diseases and surgery.

DR. GOLDSTEIN
Visual impairment assessment and rehabilitation.

DR. GOTTSCHE
Cornea and cataract.

DR. GROVER
Vision impairment and rehabilitation.

DR. GUYTON
Ophthalmic instrumentation, especially related to ophthalmic optics and strabismus.

DR. JAMPEL
Glaucoma and glaucoma surgery.
Impairment.


Weekly research seminar and supervised research project. Special interests of faculty include: retinal implants; assessment of visual function and daily living activities in common vision disorders (macular degeneration, diabetic retinopathy, retinal vasculature occlusion, retinitis pigmentosa, optic nerve lesions, stroke); vision impairment and rehabilitation; outcomes measurement; clinical decision making; prosthetic/therapeutic contact lenses; visual field enhancement; pediatric visual impairment.

E 8. Clinical Research in Medical Retinal Disease. Dr. S. Bressler. One student per 9 weeks. Prerequisites: Clinical elective in Ophthalmology. This elective includes reviewing pertinent literature in a specific area of medical retinal disease, reviewing patient records and/or clinical examinations to evaluate specific questions in regard to that condition, acquisition of basic and advanced ophthalmologic examination skills, interpretation of fluorescein angiography, examining patients with preceptor in her clinical practice one full day per week, and manuscript preparation.

E 9. Elective in Oculoplastic Surgery. Drs. Merbs and Grant. Available all year; contact 410-614-1435. The one month elective in Oculoplastic surgery provides clinical and surgical experience for the medical student in this subspecialty. Three days a week will be spent in clinic and two days in the operating room. At all times the student will be directly supervised by one of the attending preceptors. In the clinic there will be the opportunity to observe the evaluation and management of patients presenting with all aspects of Oculoplastic disease including trauma, neoplasia, aging, and congenital defects involving the ocular adnexae seen. There will be opportunity to do portions of the workups and then present to the preceptor(s). In the operating room, there will be observation of surgical techniques and opportunity to scrub in and assist on cases. The student will be assigned a library research project due at the end of the rotation as a PowerPoint presentation. The project will be on an Oculoplastic issue, disease, or surgery of interest to the student.

E 10. Ophthalmology Informatics (Computers in Ophthalmology). Dr. Boland. Available all year; any one term; contact boland@jhmi.edu, 410-502-4074. Prerequisites: Technical background appropriate to the planned project, if necessary. This elective affords the student the opportunity to work with faculty from ophthalmology in the field of medical informatics. The student will be allowed to develop either a research project or practical experience focused on the use of computers and information technology in ophthalmology. Examples of possible projects include: development of user interfaces for electronic patient records; computer-aided analysis and/or diagnosis of ophthalmic images; assessment of information needs in ophthalmology; assessment of the impact of information technology on ophthalmology; development and assessment of electronic patient education material; and development and assessment of clinician decision support. Students will be expected to generate a formal report describing their project and will be evaluated on their ability to plan and carry out that project.


E 12. Clinical Research in Ophthalmology Epidemiology. Dr. West. 2-3 months during summer. Opportunity to assist in design and conduct of epidemiologic studies of visual impairment and trachoma in selected populations in the U.S. and abroad.


E 14. Clinical/Basic Research in External Eye Disease. Dr. Akpek. To be arranged; contact course director prior to applying. Prerequisites: Electronics or engineering background or experience would be welcome. The student will conduct a pertinent literature search in a particular area of cornea/external diseases. Reviewing patient records, clinical examinations, and/or interpretation of laboratory investi-
gations (including anterior segment angiography) to evaluate specific questions and manuscript preparation will be performed with the preceptor. Exposure to basic laboratory techniques (including cell cultures, immunohistochemical/fluorescein staining) will be available for interested students.

E 15. Retina/Ophthalmology Clerkship (for Clinician Scientists). Dr. Gelbach. One student each semester; 4.5 weeks.
Prerequisites: Completion of basic sciences portion of an approved medical school program. An interest in ophthalmology, retina, or vision science as a career.
Exposure to medical and surgical retina practice and retina research. The rotation will include attendance in retina clinic and the retina operating room. There will be assigned readings and a retina related project that will contribute to a publication level document. Visitation to the retina laboratory where in vitro and in vivo work related to retinal disease is ongoing and will be incorporated into the experience.

This elective is designed for students interested in ophthalmology and retina. This rotation will expose students to medical and surgical retina through time in the retina clinic and operating rooms. In addition, interested students will have an opportunity to participate in clinical research and case reports.

E 17. Signal Acquisition and Processing in Ophthalmic Optics. Dr. Gramatikov. To be arranged.
This elective provides the student with an introduction to the physical principles, hardware design, and signal processing techniques used in ophthalmic optics and electronics. The course is designed for students who wish to pursue research in ophthalmic optics. Emphasis will be placed on optical sensors, amplifiers and filters, noise reduction, pattern recognition, and data analysis in time, and frequency domains. The project may include elements of computer programming, modeling, and optimization; possibly also decision making. Experimental data will be collected, analyzed, and statistically assessed. The end goal is to develop algorithms to be applied in functional and reliable diagnostic devices.

E 18. Elective in Oculoplastic Surgery at Bayview Medical Center Dr. Iliff. Ongoing, 4 weeks.
This one month elective in Oculoplastic Surgery provides clinical and surgical experience for the medical student in this subspecialty. Two days a week will be spent in clinic and two days in the operating room. At all times the student will be directly supervised by the attending preceptor. In the clinic there will be the opportunity to observe the evaluation and management of patients presenting with all aspects of oculoplastic disease including trauma, neoplasia, aging, and congenital defects involving the ocular adnexae. There will be opportunity to do portions of the workups and then present to the preceptor(s). In the operating room, there will be observation of surgical techniques and opportunity to scrub in and assist on cases.

E 19. Clinical Elective in Ophthalmology- Green Spring Station Dr. Bower. To be arranged; 3-4.5 weeks.
Prerequisites: Medical student in clinical years.
Supervised clinical rotation with full time Wilmer faculty at Green Spring Station. This course will focus on diagnosis and treatment of many common eye diseases, with particular attention to conditions of the anterior segment, including cataract, cornea, and refractive surgery. Curriculum will include clinical experience, observation in the operating room and during laser refractive surgery, reading assignments, lectures and seminars, and one-on-one teaching.

This elective is designed for students interested in ophthalmology, especially retina and uveitis. This rotation will expose students to uveitis and medical and surgical retina through time in the retina clinic and operating rooms. In addition, interested students will have an opportunity to participate in clinical research and case reports.

Prerequisites: Medical student in clinical years.
Cataract and intra-ocular lens implantation, contact lenses, ocular immunology, in particular immune aspects of corneal transplant rejection.
Pathology

JAY BROOKS JACKSON
Baxley Professor of Pathology, Director of the Department of Pathology

SYED ZULFIQAR ALI
Professor of Pathology, Associate Professor of Radiology

RICHARD FREDERICK AMBINDE
James B. Murphy Professor of Oncology, Professor of Medicine, Professor of Pathology, Professor of Pharmacology and Molecular Sciences

GRANT J. ANHALT
Professor of Dermatology, Professor of Pathology

PEDRAM ARGANI
Professor of Pathology, Professor of Oncology

FREDERIC B. ASKIN, Professor

WILLIAM M. BALDWIN, III, Adjunct Professor

JOHN K. BOITNOTT, Professor

MICHAEL J. BOROWITZ
Professor of Pathology, Professor of Oncology

PETER C. BURGER
Professor of Pathology, Professor of Neurological Surgery, Professor of Oncology

KAREN C. CARROLL
Professor of Pathology, Joint Appointment in Medicine

DARRYL CARTER, Adjunct Professor

DANIEL W. CHAN
Professor of Pathology, Professor of Oncology, Professor of Radiology, Professor of Urology

PATRICIA CHARACHE
Professor Emerita of Pathology, Professor Emerita of Medicine

SAMUEL CHARACHE
Professor Emeritus of Medicine, Professor Emeritus of Pathology

DOUGLAS PAUL CLARK
Professor of Pathology (on leave of absence), Professor of Oncology (on leave of absence)

JANICE E. CLEMENTS
University Distinguished Service Professor of Molecular and Comparative Pathobiology, Joint Appointment in Molecular Biology and Genetics, Professor of Neurology, Professor of Pathology, Mary Wallace Stanton Professor for Faculty Affairs

DONALD S. COFFEY
Catherine Lola and J. Smith Michael Distinguished Service Professor of Urology, Professor of Oncology, Professor of Pathology, Professor of Pharmacology and Molecular Sciences

CAROLYN CORLIES COMPTON, Adjunct Professor

SUSAN W. CRAIG
Professor of Biological Chemistry, Professor of Pathology

CHI VAN DANG
Professor of Medicine, Professor of Cell Biology, Joint Appointment in Molecular Biology and Genetics, Professor of Oncology, Professor of Pathology

ANGELO MICHAEL DEMARZO
Professor of Pathology, Professor of Oncology, Professor of Urology

BARBARA DETRICK, Professor

J. STEPHEN DUMLER, Professor

JONATHAN I. EPSTEIN
Rose-Lee and Keith Reinhard Professor of Urologic Pathology, Professor of Oncology, Professor of Urology

YENER S. EROZAN, Professor

JAMES R. ESHELMAN
Professor of Pathology, Professor of Oncology

SUSAN H. SHAHIN ESHELMAN, Professor

MARY GLENN FOWLER, Professor

EDWARD W. GABRIELSON
Professor of Pathology, Professor of Oncology

FRANCIS M. GIARDIELLO
John G. Rangos Sr. Professor of Adult Medicine in the Department of Medicine, Professor of Oncology, Professor of Pathology

MICHAEL G. GOOGINS
Professor of Pathology, Professor of Medicine, Professor of Oncology

CONSTANCE A. GRIFFIN
Professor of Pathology, Associate Professor of Medicine, Professor of Oncology

ROBERT G. HAMILTON
Professor of Medicine, Professor of Pathology

ULRIKE M. HAMPER
Professor of Radiology, Professor of Pathology, Professor of Urology

GARY S. HAYWARD
Professor of Oncology, Professor of Pathology, Professor of Pharmacology and Molecular Sciences

ROBERT H. HEPTINSTALL
University Distinguished Service Professor Emeritus of Pathology

ALLAN D. HESS
Professor of Oncology, Professor of Pathology

GARY S. HILL, Adjunct Professor

RALPH HARVEY HRUBAN
Professor of Pathology, Professor of Oncology

ELIZABETH M. JAFFEE
Dana and Albert “Cubby” Broccoli Professor of Oncology, Professor of Pathology

WALTER ERWIN KAUFMANN
Professor of Pathology, Professor of Neurology, Professor of Pediatrics, Professor of Psychiatry, Professor of Radiology

SCOTT E. KERN
Everett and Marjorie Kovler Professor of Pancreas Cancer Research in the Department of Oncology, Professor of Pathology

THOMAS S. KICKLER
Professor of Pathology, Professor of Medicine, Professor of Oncology
JOHN H. YARDLEY  
University Distinguished Service Professor Emeritus of Pathology

M. CHRISTINE ZINK  
Professor of Molecular and Comparative Pathobiology, Professor of Pathology

ROBERT ALBERT ANDERS  
Associate Professor of Pathology, Assistant Professor of Oncology

LOIS J. AREND, Visiting Associate Professor

SERENA MARIA BANASCO, Associate Professor

NORMAN J. BARKER  
Associate Professor of Pathology, Associate Professor of Art as Applied to Medicine

DENISE A. BATISTA  
Associate Professor of Pathology (from 10/01/2011), Assistant Professor of Pathology (to 09/30/2011)

DEBORAH ANN BELCHIS  
Visiting Associate Professor of Pathology (from 09/06/2011)

DAVID MONTY BERMAN  
Associate Professor of Pathology, Associate Professor of Oncology, Assistant Professor of Urology

BELUR S. BHAGAVAN, Associate Professor

CAROL L. BUREK, Associate Professor Emerita

ELIZABETH CUMMINGS BURTON, Visiting Associate Professor

PATRIZIO P. CATUREGLI  
Associate Professor of Pathology, Joint Appointment in Medicine

WILLIAM ALEX CLARKE, Associate Professor

BARBARA J. CRAIN  
Associate Professor of Pathology, Associate Professor of Neurology, Associate Professor of Oncology

CHARLES GEORGE EBERHART  
Associate Professor of Pathology, Associate Professor of Oncology, Associate Professor of Ophthalmology

KATHLEEN GABRIELSON  
Associate Professor of Molecular and Comparative Pathobiology, Associate Professor of Pathology

PATRICIA J. GEARHART  
Adjunct Professor of Medicine, Adjunct Associate Professor of Pathology, Adjunct Associate Professor of Surgery

CHRISTOPHER D. GOCKE  
Associate Professor of Pathology, Associate Professor of Oncology

DENNIS JOHN GRAB  
Associate Professor of Pathology, Associate Professor of Pediatrics

LAURA A. GUAY  
Adjunct Associate Professor of Pathology, Adjunct Associate Professor of Pediatrics

MARC KENNETH HALUSHKA, Associate Professor

RICHARD L. HUMPHREY  
Associate Professor of Pathology, Associate Professor of Medicine

CHIEN-FU HUNG  
Associate Professor of Pathology, Associate Professor of Gynecology and Obstetrics, Associate Professor of Oncology

CHRISTINE A. IACOBUZZIO-DONAHUE  
Associate Professor of Pathology, Associate Professor of Oncology, Associate Professor of Surgery

KAREN EILEEN KING  
Associate Professor of Pathology, Associate Professor of Oncology

JOSEPH LEONARD MANKOWSKI  
Associate Professor of Molecular and Comparative Pathobiology, Associate Professor of Neurology, Associate Professor of Pathology

ROBERT E. MILLER  
Associate Professor of Pathology, Joint Appointment in Health Sciences Informatics, Associate Professor of Biomedical Engineering

KATHLEEN MARIE MURPHY, Adjunct Associate Professor

GEORGES JABBOURE NETTO  
Associate Professor of Pathology, Associate Professor of Oncology, Associate Professor of Urology

GARY ROY PASTERNACK  
Adjunct Associate Professor of Pathology, Adjunct Associate Professor of Medicine

TRISH M. PERL  
Professor of Medicine, Associate Professor of Pathology

SCHERERAZADE SADEGH-NASSERI, Associate Professor

HUA SHAN, Associate Professor

SHEILA SHETH  
Associate Professor of Radiology, Associate Professor of Pathology

LORI JEAN SOKOLL  
Associate Professor of Pathology, Associate Professor of Oncology, Associate Professor of Urology

MICHAEL SCOTT TORBENSON  
Associate Professor of Pathology, Associate Professor of Oncology

CORNELIA LIU TRIMBLE  
Associate Professor of Gynecology and Obstetrics, Associate Professor of Oncology, Associate Professor of Pathology

ALEXANDRA VALSAMAKIS, Associate Professor

RUSSELL VANG  
Associate Professor of Pathology, Associate Professor of Gynecology and Obstetrics

GARY RAY WARNOCK  
Associate Professor of Dermatology, Associate Professor of Pathology

CHRISTOPHER L. WOLFGANG  
Associate Professor of Surgery, Associate Professor of Oncology, Associate Professor of Pathology

HUI ZHANG  
Associate Professor of Pathology (from 10/01/2011), Assistant Professor of Pathology (to 09/30/2011)
ZHEN ZHANG  
Associate Professor of Pathology, Associate Professor of Oncology

ELI E. BAR, Assistant Professor

SHAHNAZ BEGUM, Assistant Professor

JUSTIN AVERY BISHOP, Assistant Professor

G. STEVEN BOVA  
Assistant Professor of Pathology, Joint Appointment in Health Sciences Informatics, Assistant Professor of Oncology, Assistant Professor of Urology

PATRICIA A.R. BRUNKER, Adjunct Assistant Professor

KATHLEEN HELEN BURNS  
Assistant Professor of Pathology, Assistant Professor of Oncology

DANIELA CIHAKOVA, Assistant Professor

TOBY CHARLES CORNISH, Assistant Professor

CHERYL DESCPIO  
Assistant Professor of Pathology, Assistant Professor of Gynecology and Obstetrics

AMY SUSAN DUFFIELD, Assistant Professor

DONALD WILLIAM EDDLOW, Assistant Professor

SHELDON M. GLUSMAN, Assistant Professor

ABDEL-RAHIM A. HAMAD  
Assistant Professor of Pathology, Assistant Professor of Medicine

PETRA KAYE, Assistant Professor

TONG LI, Assistant Professor

MING-TSEH LIN, Assistant Professor

TAMARA LEVIN LOTAN, Assistant Professor

ZAHRA MALEKI, Assistant Professor

DANNI LI MEANY, Assistant Professor

ALAN KEITH MEEKER  
Assistant Professor of Pathology, Assistant Professor of Oncology, Assistant Professor of Urology

PATRICE JEAN-LUC MORIN, Adjunct Assistant Professor

DOLORES B. NJOKU  
Associate Professor of Anesthesiology and Critical Care Medicine, Assistant Professor of Pathology, Assistant Professor of Pediatrics

MATHIAS OELKE, Assistant Professor

CARLOS A. PARDO-VILLAMIZAR  
Associate Professor of Neurology, Assistant Professor of Pathology

NICOLE M. PARRISH, Assistant Professor

DANIEL PETERSON, Assistant Professor

EDWARD A. RATOVITSKI  
Associate Professor of Dermatology, Associate Professor of Medicine, Associate Professor of Otolaryngology-Head and Neck Surgery, Assistant Professor of Pathology

MEGAN ELIZABETH RELLER, Assistant Professor

STEVEN RIEDEL, Assistant Professor

MARY G. RIPPLE, Adjunct Assistant Professor

FAUSTO RODRIGUEZ, Assistant Professor

WILLIAM JACOB SAVAGE, Assistant Professor

ALENA V. SAVONENKO  
Assistant Professor of Pathology, Assistant Professor of Neurology

KAREN SANDELL SFANOS, Assistant Professor

DUNCAN SCOTT STEARNS, Adjunct Assistant Professor

ARMANDA D. TATSERS, Assistant Professor

JANIS MARIE TAUBE  
Assistant Professor of Dermatology, Assistant Professor of Pathology

JAGAN N. THUPARI, Adjunct Assistant Professor

JOHN R. TICEHURST, Assistant Professor

AARON ANDREW ROSS TOBIAN, Assistant Professor

CHRISTOPHER BENEDICT UMBRICHT  
Assistant Professor of Surgery, Assistant Professor of Oncology, Assistant Professor of Pathology

MILENA VUICA-ROSS, Assistant Professor

BARBARA A. WASOWSKA, Assistant Professor

ANNA YEMELYANOVA, Assistant Professor

SEAN X. ZHANG, Assistant Professor

TIMOTHY AMUKELE, Instructor

HUI GUAN, Instructor

TATIANA MELNIKOV, Instructor

ESTHER SEUNGHEE OH  
Assistant Professor of Medicine, Instructor in Pathology, Joint Appointment in Psychiatry

MIGUEL BLAKE STREIFF  
Associate Professor of Medicine, Instructor in Pathology

CHRISTINA A. ARNOLD, Assistant

CHRISTINA MARIA BAGBY, Assistant

MICHAEL KUPERMAN, Assistant

KRUTI P. MANIAR, Assistant

KAREN E. MATSUOKA, Assistant

NILOOFAR NASSERI-NIK, Assistant

STEPHANIE DIANA NORWOOD, Assistant

ADAM D. TOLL, Assistant

KATHRYN JOCKOVIC VILLA, Assistant

JILL IRENE ALLBRITTON, Lecturer

NICHOLAS JOHN BELITSOS  
Assistant Professor of Medicine, Lecturer in Pathology

JEFFREY STEPHEN IDING, Lecturer

MOIRA P. LARSEN, Lecturer

JAMES LARSON LOCKE, Lecturer

DIANA WEEDMAN MOLAVI, Lecturer

JOAN WHITEHOUSE-GIBBLE  
Lecturer in Pathology (to 07/16/2011)

JOAN GLICK BIELER, Research Associate

LI CHAIN, Research Associate

SACHIDANAND ARVIND HEBBAR, Research Associate

SUBHASHINI JAGU, Research Associate

BALASUBRAMANYAM KARANAM, Research Associate
BONNIE S. KING, Research Associate
VASILIKI MACHAIRAKI, Research Associate
MAHNAZ MOTEVALLI, Research Associate
OLGA V. NIKOLSKAIA, Research Associate
SHIWEN PENG, Research Associate
OLGA PLETNIKOVA, Research Associate
YUAN TIAN, Research Associate
WENJING TONG, Research Associate
LEYAN XU, Research Associate
MUHAMMED KABIRU SHITTU, Visiting Scientist

FACULTY ASSOCIATED WITH THE DEPARTMENT OF PATHOLOGY HOLDING A PRIMARY APPOINTMENT IN:
The School of Medicine:
WILLIAM RAMSES BISHAI
Professor of Medicine

The Bloomberg School of Public Health:
ARTHUR M. DANNENBERG, JR.
Professor of Environmental Health Sciences
DELISA FAIRWEATHER
Assistant Professor of Environmental Health Sciences

The School of Arts and Sciences:
MICHAEL AARON EDIDIN
Professor of Biology

REQUIRED COURSE WORK FOR M.D. DEGREE

First Year

Foundations of Histology and Pathobiology Section of Scientific Foundations of Medicine. Dr. Marc Halushka.
The Foundations of Histology and Pathobiology section of SFM is designed to provide the foundations to understand organ histology and histopathology. This course begins with basic concepts of tissue organization and ends with globally relevant histopathologic changes seen in disease. This course is designed to provide the background material necessary for the disease oriented sections to come. This course is primarily designed around the virtual microscopy system within small groups and occasional lectures. Students teach some of the materials to their colleagues through short presentations.

OTHER COURSES AND ELECTIVE OPPORTUNITIES—Curricular Consultants: Drs. Crain and Racusen. Elective programs must be approved by the preceptor; any member of the department may act as preceptor.

Pathology E

E 1. Advanced Work and Special Research. (300.701)
Opportunity is offered to pursue advanced work or research in pathological anatomy, experimental pathology, and laboratory medicine. Research interests represented in the Department of Pathology are as follows:

DR. ALI
Cytopathology; digital photoimaging; web-based teaching tools.
DR. AMUKELE
Clinical Laboratories in Developing Countries; Renal Disease in Developing Countries; and Clinical Immunology.
DR. ANDERS
Liver biology and gastrointestinal pathology.
DR. AREND
Kidney and transplant pathology; basic mechanisms of kidney development, pathogenesis of cystic kidney disease.
DR. ARGANI
Breast cancer; gallbladder and bile duct carcinomas; pediatric renal tumors.
DR. ASKIN
Pulmonary disease, placental pathology, and pediatric neoplasia.
DR. BAGNASCO
Pathology of native and transplanted kidneys.

MR. BARKER
Digital microscopy; macro imaging; gross specimen documentation; publication preparation.
DR. BATISTA
Clinical cancer cytogenetics; post-natal cytogenetics and chromosomal microarray; delineation of genetic syndromes.
DR. BEGUM
Cancer genetics and epigenetics, particularly lung and head and neck cancer; viral infection related to human cancer.
DR. BELCHIS
Pulmonary pathology; pediatric pathology; cytopathology.

DR. BISHOP
Head and neck pathology.
DR. BOITNOTT
Liver disease, morphology and informatics.
DR. BOROWITZ
Leukemia and lymphoma, especially pediatric leukemia; flow cytometry.
DR. BRUNKER
Molecular transfusion medicine; alloimmunization; genetic epidemiology.

DR. BUREK
Clinical immunology; autoimmunity; autoimmune disease.
DR. BURGER
Neuropathology; neuro-oncology.

DR. BURNS
Clinical hematopathology and flow cytometry; cancer genetics and genetic variation; mobile DNAs.
DR. BURTON
Adult and pediatric autopsy pathology.
DR. CARROLL
Diagnostic test development and evaluation for bacterial and mycobacterial pathogens with emphasis on healthcare associated infections.
DR. CATUREGELI
Autoimmune diseases; thyroiditis; hypophysitis; mouse models.
DR. D. CHAN
Tumor markers; proteomics; immunoassay.

DR. CHEN
Neuropathology; neurodegenerative disorders.
DR. P. CHARACHE
Medical microbiology.
DR. CIHAKOVA
Autoimmune diseases; myocarditis; APECED; vasculitis; mouse models.

DR. CIMINO-MATHEWS
Breast pathology.

DR. CLARK
Molecular cytopathology.

DR. CLARKE
Therapeutic drug monitoring; clinical toxicology; pharmacogenomics; drug assay development.

DR. CORNISH
Gastrointestinal and pancreatic pathology; digital pathology; mobile and web-based teaching technologies; pathology informatics.

DR. CRAIN
Neurodegenerative diseases; autopsy pathology.

DR. A. M. DANNENBERG JR.
Pathogenesis of allergic and infectious diseases; the inflammatory process; tuberculosis.

DR. DEMARZO
Molecular pathogenesis of prostate cancer.

DR. DESCPIO
Identification and characterization of cytogenetic abnormalities and how they related to placental and fetal abnormalities.

DR. DETRICK
Clinical immunology; immunoregulation in the retina and ocular diseases; cytokine biology in immune disease.

DR. DUFFIELD
FMS-like tyrosine kinase receptor-3 (FLT3) interacting proteins and leukemogenesis.

DR. DUMLER
Study of vector-borne infections including tick-borne diseases caused by Rickettsia, Ehrlichia/Anaplasma, Borrelia, and those caused by other vectors such as malaria and trypanosomiasis.

DR. EBERHART
Pathogenesis of brain and eye tumors.

DR. EPSTEIN
Genitourinary pathology.

DR. EROZAN
Pulmonary and gastrointestinal cytopathology.

DR. J. ESHELEMAN
Early detection of pancreatic cancer; genes causing familial pancreatic cancer; novel molecular therapeutic and diagnostic tools for cancer.

DR. S. ESHELEMAN
HIV prevention; role of HIV genetic diversity in transmission; disease progression; drug resistance.

DR. FOWLER
Prevention and treatment of pediatric and HIV infection.

DR. GABRIELSON
Molecular pathology of breast cancer and lung cancer.

DR. GOCKE
Molecular diagnostics and hematopathology.

DR. GOGGINS
Pancreatic cancer, particularly early detection; screening; markers; susceptibility; cancer genetics; cancer epigenetics.

DR. HALUSHKA
Cardiovascular pathology.

DR. HAMAD
Regulation of organ specific autoimmunity and mucosal tolerance by the Fas pathway.

DR. HRUBAN
Cancer of the pancreas.

DR. HUMPHREY
Diagnostic immunology; dysproteinemias.

DR. HUNG
Cancer vaccine; immunotherapy; DNA vaccine.

DR. IACOBUZIO-DONAHUE
Metastasis; cancer genetics; cancer genomics; gastrointestinal pathology.

DR. ILLEI
Pulmonary pathology including pathology of lung transplants; immunohistochemistry and in situ hybridization of solid tissue tumors.

DR. JACKSON
HIV, transfusion transmitted viruses.

DR. KERN
Molecular biology of cancer; gastrointestinal diseases.

DR. KICKLER
Hemostasis/thrombotic disorders.

DR. KING
Apheresis, transfusion medicine, and immunohematology; alloimmunization and immune hemolysis.

DR. KOLIATSOS
Axonal pathology and tauopathy after traumatic brain injury; neural injury and repair, including stem cell therapies.

DR. KURMAN
Cervical, ovarian, endometrial, and trophoblastic neoplasia.

DR. LAI
Cytopathology and molecular biology of lung cancer.

DR. LE THI
Cancer metabolism and metabolic diseases.

DR. Q. (KAY) LI
Cytopathology and molecular biology of lung cancer.

DR. T. LI
Molecular biology of neurobiological diseases.

DR. LIN
Molecular pathology.

DR. LOTAN
Cellular migration in prostate development, prostate cancer and prostate cancer metastasis; genitourinary pathology.

DR. MAITRA
Pancreatic cancer; experimental therapeutics; mouse models; nanotechnology.

DR. MALEKI
Cytopathology; cytology of lung neoplasms; head and neck cytology; digital microscopic photoimaging.

DR. MARTIN
Amyotrophic lateral sclerosis; Parkinson's Disease; mitochondria; stroke; pediatric brain ischemia; cell death; apoptosis-necrosis continuum; motor neuron disease; epigenetics.

DR. MARZINKE
Core laboratory preanalytics; pharmacogenetics; personalized medicine; clinical pharmacology.

DR. MCCARTHY
Bone pathology.

DR. MEEKER
Molecular pathology and telomere biology of prostate and other cancers.
DR. MELNIKOVA  
Animal models of Alzheimer’s disease and schizophrenia.

DR. MILLER  
Computer applications in laboratory diagnosis; web-based teaching and clinical systems.

DR. MONTGOMERY  
Surgical pathology, focusing on gastrointestinal and soft tissue pathology.

DR. NESS  
Transfusion medicine; immune hemolysis; transfusion alternatives; clinical trials in transfusion recipients; blood donor epidemiology studies.

DR. NETTO  
Surgical pathology; urologic pathology; molecular diagnostic pathology; prognostic and theranostic biomarkers in urologic malignancies.

DR. OELKE  
Human T cell immunology; aAPC; adoptive and active immunotherapy; artificial immune modulation; cancer research.

DR. PARRISH  
Mycobacterial biochemistry; drug development.

DR. PETERSON  
Diagnostic immunology; gut microbiota and microbiome studies in humans disease and mouse models of disease; mucosal immunology of T cell and B cell (antibody) responses to symbiotic bacteria in the gastrointestinal tract.

DR. PRICE  
Neuronal degeneration and regeneration; axonal transport; biology of synapses and their involvement in diseases; genetically engineered models of neurodegenerative diseases, particularly Alzheimer’s disease, Parkinson’s disease, motor neuron disease; pathogenic mechanism; validation of targets for treatment; experimental therapeutics.

DR. RACUSEN  
Renal failure/AKI, with focus on pathology and clinicopathologic correlations; native kidney pathology; transplant pathology of the kidney and pancreas with focus on antibody-mediated rejection and incompatible transplants and rejection diagnosis.

DR. RATOVITSKI  
Molecular biology of cancer; drug resistance; protein-protein interactions; metabolomics; microRNA transcription and processing in ectodermal dysplasia.

DR. RELLER  
Diagnostic test development in rickettsial diseases and parasitology; epidemiology and diagnosis of acute febrile illness, enteric diseases, and parasitology.

DR. RIEDEL  
Epidemiology of emerging bacterial resistance; mechanisms and laboratory detection of antimicrobial resistance; correlation of antimicrobial consumption data and resistance blood culture technology and diagnosis of sepsis; the clinical impact of laboratory testing and the development and evaluation of novel diagnostic methods in clinical microbiology.

DR. RODEN  
Cervical cancer; ovarian cancer; papillomavirus; vaccine development; virology.

DR. RODRIQUEZ  
Neoplastic neuropathology and ophthalmic pathology.

DR. RONNETT  
Gynecologic pathology.

DR. ROSE  
Autoimmunity; autoimmune disease.

DR. ROSENTHAL  
Cytopathology.

DR. SADEGH-NASSERI  
Molecular mechanisms of immune recognition and response: antigen processing and presentation; mechanism of immunodominance; genetic regulation of memory T cells differentiation and longevity; mechanisms of T cell tolerance.

DR. SATHIYAMOORTHY  
Pulmonary cytopathology; optimizing the diagnostic utility of fine needle aspiration specimens and application of molecular testing in personalized lung cancer therapy.

DR. SAVONENKO  
Cognitive deficits in animal models of Alzheimer’s, Parkinson’s, and schizophrenia: testing experimental treatments for these diseases: their mechanisms, safety, and side effects.

DR. SCHNECK  
Basic mechanisms controlling T-cell mediated immune responses; cell engineering; adoptive immunotherapy; cellular microarray-based high-throughput analysis of immune responses.

DR. SFANOS  
Pathogenesis of prostate cancer; inflammation.

DR. SHAN  
Transfusion medicine, hemapheresis and international collaboration on blood safety and availability research.

DR. SHIH  
Molecular genetics and functional genomics of gynecologic cancers; cancer stem cell research; development of new targeted therapy in ovarian cancer; molecular etiology of cancer.

DR. SOKOLL  
Clinical chemistry; tumor markers; immunoassays.

DR. STEENBERGEN  
Cardiac pathology; myocardial ischemia/reperfusion injury and cardioprotection.

DR. TATSAS  
Cytopathology; human papillomavirus.

DR. TOBIAN  
Transfusion medicine; transfusion-transmitted infections; HIV; sexually transmitted infections; male circumcision.

DR. TORBENSON  
Diagnostic liver and GI pathology; viral hepatitis; hepatocellular carcinoma.

DR. TRONCOSO  
Neuropathology of normal aging; Alzheimer’s, Parkinson’s and Huntington’s disease; stereological quantitation of neurons in hippocampus and substantia nigra; neuropathology of transgenic models of neurodegenerative disorders; immunotherapy of animal models of Alzheimer’s disease.

DR. VALSAMAKIS  
Molecular diagnosis of infectious diseases; hepatitis B diagnostics; hepatitis C diagnostics; respiratory virus diagnostics.
DR. VANG
Gynecologic pathology; epithelial neoplasms of the ovary and fallopian tube.

DR. WU
Cancer immunotherapy for HPV associated malignancies and other gynecological cancers; molecular pathology and DNA vaccines.

DR. H. ZHANG
Glycoproteins and glycans associated with diseases using proteomics; glycomics; and mass spectrometry.

DR. Z. ZHANG
Diagnostic mycology; molecular identification of fungal pathogens from tissue specimens.

DR. ZINK
HIV; SIV; pathogenesis; virology; pathology; neurology; animal models.

E 2. Autopsy Pathology (The Johns Hopkins Hospital). Dr. Crain. Throughout year except July; one quarter.
Prerequisite: Completion of Introduction to Pathology (300.600).

Students are trained to function as first year house officers on the autopsy service. They become responsible for work-up and final sign-out of their cases and in other respects participate fully in the life of the department. There are informal case conferences at the autopsy table and at multiheaded microscopes. Students present cases at departmental and interdepartmental conferences. Brief supplementary exposures to surgical pathology and forensic pathology are offered to interested students. The elective can be taken year round by third and fourth year students. Additionally, the elective is made available to second year students in the fourth and summer quarters as a special lottery elective option.

E 3. Surgical Pathology. (Johns Hopkins Bayview Medical Center) Dr. Askin and staff. All year; one quarter or half-quarter.
Prerequisite: Completion of Introduction to Pathology (300.600).

This course offers an opportunity to see and experience at first hand a wide spectrum of activities in anatomic pathology. Students will rotate in Surgical Pathology, functioning at the level of a first year resident in pathology. He or she will perform gross dissections, dictate clinical summaries, review microscopic sections and sign out the surgical pathologic material under senior staff supervision.

E 4. Surgical Pathology (The Johns Hopkins Hospital). Dr. McCarthy. Throughout year; one half quarter, or longer by arrangement.
Prerequisite: Completion of Introduction to Pathology (300.600).

Students are trained in the techniques of general surgical pathology and then become responsible for the gross description, gross dissection, and microscopic examination of their assigned cases. Students are supervised by faculty members and senior residents, and they participate in all conference activities in the division. The elective exposes the student to a variety of modern techniques employed in the pathologic diagnosis of medical and surgical diseases and increases their awareness and understanding of the role played by surgical pathology in patient management. There are opportunities for exposure to other diagnostic pathology services (e.g., cytopathology and neuropathology)

E 5. Pathology Clerkship for M.D./Ph.D. Students. (300.712) Dr. Burns and staff. Full or half quarter; arrange with course director. (Not offered in fourth quarter)
Prerequisite: Limited to M.D./Ph.D. students.

M.D./Ph.D. students returning to clinical studies will have the opportunity to gain first-hand experience with clinical concepts through surgical, subspecialty, and/or clinical pathology. Students will work closely with house staff and faculty in evaluating clinical specimens. Rotations will be tailored to the investigative and clinical interests of the student. As with the Autopsy Prosectorship (E3), the overall experience will provide a transition to clinical work which incorporates exposure to clinical problems, as well as an opportunity to understand how basic medical sciences are translated into patient care.

Students observe and participate in the gross and histologic assessment of gynecologic pathology specimens under the supervision of residents, fellows, and attending physicians.

E 7. Ophthalmic Pathology. Dr. Charles Eberhart.
All year. For Johns Hopkins Students only. (Same as Ophthalmology E3)
Clinicopathologic correlation of ocular diseases, degenerative changes of the eye, and ocular manifestations of systemic diseases are stressed.

E 8. Forensic Pathology. Dr. Fowler and staff. All year; four and one-half weeks or one quarter.
Prerequisite: Completion of Introduction to Pathology (300.600)

Students acquire first-hand knowledge of legal medicine and the investigation of sudden, unexpected, and violent deaths by actively participating in all regular functions of the Office of the Chief Medical Examiner (near the University of
E 9. Animal Pathology Laboratory. (680.703) Dr. Zink and staff. All year.
Prerequisites: Principles of Animal Pathology 680.701, Pathology 300.600, or their equivalent and courses in human/animal histology.
A limited number of persons may serve as prosecutors on the animal pathology diagnostic service. This entails responsibility for gross and microscopic examination of diseased animals and tissues submitted for diagnosis by investigators within the Institutions, the Maryland Zoo in Baltimore, the National Aquarium, and by practicing veterinarians. Complete necropsy and histopathology laboratories are available and prosecutors work under close supervision. Rotational assignments may vary according to schedules.

E 10. Diagnostic Cytopathology. Dr. Ali and staff.
All year, by prior approval. One quarter or summer or as a 1-3 week elective. Second, third, and fourth year students.
Prerequisite: Completion of Introduction to Pathology (300.600)
An opportunity to become acquainted with the clinical significance in health and in disease of morphologic changes in cells and other elements of the cellular specimen. The materials utilized are specimens from The Johns Hopkins Hospital Diagnostic Cytopathology Service, including pap tests and biopsies from the Fine Needle Aspiration Service. There will be active correlation of the clinical, morphologic, and histologic findings with the ward, clinic, Radiology, Surgical Pathology, Autopsy Pathology, and follow-up information.

E 11. Laboratory Medicine: Effective Use of the Clinical Laboratory. Dr. Borowitz and staff. Tutorial (by arrangement).
This elective course is designed primarily for junior and senior medical students. The course emphasizes the appropriate use of the clinical laboratory in both diagnosis and management, using didactic presentations, case discussions, and demonstrations of laboratory technology.

E 12. Medical Microbiology. (300.713) Dr. K. Carroll. All year; four weeks. Limit of two students per quarter.
Laboratory diagnosis of infectious diseases and therapeutic monitoring of antimicrobial agents. This course will emphasize all facets of diagnostic testing. The student will review specimen collection guidelines as they pertain to microbiology samples. Diagnostic methods and specific technologies for detection of a broad range of clinically significant pathogens will be learned. Susceptibility testing methods including special antibiotic studies will be covered. A major objective is to provide correlation of laboratory information with disease presentations in patients through a dynamic interface with healthcare providers and other divisions within the Department of Pathology. Learning objectives are fulfilled through bench rotations in the laboratory, daily work rounds, didactics, and interdisciplinary conferences.

E 13. Special Studies in Research on Tissue Injury, Inflammation, and Repair. (PH 188.840) Dr. A.M. Dannenberg, Jr. (given jointly at the Bloomberg School of Public Health) A tutorial for one to twenty students, in the fourth quarter, Thursdays from 5:30-6:50 p.m. Next offered Spring 2014.
This tutorial covers the biochemical and pathophysiological mechanisms of acute and chronic inflammation, including immediate and delayed hypersensitivity and the response to physical, chemical, and microbial tissue damage. The course discusses cell membrane function, capillary permeability, histamine, kinins, plasmin, complement, isoanoids, blood clotting, chemotaxis, and other inflammatory mediators produced by various blood cells.

E 14. Principles of Bacterial Infection. (PH 260.622) (3 units) Dr. Dannenberg and faculty. Fourth quarter. Enrollment minimum of 8 (credit). Jointly offered with the departments of Molecular Microbiology and Immunology, Environmental Health Sciences and Epidemiology. Next offered Spring 2013 from 3:30-5:00 p.m. on Tuesdays and Thursdays in the Bloomberg School of Public Health.
Introduces major bacterial and rickettsial infections of man, emphasizing their transmission, pathogenesis, and control. Considers bacterial virulence and host resistance; dysentery, typhoid fever, and cholera; syphilis and gonorrhea; Lyme disease; pneumococcal, staphylococcal, and streptococcal infections; typhus; Rocky Mountain spotted fever; plague, anthrax, brucellosis, and tularemia; tuberculosis; leprosy; infections with anaerobic bacteria; mycoplasma infections; and Legionnaires’ disease.

Prerequisite: Completion of Introduction to Pathology 300.600 or approved equivalent.
Diagnostic gastrointestinal pathology and clinical conferences with gastroenterology, and gastrointestinal surgery. Opportunities for research projects on colorectal, esophageal, pancreatic, and hepatobiliary cancer and inflammatory diseases of the gastrointestinal tract.

E 16. Clinical Chemistry. Dr. Chan and staff. Offered all year with prior arrangement.
This course will provide an introduction to the clinical and research activities of the Clinical Chemistry Division. Clinical aspects will focus on the analytical methods, quality assurance and the clinical interpretation of biochemical, immunological, and proteomics tests. Laboratories include: automated chemistry, critical care, emergency department, immunoassay for hormones and tumor markers, toxicology, and therapeutic drug monitoring. Research aspects will focus on clinical proteomics through interaction with the biomarker discovery laboratory. Students will meet with individual faculty members, attend laboratory meetings, rotate in the laboratories and be involved in research projects.
Prerequisite: 260.611-260.612, ME 600, ME 603, or consent of instructor.
Presents advanced topics in the immunological system; the cellular basis of the immune response; effector functions of antibody, lymphocytes, and macrophages; regulation of the immune response; and immunological diseases. Lectures and readings develop a well-rounded view of the interrelated elements comprising the immune system. Student evaluation based on a paper.

E 18. Research Opportunities in HIV. Drs. Jackson, Eshleman, Shan and staff. Quarters 1-4; scheduled on an individual basis.
Medical students and graduate students interested in virology of HIV may participate in one of the ongoing research projects in the HIV Specialty Laboratory or the HIV genotyping laboratory. The areas of research include HIV diagnostics, viral diversity, drug resistance, mother-to-child transmission, prevention and disease monitoring.
Pediatrics

GEORGE J. DOVER
Given Foundation Professor of Pediatrics,
Professor of Oncology, Joint Appointment
in Medicine, Director of the Department of Pediatrics

HOOVER ADGER, Professor

MARILEE CHRISTINE ALLEN, Professor

BLANCHE PEARL ALTER, Visiting Professor

ROBERT J. ARCECI
King Fahd Professor of Pediatric Oncology,
Professor of Pediatrics

MARK DOUGLAS BAKER, Visiting Professor

JOANN NORMA BODURTHA
Visiting Professor of Pediatrics (from
10/01/2011)

SAUL W. BRUSILOW, Professor Emeritus

ARLENE MANNS BUTZ, Professor

HUGH G. CALKINS
Nicholas J. Fortuin, M.D. Professor of
Cardiology in the Department of Medicine,
Professor of Pediatrics

DUKE E. CAMERON
James T. Dresher, Sr. Professor of Cardiac
Surgery, Professor of Pediatrics

BENJAMIN S. CARSON
Benjamin S. Carson, Sr. M.D. and Dr. Evelyn
Spiron, RN Professor of Pediatric Neurosurgery,
Professor of Oncology, Professor of Pediatrics,
Professor of Plastic and Reconstructive Surgery

JAMES F. CASELLA
Rainey Professor of Pediatric Hematology in the
Department of Pediatrics, Professor of Oncology

MICHAEL F. CATALDO
Professor of Behavioral Biology, Professor of
Pediatrics

ARAVINDA CHAKRAVARTI
Professor of Medicine in Genetic Medicine, Joint
Appointment in Molecular Biology and Genetics,
Professor of Pediatrics

SUBROTO B. CHATTERJEE, Professor

TINA LEE CHENG, Professor

CURT I. CIVIN
Adjunct Professor of Oncology, Adjunct
Professor of Pediatrics

BERNARD A. COHEN
Professor of Dermatology, Professor of
Pediatrics

PAUL M. COLOMBANI
Robert Garrett Professor of Pediatric Surgery,
Professor of Oncology, Professor of Pediatrics

GARRY R. CUTTING
Aetna U.S. Healthcare Professor of Medical
Genetics in the Department of Pediatrics,
Professor of Medicine

CATHERINE DEANGELIS, Professor

MARTHA BRIDGE DENCKLA
Professor of Neurology, Professor of Pediatrics,
Joint Appointment in Psychiatry

HARRY C. DIETZ
Victor A. McKusick Professor of Medicine and
Genetics in the Department of Pediatrics, Joint
Appointment in Molecular Biology and Genetics,
Associate Professor of Medicine, Assistant
Professor of Neurological Surgery, Investigator
of the Howard Hughes Medical Institute

ANNE L.K. DUGGAN, Professor

JONATHAN MARK ELLEN, Professor

BARBARA FIVUSH, Professor

JOHN M. FREEMAN
Professor Emeritus of Neurology, Professor
Emeritus of Pediatrics

ALAN D. FRIEDMAN
Professor of Oncology, Professor of Pediatrics

SUSAN LYNN FURTH, Professor

ESTELLE B. GAUDA, Professor

JOHN P. GEARHART
Robert D. Jeffs Professor of Pediatric Urology,
Professor of Pediatrics

GAIL GELLER
Professor of Medicine, Professor of Pediatrics

GARY W. GOLDSTEIN
Professor of Neurology, Professor of Pediatrics

STEVEN N. GOODMAN
Professor of Oncology, Professor of Pediatrics

LEON GORDIS, Professor Emeritus

WILLIAM B. GUGGINO
Professor of Physiology, Professor of Pediatrics

J. ALEX HALLER, JR.
Professor Emeritus of Pediatric Surgery,
Professor Emeritus of Emergency Medicine,
Professor Emeritus of Pediatrics

ADA HAMOSH, Professor

JAMES C. HARRIS, JR.
Professor of Psychiatry (on leave of absence to
10/01/2011), Professor of Pediatrics (on leave of
absence to 10/01/2011)

LEE J. HELMAN
Professor of Oncology, Professor of Pediatrics

NEIL A. HOLTZMAN, Professor Emeritus

ETHYLIN WANG JABS
Adjunct Professor of Pediatrics, Adjunct
Professor of Medicine, Adjunct Professor of
Plastic and Reconstructive Surgery

GEORGE ISSA JALLO
Professor of Neurological Surgery, Professor of
Oncology, Professor of Pediatrics

MICHAE L V. JOHNSTON
Professor of Neurology, Professor of
Pediatrics, Professor of Physical Medicine and
Rehabilitation

JEAN S. KAN
Helen B. Taussig Professor Emerita of Pediatrics

WALTER ERWIN KAUFMANN
Professor of Pathology, Professor of Neurology,
Professor of Pediatrics, Professor of Psychiatry,
Professor of Radiology

HAIG H. KAZAZIAN, JR.
Professor of Pediatrics in Genetic Medicine,
Professor of Molecular Biology and Genetics

RICHARD IAN KELLEY, Professor

KWANG SIK KIM, Professor
SHARON RACHAEL GHAZARIAN, Research Associate
GEORGE ROBERT KIM
    Research Associate in Pediatrics, Research Associate in Health Sciences Informatics
LISA ELINOR KRATZ, Research Associate
JESSICA K. STARNES LAW, Research Associate
SARAH RENEE LINDSTROM JOHNSON
    Research Associate in Pediatrics (from 09/01/2011)
NICOLE PERSING, Research Associate
YANA SANDLERS, Research Associate
DAVID W. WEST, Research Associate
SHENG WU, Research Associate
JIAN-CHUN XIAO, Research Associate
HAKAN PER-OLA KARLSSON
    Visiting Scientist in Pediatrics (from 08/20/2011)
CHAVONNE DANIELLE LENOIR, Visiting Scientist
JIE LI, Visiting Scientist

FACULTY ASSOCIATED WITH THE DEPARTMENT OF PEDIATRICS HOLDING A PRIMARY APPOINTMENT IN:

The School of Medicine:
THEODORE A. BARAMKI
    Associate Professor Emeritus of Gynecology and Obstetrics
JANE E. BENSON
    Assistant Professor of Radiology and Radiological Science

The Bloomberg School of Public Health:
SUSAN P. BAKER
    Professor of Health Policy and Management
DAVID M. BISHAI
    Professor of Population, Family and Reproductive Health
ROBERT W.M. BLUM
    Professor and Chair of Population, Family and Reproductive Health
TERRY R. BROWN
    Professor of Biochemistry and Molecular Biology
BENJAMIN CABALLERO
    Professor of International Health
DONALD A. CORNELY
    Professor Emeritus of Maternal and Child Health
BERNARD GUYER
    Professor of Population, Family and Reproductive Health
NEAL A. HALSEY
    Professor of International Health
RUTH A. KARRON
    Professor of International Health
CYNTHIA SCHAFFER MINKOVITZ
    Professor of Population, Family and Reproductive Health
WILLIAM JOHN MOSS
    Associate Professor of Epidemiology
DAVID M. PAIGE
    Professor of Population, Family and Reproductive Health
ANDREA J. RUFF
    Associate Professor of International Health
MATHURAM SANTOSHAM
    Professor of International Health
BARBARA H. STARFIELD
    Professor of Health Policy and Management
MARK C. STEINHOFF
    Professor of International Health
INA BURROWS STEPHENS
    Associate in International Health
STEPHEN P. TERET
    Professor of Health Policy and Management
LAWRENCE S. WISSOW
    Professor of Health Policy and Management

The School of Arts and Sciences:
LEON A. ROSENBERG
    Professor of Education

The School of Nursing:
DOUGLAS ALAN GRANGER
    Professor of Nursing
CYNDA HYLTON RUSHTON
    Professor of Nursing

REQUIRED COURSE WORK FOR M.D. PROGRAM

Second, Third or Fourth Year —
   Eight week course that may be taken at any time from the last quarter of the second year through the third quarter of the fourth year. This clerkship is designed to provide the student with basic principles and skills in pediatrics. It includes both inpatient and outpatient work.

   ELECTIVE OPPORTUNITIES—Curricular Consultant: Dr. Barone. Elective courses must be approved by the preceptor; any member of the department may act as preceptor.
   These courses are open to students from the second, third and fourth years, unless otherwise noted.
   Certain of these courses will be given in the alternate year only.

   Pediatrics E

   Inpatient Pediatrics: A subinternship experience on a ward service in the Children’s Center, with primary responsibility for patients admitted to that service. Supervised by the SAR on that service, with night shift and weekend responsibilities. This course will enhance the student’s knowledge of pediatrics and provide responsibility appropriate to the level of subintern. Evaluation will be performed by ward attending and senior residents.
   Emergency Medicine: Evaluation and treatment of children presenting to the Pediatric Emergency Department. Duties to approximate the workload of a pediatric intern—approximately 17 ten hour shifts carrying and average of three to four patients at a time.
Harriet Lane Clinic: The acute care Harriet Lane team sees pediatric patients aged birth to 21 years for acute complaints, newborn visits and immunizations. Each day begins with an hour long lecture on a topic relevant to primary care pediatrics. The subintern will perform histories and physical exams, present to the senior resident, fellow or faculty attending, participate in decisions regarding treatment plans, and communicate with the patient’s primary care provider and subspecialist consultants as necessary. The subintern will work closely with our social workers, nurses, child life specialists, legal advocate and mental health counselors in providing care to our patients. The student will also have the opportunity to join the lactation consultant during a breastfeeding clinic session. The subintern will also participate in the monthly case conference and journal club.

On completion of the required clerkship a limited number of students may serve as substitute interns for approximately 1/2 quarter on the pediatric wards of Johns Hopkins Hospital during the academic year.

E 2. Introduction to Pediatric Intensive Care. Dr. Shaffner and staff. Four and one half week rotation. Limited to two students.

Designed for students planning a career in either pediatrics or a pediatric surgery specialty. This course encourages students to become familiar with the problems of critically sick infants and children. Both basic pathophysiology and pharmacology will be stressed. Students will be expected to have already completed their pediatric rotation and to be prepared to help contribute to the care of these patients.

E 3. Research Activities. Dr. Dover and staff. Four quarters.

Students are encouraged to carry out investigations in areas of interest to members of the department as follows:

DR. ADGER
Adolescent medicine (including sexually transmitted diseases, substance abuse, alcohol drug prevention).

DR. ALLEN
Assessment and follow-up of high risk neonates and premature infants, focusing on neurodevelopmental disabilities.

DR. BARRON-CASELLA
Sickle cell disease.

DR. BELCHER
Clinical outcome studies affiliated with Substance Abuse and Mental Health Services Administration- National Center of Traumatic Stress Network; child behavior checklist- National Child Traumatic Stress Network (CBCL NCTSN) Study; early head start intervention study.

DR. CAPONE
Down syndrome-clinical research opportunities; includes attendance at clinic and contribution to ongoing research projects.

DR. COHEN
Clinical investigations in pediatric dermatology.

DR. COLOMBANI
Effect of cyclosporine on susceptible T-lymphocytes early in immune response.

DR. CUTTING
Identification of genetic and non-genetic modifiers of disease severity in the Mendelian disorder Cystic Fibrosis.

DR. DOVER
Factors controlling hemoglobin synthesis.

DR. DUGGAN
Health services evaluation; home visiting programs for at-risk families; child abuse prevention; primary care.

DR. EGGLESTON
Immunotherapy in childhood asthma; allergy to laboratory animals.

DR. GEARHART
Cellular function of bladder muscle.

DR. GERMAIN-LEE
Genetic, molecular, and hormonal analyses of Albright hereditary osteodystrophy (pseudohypoparathyroidism type Ia and pseudopseudohypoparathyroidism) including both clinical and laboratory research.

DR. HOON
Movement disorders.

DR. K. S. KIM
Central nervous system infection and inflammation; pathogenesis; prevention and therapy.

DR. KWITEROVITCH
Genetic and biochemical studies of disorders of lipoprotein metabolism; effects of genetic variation in the apolipoprotein E gene on the expression of lipoproteins subclasses in infant and their parents.

DR. LANDA
Language and social abnormalities in autistic children and their siblings.

DR. LAUBE
In vivo quantification of the deposition and removal of particulates in healthy and diseased lungs using radiolabeled aerosols and scintigraphic lung-image assessments.

DR. LEDERMAN
Immunodeficiency diseases (primary and acquired); ataxia-telangiectasia; hypogammaglobulinemia; immunology.

DR. LEFTON-GREIF
Swallowing and respiratory coordination, with an emphasis on how these problems affect breathing; development of approaches to evaluate and treat children affected with oropharyngeal dysphagia.

DR. LIPKIN
Attention deficit and learning disorders; developmental screening; autism spectrum disorders.

DR. MCGRAH-MORROW
Growth factors in fetal lung development.

DR. C. MIGEON
Follow-up of patients with disorders of sex development (DSD); www.hopkinschildrens.org/ INTERSEX and www.hopkinschildrens.org/CAH.

DR. NEU
Clinical trials in pediatric renal transplantation; humoral immunity/vaccine response in pediatric renal patients (including chronic renal insufficiency, dialysis, and transplant patients).

DR. RIDDLE
Pediatric psychopharmacology.
Dr. Brenner and staff.

Clinical epidemiology and management of chronic fatigue syndrome.

Dr. SERWINT

Health care issues of underserved children; medical education; end of life issues; practice based research networks; medical home.

Dr. SHAPIRO

Neurodevelopmental precursors of learning disability; attention deficit disorders.

Dr. SINGER

Immune mechanisms in autism; pediatric movement disorders; motor stereotypy disorders: clinical and basic investigations; Tourette syndrome: treatment and pathophysiological studies; PANDAS (pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections).

Dr. TAKEMOTO

Myeloid development.

Dr. VALLE

Molecular biology of human genetic diseases especially inborn errors of metabolism.

Dr. WALKER

Emergency medicine (especially substance abuse; organization of emergency services).

Dr. YOLKEN

Infectious diseases.

E 4. Pediatric Hematology. Dr. Casella. All quarters, time to be arranged.

Clinical and laboratory experience in pediatric hematology, including assignments in clinic, ward rounds, training in morphologic hematology, and attending research and clinical seminars and conferences. Only one student accepted for a minimum of four weeks and a maximum of eight weeks' experience.

E 5. Pediatric Endocrinology. Dr. Cooke. All quarters; limited to 3 or 4 students for each 4 week period.

This elective offers the student an intensive outpatient exposure to a wide variety of endocrine problems in children and adolescents. The student will gain an understanding of normal growth and sexual maturation and how these patterns are affected by endocrine disorders at different ages. Also, the outpatient management of complex chronic disease on a long-term basis is emphasized. Students have the same clinical responsibilities as residents and fellows. A research conference and clinical conference are held weekly throughout the academic year. Disorders seen include pituitary, thyroid, bone/mineral, adrenal, growth, puberty, gonad and sexual differentiation abnormalities, and diabetes.

E 6. Advanced Clerkship in Pediatric Oncology. Dr. Cohen and staff. Time to be arranged; all quarters.

Students will have the opportunity to become familiar with pediatric oncology patient care during this one month inpatient-based rotation. The elective includes exposure and education to a wide-range of oncologic conditions and complications. Students will have the opportunity to participate in the management of children with hematologic malignancies and solid tumors. In addition, students can participate in the management of pediatric bone marrow transplantation patients. Students primarily manage selected inpatients with resident, fellow, and attending supervision. Students may have the opportunity to see consults in concert with the inpatient team and to follow the progress of patients as they transition to the outpatient setting.

E 7. Child and Adolescent Psychiatry. Dr. Frosch and staff. To be arranged.

This course offers the opportunity to observe and participate in a variety of clinical-teaching settings, including inpatient child and adolescent units, day hospital, consultation liaison service, outpatient specialty clinics (affective disorders, anxiety disorders, developmental neuropsychiatric disorders, psychosomatic disorders) as well as community psychiatric programs including outpatient services, community liaison, and school based programs. The student will learn about a variety of psychiatric presentations of children, adolescents, and their families and the range of psychotherapeutic interventions available. In addition, students have the opportunity to participate in a large number of ongoing research projects within the division. The elective is tailored to meet individual interests.

E 8. Pediatric Infectious Diseases. Dr. Kim and staff. All quarters; limited to one or two students.

Consultation service seeing a variety of ward, intensive care, oncologic, transplantation, neonatal and HIV-infected patients. The service also serves as primary attending on select inpatients such as meningitis. Students have primary responsibility for selected patients and will accompany the faculty on daily consultation rounds as well as participating in daily “plate rounds” in the microbiologic laboratories. Students will select a topic to study and present to the division faculty in an informal conference.

E 9. Pediatric Cardiology. Dr. Brenner and staff. All year.

Students actively participate on the service working primarily with the cardiologist on call for the month. Students attend a weekly schedule of divisional conferences and teaching seminars; videotape, tapeslide and computer interactive learning resources are available.

Emphasis is placed on the following areas: acquisition of basic skills of cardiovascular assessment in infants and children; understanding the hemodynamic principles of pressure, flow and resistance, and relating them to the clinical picture and the findings at cardiac catheterization; overview of the natural history of common congenital and acquired heart disease in infancy, childhood and adolescence; introduction to electrocardiography and twodimensional color and Doppler echocardiography.


Participate in the interdisciplinary evaluation, diagnosis and management of developmental disabilities in school aged children in outpatient settings. The student will develop working competence in the neurodevelopmental assessment of school aged children and an understanding of cognitive and central processing disorders.

Clinical activities will be precepted and the clerk will participate in a didactic program that focuses
on issues related to developmental disabilities. Opportunities will be provided for the clerk to observe evaluations in community settings as well as in the outpatient clinics.

E 11. Adolescent Medicine. Dr. Trent. Half quarter; not available June or July.
Prerequisite: Core Clerkship in Pediatrics and Ob/Gyn.
Students will gain increased experience working with adolescents (ages 10-21 years). Time is primarily spent in the Adolescent Clinic with additional clinical opportunities at the Baltimore City school-based clinics, and an adolescent substance abuse treatment program. Clinical interviewing skills are emphasized, and there is a weekly didactic seminar series. A case presentation or literature review is required during the month.

E 12. Pediatric Gastroenterology and Nutrition. Dr. Cuffari and staff. All quarters.
Prerequisite: Core clerkship in Pediatrics preferred.
Students will receive exposure to children with a wide variety of pediatric gastrointestinal, hepatic and/or pancreatic disorders as well as disorders of under and over nutrition. Students will round daily with ward team beginning at 8 a.m. from CMSC 9, M-F.
Additionally, students will be expected to participate in various divisional outpatient clinics, including General GI/Inflammatory Bowel Disease Clinic Tuesday 9 a.m.-12 p.m. and/or 1-4 p.m.; General GI/ Clinic on Thurs. 8-12 a.m and Liver clinic on Friday 9 a.m.-12 p.m. Clinic is in the David M. Rubenstein Children’s Health Building, Lower Level.
Students are also encouraged to participate in various divisional teaching sessions on Wednesdays from 12–2 p.m. Students will be asked to present an interesting case on the last Wednesday of their rotation.

This is an intensive clinical experience in Pediatric Dermatology. The student will participate in outpatient clinics, inpatient consults, dermatology rounds, and grand rounds. Students are also encouraged to design and complete clinical research projects and contribute to the online image resource dermatlas.org.

The goal of this elective is to provide the student with an overview to neurodevelopmental disabilities including cerebral palsy, autism, intellectual disability, attention deficit hyperactivity disorder and other disorders of communication and learning. Students will actively participate in the diagnostic and interdisciplinary evaluation and management of infants, children, and adolescents with neurodevelopmental disorders. Directed readings, lectures, and regular meetings with a faculty preceptor will be used to increase the student’s knowledge of principles of development, specific diagnostic entities, brain-behavior relationships, and current issues in care. This elective is recommended for those students who are considering careers in pediatrics, neurology, genetics, physiatry, or psychiatry.

E 15. Clinical Clerkship in Pediatric Epilepsy. Dr. Hartman. All year.
This elective will give the student experience in the “trenches” of managing pediatric epilepsy. Participation in clinic with the preceptors on Tuesday and Thursday afternoons 1-5 p.m., or in a more structured and intensive experience including ward duty. There also is experience reading EEGs both outpatient and in the epilepsy monitoring unit. The student can also spend time with ketogenic diet patients and in epilepsy surgery cases as available.

E 16. Clinical Clerkship in Full-Term Nursery. Dr. Golden. All year; four weeks.
Clinical experience in the care of full-term and near-term newborns, including both normal and “at-risk” infants. Student will be expected to follow newborns and families throughout the nursery stay. On completion of the clerkship, the student should be able to: perform a newborn physical exam, including assessment of gestational age; recognize normal patterns of transition at birth; recognize risk factors for and signs of abnormal transition; identify many normal variants and abnormal findings; understand the diagnosis and management of common neonatal problems (such as jaundice, suspected sepsis, feeding problems, congenital infections, drug withdrawal, skin rashes); understand important issues in counseling parents regarding care of the newborn. Students will have the opportunity to attend deliveries with the pediatric house staff and participate in resuscitation, if interested.

E 17. Research in Pediatric Allergy. Dr. Eggleston and Dr. R. Wood. All year; nine weeks.
The student may participate in a variety of ongoing research on allergic disease in asthmatic children. Current projects include basic research on the immunochemistry of animal allergens and assessment of hypersensitivity based on sera and basophils, environmental (indoor) allergens, as well as clinical research on the human response to measured concentrations of airborne allergens. A multidisciplinary center for the study of home environment in determining the severity of asthma in children offers many exciting research opportunities.

Prerequisite: Basic Clerkship in Pediatrics
Opportunities are available for studies to participate in ongoing clinical research projects within the Division of General Pediatrics, which includes the Harriet Lane Primary Care Clinic, Adolescent Medicine, Intensive Primary Care Clinic (primary care services for children with HIV infection), and a health services research group. Students may be involved in developing critical literature reviews or pre-testing research instruments, in collecting data through interview or chart review, or in analyzing data, depending on the student’s interests and previous experience and the stage of the project. Students who choose this elective will increase their depth of knowledge in at least one pediatric content area.

E 19. Healthcare Issues in Homeless Children Dr. K. Schwarz. All year; three weeks. Available
to Johns Hopkins School of Medicine students; two students per quarter.

**Prerequisite:** Basic Clerkship in Pediatrics

There are currently ~2500 homeless children in Baltimore City. Recent studies of homeless East Baltimore families by the elective faculty demonstrate low hepatitis B vaccine coverage, high rates of obesity, and frequent exposure to domestic violence. These findings are consistent with existing literature which documents that homeless children have poorer overall health than their housed peers. The purpose of this service-based learning curriculum is for medical students to develop the knowledge, skills and attitudes necessary to address the complex healthcare needs of homeless families. The elective will be for three weeks and will be offered by pediatric and nursing school faculty with experience in urban health, children’s health consequences of domestic violence and homelessness, in collaboration with the Director of the Ark (a day care for homeless children), the Director of residential programs at House of Ruth Maryland (a domestic violence shelter), and the Director of neighborhood services of HEBCAC (Historic East Baltimore Community Action Coalition), Inc. The elective will begin with an orientation session with the faculty; the student will pick one subject around which to develop healthcare education which he/she will provide at the 3 sites (such as nutritional counseling, HBV prevention, etc). Students will spend mornings at The Ark and afternoons at the House of Ruth, learning firsthand about health issues of homeless children, and will work collaboratively with these organizations to implement a health education program. One afternoon/week at the House of Ruth will be spent doing pre-school physical examinations under the supervision of a pediatric faculty member. HEBCAC, our primary community collaborator which is well known for its consistent, exemplary advocacy for the homeless, will teach the students about how to develop and execute this type of community-based health advocacy project. The student will present his/her work formally to the faculty group at the conclusion of the elective. It is our hope that this educational, hands-on experience will empower and motivate the students to continue to advocate for these vulnerable children throughout their careers.

**E 20. Pediatric Intensive Care Elective** Dr. Shilkofski. Two to four weeks; one student per rotation.

**Prerequisite:** Basic Clerkship in Pediatrics. Clinical preceptorship in anesthesiology recommended, but not required.

The course is designed for students planning a career in anesthesiology, pediatrics, or a pediatric surgery specialty and encourages students to become familiar with problems of critically ill infants and children. Basic pathophysiology and pharmacology will be stressed. Students should be prepared to help contribute to the care of these patients on rounds and are expected to attend daily didactic sessions and in-depth case discussions for residents and students held by the PICU faculty and fellows. Night float call with the resident they are “paired” with is optional but encouraged. Students will be expected to give a case presentation on a critical care topic of their choice at the end of the rotation.

**E 21. Clinical Research Elective in Pediatric Infectious Diseases** Dr. K. Kim. All year; nine weeks.

Clinical research opportunities are available on a range of topics related to the pathogenesis, epidemiology, diagnosis and management of infectious diseases, patient care (including HIV-infected children), outcome assessment, critical pathways, antibiotic utilization, and vaccine-related issues.

**E 22. Laboratory Elective in Pediatric Infectious Diseases** Dr. K. Kim. All year; one quarter or longer.

Laboratory projects on the biology of the blood-brain barrier in central nervous system infections, inflammation, and on HIV. Laboratory skills include tissue culture, assays for microbial interaction with the blood-brain barrier, recombinant protein expression systems, microbial genetics, microarrays, proteomics, PAGE, 2D gels and Western blots, ELISA assays, signal transduction pathways including Ca signaling and protein biochemistry.

**E 23. Advanced Clerkship in Pediatric Oncology** Dr. K. Cohen. All year.

**Prerequisite:** Basic Clerkship in Pediatrics

Students will have the opportunity to become familiar with pediatric oncology patient care during this one month inpatient-based rotation. The elective includes exposure and education to a wide-range of oncologic diseases and complications. Students will have the opportunity to participate in the management of children with hematologic malignancies and solid tumors. In addition, students can participate in the management of pediatric bone marrow transplantation patients. Students primarily manage selected inpatients with resident, fellow, and attending supervision. Students may have the opportunity to see consults in concert with the inpatient team and to follow the progress of patients as they transition to the outpatient setting.
Pharmacology and Molecular Sciences

PHILIP ARTHUR COLE
E.K. Marshall and Thomas H. Maren Professor of Pharmacology, Professor of Oncology, Director of the Department of Pharmacology and Molecular Sciences

DARRELL R. ABERNETHY
Professor of Medicine, Professor of Pharmacology and Molecular Sciences

RICHARD FREDERICK AMINDER
James B. Murphy Professor of Oncology, Professor of Medicine, Professor of Pharmacology and Molecular Sciences

J. THOMAS AUGUST
University Distinguished Service Professor of Pharmacology, Professor of Oncology

DONALD S. COFFEY
Catherine Iola and J. Smith Michael Distinguished Service Professor of Urology, Professor of Oncology, Professor of Pharmacology and Molecular Sciences

ROBERT J. COTTER
Professor of Pharmacology and Molecular Sciences, Professor of Biophysics and Biophysical Chemistry

SAMUEL RAY DENMEADE
Professor of Oncology, Professor of Pharmacology and Molecular Sciences, Professor of Urology

CHARLES WILLIAMS FLEXNER
Professor of Medicine, Professor of Pharmacology and Molecular Sciences

ROBERT HOWARD GETZENBERG
Donald S. Coffey Professor of Urology, Professor of Oncology, Professor of Pharmacology and Molecular Sciences

D. WADE GIBSON
Professor of Pharmacology and Molecular Sciences, Professor of Oncology

GARY S. HAYWARD
Professor of Oncology, Professor of Pharmacology and Molecular Sciences

S. DIANE HAYWARD
Professor of Oncology, Associate Professor of Neurology, Professor of Pharmacology and Molecular Sciences

CRAIG WALTER HENDRIX
Professor of Medicine, Professor of Pharmacology and Molecular Sciences

DANIEL J. LEAHY
Professor of Biophysics and Biophysical Chemistry, Professor of Oncology, Professor of Pharmacology and Molecular Sciences

PAUL S. LIETMAN
Professor Emeritus of Medicine, Professor Emeritus of Pediatrics, Professor Emeritus of Pharmacology and Molecular Sciences

JUN LIU
Professor of Pharmacology and Molecular Sciences, Professor of Oncology

WILLIAM G. NELSON
Marion I. Knott Director and Professor of Oncology, Professor of Medicine, Professor of Pathology, Professor of Pharmacology and Molecular Sciences, Professor of Urology, Professor of Radiation Oncology and Molecular Radiation Sciences

DUOJIA PAN
Professor of Molecular Biology and Genetics, Professor of Oncology, Professor of Pharmacology and Molecular Sciences

MARTIN GILBERT POMPER
William R. Brody Professor of Radiology and Radiological Sciences, Professor of Oncology, Professor of Pharmacology and Molecular Sciences, Joint Appointment in Psychiatry, Professor of Radiation Oncology and Molecular Radiation Sciences

CECIL H. ROBINSON, Professor Emeritus

CHRISTOPHER A. ROSS
Professor of Psychiatry, Professor of Neurology, Professor of Neuroscience, Professor of Pharmacology and Molecular Sciences

RONALD L. SCHNAAR
Professor of Pharmacology and Molecular Sciences, Professor of Neuroscience

THERESA A. SHAPIRO
Wellcome Professor of Clinical Pharmacology in the Department of Medicine, Professor of Pharmacology and Molecular Sciences

ROBERT FRANCIS SILICIANO
Professor of Medicine, Joint Appointment in Molecular Biology and Genetics, Professor of Pharmacology and Molecular Sciences, Investigator of the Howard Hughes Medical Institute

SOLOMON H. SNYDER
University Distinguished Service Professor of Neuroscience, University Distinguished Service Professor of Pharmacology and Molecular Sciences, University Distinguished Service Professor of Psychiatry

JAMES T. STIVERS
Professor of Pharmacology and Molecular Sciences, Professor of Oncology

RAYMOND TALALAY
John Jacob Abel Distinguished Service Professor of Pharmacology and Experimental Therapeutics

JAMES C. BARROW, Associate Professor

WALTER C. HUBBARD
Associate Professor of Medicine, Associate Professor of Pharmacology and Molecular Sciences

BRENT G. PETTY
Associate Professor of Medicine, Associate Professor of Pharmacology and Molecular Sciences

JONATHAN D. POWELL
Associate Professor of Oncology, Associate Professor of Pharmacology and Molecular Sciences

DOUGLAS N. ROBINSON
Associate Professor of Cell Biology, Associate Professor of Pharmacology and Molecular Sciences

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AMINA SARAH WOODS, Adjunct Associate Professor
JIN ZHANG
Associate Professor of Pharmacology and Molecular Sciences, Associate Professor of Neuroscience, Associate Professor of Oncology
HENG ZHU
Associate Professor of Pharmacology and Molecular Sciences, Assistant Professor of Oncology
NAMANDJE N. BUMPUS
Assistant Professor of Medicine, Assistant Professor of Pharmacology and Molecular Sciences
ALBENA TODOROVA DINKOVA-KOSTOVA
Assistant Professor of Pharmacology and Molecular Sciences, Assistant Professor of Medicine
KELLY ELISE DOOLEY
Assistant Professor of Medicine, Assistant Professor of Pharmacology and Molecular Sciences
TAKANARI INOUE
Assistant Professor of Cell Biology, Assistant Professor of Biological Chemistry, Assistant Professor of Pharmacology and Molecular Sciences
CAREN L. FREEL MEYERS
Assistant Professor of Pharmacology and Molecular Sciences, Assistant Professor of Oncology
SEAN DIXON TAVERNA
Assistant Professor of Pharmacology and Molecular Sciences, Joint Appointment in Medicine, Assistant Professor of Oncology
SHRIDHAR BHAT, Research Associate
YONGJUN DANG, Research Associate
JED W. FAHEY, Research Associate
YOU SANG HWANG, Research Associate
JUN SEOP JEONG
Research Associate in Pharmacology and Molecular Sciences (to 11/30/2011)
MOHAMMAD ASIF KHAN, Research Associate
HUA LIU, Research Associate
PABLO HECTOR HORACIO LOPEZ, Research Associate
DAVID J. MEYERS, Research Associate
QIANG NI, Research Associate
JOAN SUP SHIM
Research Associate in Pharmacology and Molecular Sciences (to 11/30/2011)
YAN SUN, Research Associate
MAREK ANDRZEJ CEBRAT, Visiting Scientist
ALAN P. KOZIKOWSKI, Visiting Scientist
BARRY J. MARGULIES, Visiting Scientist
ERNESTO TORRES DE AZEVEDO MARQUES, JR., Visiting Scientist
KATHRYN ELIZABETH MURATORE
Visiting Scientist in Pharmacology and Molecular Sciences (to 08/29/2011)
LEONARDO NIMRICHTER, Visiting Scientist
KEYKAVOUS PARANG, Visiting Scientist
KERRY ANN PICKIN PAUMI, Visiting Scientist
KUI SHEN, Visiting Scientist
YUSUKE USHIDA, Visiting Scientist
MINGHUA WANG, Visiting Scientist

FACULTY ASSOCIATED WITH THE DEPARTMENT OF PHARMACOLOGY AND MOLECULAR SCIENCES HOLDING A PRIMARY APPOINTMENT IN:
The Bloomberg School of Public Health:
LUIGI MARIA DE LUCA
Senior Associate in International Health
J. MARIE HARDWICK
Professor of Molecular Microbiology and Immunology
THOMAS W. KENSLER
Professor of Environmental Health Sciences

REQUIRED COURSE WORK FOR M.D. DEGREE

First Year
Scientific Foundations of Medicine/Pharmacology. Dr. Cole.
This eight day section introduces students to a history of pharmacology, and fundamental principles of pharmacokinetics, drug development, autonomic pharmacology, molecular imaging, and alternative and complementary medicine.

Second Year
Genes to Society/Pharmacology. Dr. Cole

OTHER COURSES AND ELECTIVE OPPORTUNITIES—Curricular Consultant: Dr. Cole. Elective courses must be approved by the preceptor; any member of the department may act as preceptor.

Pharmacology
330.709 Organic Mechanisms in Biology. Dr. Stivers. Wed/Fri; Nov-Jan; 9:00-10:30 a.m. Required course for Pharmacology graduate students.
This fifteen-lecture course deals with the chemical mechanisms of enzymes. It is intended to illustrate how catalysis in biological systems can be understood using principles derived from organic reaction mechanisms.

330.710 Mechanisms in Bioorganic Chemistry. Dr. Meyers. April and May, 2:00-3:30 p.m. Required course for Pharmacology graduate students.
This nine-lecture course deals with the chemical mechanisms of enzymes, and builds on the basic principles of catalysis and organic reaction mechanisms that are presented in the course “Organic Mechanisms in Biology.” The course will emphasize the chemical and biophysical tools that are used in this research area, and will focus on recent research in which chemical methods have been used to activate, inhibit, or alter the specificity of enzymes.

330.707 Graduate Pharmacology. Drs. Barrow and Zhang. Offered January through May, 10:30 a.m.-12:00 p.m. Required course for Pharmacology graduate students.
This spring semester course is designed for second year graduate students and will cover basic pharmacology concepts as well as specific drug classes related to diseases. The first half of the course includes lectures on receptors, enzymes, pharmacokinetics and drug metabolism, combinatorial chemistry, and drug design. The second half of the course includes lectures on therapeutic agents used in infectious diseases, cancer, cardiovascular diseases, endocrine disorders, inflammation, and psychiatric illness. There will be two exams. In addition, a series of tutorials on specialty topics will be given concurrently for small groups.

330.711 Virology. Dr. Hardwick. March & April; 9:00-10:30 a.m. Unlimited enrollment.

This virology course will focus on the molecular biology of virus infections, the unique strategies by which viruses alter cellular functions and the consequences of these cellular alternations on viral pathogenesis. Detailed analyses of well-studied human pathogens such as HIV, human papilloma virus, Epstein-Barr virus and influenza virus will be contrasted to newly emerging viruses such as West Nile, Ebola and SARS. Topics covered include mechanisms of replication and assembly, persistence versus apoptosis, immune evasion, host-host transmission, cell transformation, vaccines/therapeutics, and virus evolution. Grades will be determined by short quizzes/problems and a final exam.

330.801 Research. By arrangement with the staff, qualified students at various stages of their scientific development may be admitted to collaborate in research projects with members of the staff. Required course for graduate students.

330.802 Topics in Pharmacology. Staff and visiting lecturers. One hour per week, Wednesdays at 4:00 p.m. Required course for graduate students.

330.804 Role of Chromatography Mass Spectrometry in Biomedical Research. Monday and Wednesday from 10:00 a.m. to 11:00 a.m. Drs. Cotter and Woods.

This course will cover instrumentation methods and applications of high performance liquid chromatography and mass spectrometry.

390.631 Principles of Drug Development. (2 units) First term. Dr. Flexner. Jointly offered with the School of Public Health.

Prerequisite: Consent of instructor.

Presents principles underlying the drug development process from discovery through pre-clinical to all clinical phases. Regulatory issues (FDA faculty) and industry perspectives (pharmaceutical industry faculty) are included. Throughout the course students develop, write and present detailed drug development plans and clinical protocols for new drugs. Evaluation is based on course project writing and presentations. The final exam is the presentation of a proposal to FDA reviewers.

The research interests in the Department of Pharmacology are as follows:

DR. AMBINDER
Virology and human cancer; antiviral therapy; antitumor therapy; lymphoma pathogenesis and treatment; immunological approaches to virus-associated malignancies.

DR. AMZEL
3-D structure of proteins: immunoglobulins and other binding proteins; ATP synthase; monooxygenases and dioxygenases quinone reductase.

DR. AUGUST
Genetic immunotherapy of infectious diseases and cancer by targeting DNA encoded antigen chimeras to MHCII; MHC II antigen presentation; development of DNA vaccines; immune tolerance.

DR. BARROW
Drug discovery for disorders of neurodevelopment.

DR. BUMPUS
Role of drug metabolism in non-nucleoside reverse transcriptase inhibitor-mediated toxicity.

DR. COLE
Chemical and biochemical approaches in the study of signal transduction, circadian rhythm, and gene regulation.

DR. COTTER
Development of new analytical techniques and instrumentation for mass spectrometry; applications of mass spectrometry to the structural analysis of peptides, glycopeptides, and glycolipids.

DR. DENMEADE
Targeted therapies for cancer; prodrugs; proteases; peptide libraries.

DR. DENNIS
Activation of the PI3K/Akt pathway and the biology of lung cancer.

DR. DINKOVA-KOSTOVA
Protection against cancer- mechanisms and strategies; structure-activity relation of protective agents; inflammation and cancer; skin cancer prevention.

DR. DOOLEY
Clinical pharmacology of anti-infective agents; evaluation of new drug regimens for the treatment of tuberculosis and co-treatment of TB and HIV.

DR. FLEXNER
Basic and clinical pharmacology of antiretroviral drugs; HIV protease inhibitors and entry inhibitors.

DR. GIBSON
Herpes virus proteins: studies of their expression, structure, and function using genetic, biochemical, biophysical, and immunological approaches.

DR. GREENBERG
Chemical and biochemical approaches to the study of DNA damage and repair.

DR. GREIDER
Telomerase and telomere length regulation.

DR. HARDWICK
Molecular mechanisms of programmed cell death.

DR. D. HAYWARD
Epstein-Barr virus and Kaposi's sarcoma virus; viral latency and tumorigenesis; mechanisms of virus induced cell proliferation; viral mediated epigenetic modification of cell gene expression; notch and wnt pathways.

PHARMACOLOGY AND MOLECULAR SCIENCES 269
DR. G. Hayward
Pathways of herpesvirus gene regulation; cell cycle control and latency; interaction of viral immediate-early transcriptional transactivators with nuclear subdomains; chemokines and molecular piracy by KSHV; role of herpesviruses in vascular disease.

DR. Hendrix
Anti-infective drugs; chemoprevention of infectious diseases.

DR. Hubbard
Quantitative mass spectrometry via combined liquid chromatography-tandem mass spectrometry and applications to clinical and laboratory research; pharmacokinetics and metabolism of agents employed for treatment of HIV/AIDS and other viral disease; lipid molecular species: potential for newborn screening for leukodystrophies and roles as mediators of signal transduction in cells.

DR. Huganir
Molecular mechanisms in the regulation of synaptic plasticity.

DR. Inoue
Synthetic cell biology; neutrophil chemotaxis; spatio-temporal signal compartmentalization; confocal fluorescence imaging; technology development.

DR. J. Isaacs
Anti-cancer drug development; normal and malignant stem cell biology.

DR. W. Isaacs
Understanding the molecular genetic events responsible for initiation and progression of prostate cancer, with particular interest in inherited susceptibility to prostate cancer.

DR. Jaffee
Analysis of antitumor immune responses against human tumors; identification of the targets of tumor-specific cytotoxic T cells.

DR. Kinzler
Molecular genetics of cancer; translational cancer research.

DR. LeaHy
Molecular studies of signal transduction.

DR. Levin
Targeting the FLT3 signaling pathway as a treatment for acute leukemia.

DR. Liu
Chemical biology and molecular biology; use of small molecules as probes to elucidate mechanisms of signal transduction; angiogenesis and cell proliferation.

DR. Meyers
Organic and medicinal chemistry; chemical biology: drug delivery mechanisms in bacteria; development of antibiotic prodrug strategies; study of bacterial isoprenoid biosynthesis; combinatorial biosynthesis; development of potential therapeutic agents.

DR. Nelson
Molecular mechanisms of prostatic carcinogenesis; epigenetic alterations in cancer; new approaches to prostate cancer prevention and treatment.

DR. Pan
Growth control in normal development and cancer; signal transduction; animal models of cancer.

DR. Pitha-Rowe
Effects of viral infection on expression of cellular (cytokins and chemokines and their receptors) and viral (HV-1, HHV-8) genes; targeted antiviral and anticellular therapy (gene transfer, ribozymes); breast cancer: role of c-erbB-2.

DR. Pomper
In vivo molecular and cellular imaging; radiopharmaceutical development; targeted cancer imaging and therapy; functional brain imaging.

DR. Powell
Mechanisms of T cell activation and tolerance.

DR. Robinson
Understanding cytokinesis and cell shape control.

DR. Ross
Neuropsychiatric disorders.

DR. Rudin
Molecular mechanisms of apoptosis; roles of apoptosis in carcinogenesis and therapeutic resistance; novel therapeutic development in animal models of cancer.

DR. Schnaar
Cell interactions in the nervous system.

DR. Shapiro
Clinical pharmacology; molecular mechanisms of antiparasitic drug action; effects of topoisomerase inhibitors on DNA of trypanosomes; structure-activity of antimalarial artemisinins.

DR. Siliciano
HIV latency, evolution, and persistence; HIV treatment and drug resistance; pharmacology of HIV drugs.

DR. Snyder
Molecular basis of neural signal transduction.

DR. Sukumar
Molecular alterations in breast cancer.

DR. Stivers
Molecular mechanisms of enzymatic DNA repair, DNA topoisomerase mechanism; NMR studies of enzymes and nucleic acids; enzyme inhibition and engineering.

DR. Talalay
Molecular mechanisms in chemical and dietary protection against mutagens and carcinogens.

DR. Taverna
Histone and chromatin modifications; epigenetics and gene function; identification of histone binding modules; small RNA directed gene silencing.

DR. Townsend
Organic and bioorganic chemistry: biosynthesis of natural productions and biomimetic synthesis; elucidation of protein function; molecular biology of secondary metabolism and engineering of biosynthetic systems to practical ends; study of the role and inhibition of fatty acid synthesis in human cancer, tuberculosis, and obesity.

DR. Vogelstein
Molecular genetics of human cancer.

DR. Yegnasubramanian
Understanding and exploiting alterations in the cancer genome and epigenome for development of biomarkers and therapeutics.
DR. ZHANG
Cell signaling; kinases and phosphatases; chemotaxis; live-cell imaging; fluorescent proteins and reporters; chemical biology.

DR. ZHU
Signal transduction; protein network; host-pathogen interaction; biomarker identification.

DIVISION OF CLINICAL PHARMACOLOGY
This Division is operated jointly by the Department of Pharmacology and Molecular Sciences and the Department of Medicine as a closely integrated unit. (See page 199 for description of activities.)

GRADUATE PROGRAM—Students are accepted for graduate work leading to the degree of Doctor of Philosophy. An integrated program leading to both the M.D. and Ph.D. degrees is also available to medical students who are interested in combined medical and scientific training (see Graduate Programs)
Physical Medicine and Rehabilitation

JEFFREY B. PALMER
Lawrence Cardinal Shehan Professor of Physical Medicine and Rehabilitation, Professor of Functional Anatomy and Evolution, Professor of Otolaryngology-Head and Neck Surgery, Director of the Department of Physical Medicine and Rehabilitation

BARBARA J. DELATEUR
Lawrence Cardinal Shehan Professor Emerita of Physical Medicine and Rehabilitation

REBECCA Z. GERMAN
Professor of Physical Medicine and Rehabilitation, Professor of Functional Anatomy and Evolution

ARGYE ELIZABETH HILLIS
Professor of Neurology, Professor of Physical Medicine and Rehabilitation

MICHAEL V. JOHNSTON
Professor of Neurology, Professor of Pediatrics, Professor of Physical Medicine and Rehabilitation

EIICHI SAITOH, Adjunct Professor

JAY R. SHAPIRO, Professor

AMY J. BASTIAN
Associate Professor of Neuroscience, Associate Professor of Neurology, Associate Professor of Physical Medicine and Rehabilitation

PABLO ARIEL CELNIK
Associate Professor of Physical Medicine and Rehabilitation, Associate Professor of Neurology

JAMES R. CHRISTENSEN
Associate Professor of Physical Medicine and Rehabilitation, Associate Professor of Pediatrics

JAMES A. FAUERBACH
Associate Professor of Medical Psychology, Associate Professor of Physical Medicine and Rehabilitation, Joint Appointment in Surgery

FELICIA HILL-BRIGGS
Associate Professor of Medicine, Associate Professor of Physical Medicine and Rehabilitation

MAUREEN A. LEFTON-GREIF
Associate Professor of Pediatrics, Associate Professor of Otolaryngology-Head and Neck Surgery, Associate Professor of Physical Medicine and Rehabilitation

MICHAEL MARCUS, Visiting Associate Professor

JOHN WOOD MCDONALD, III
Associate Professor of Neurology, Associate Professor of Physical Medicine and Rehabilitation

DALE M. NEEDHAM
Associate Professor of Medicine, Associate Professor of Physical Medicine and Rehabilitation

FRANK S. PIDCOCK
Associate Professor of Physical Medicine and Rehabilitation, Associate Professor of Pediatrics

BETH S. SLOMINE
Associate Professor of Medical Psychology, Associate Professor of Physical Medicine and Rehabilitation

STEPHEN T. WEGENER, Associate Professor

RICHARD DAVID ZOROWITZ, Associate Professor

NKIRUKA U. ARENE, Assistant Professor

KATHLEEN D. BRADY, Assistant Professor

MARTIN B. BRODSKY, Assistant Professor

MARY JO FISHBURN, Assistant Professor

JUDITH E. GOLDSKEDTEN
Assistant Professor of Ophthalmology, Assistant Professor of Physical Medicine and Rehabilitation

MARLIS GONZALEZ-FERNANDEZ, Assistant Professor

IANESSA ALICIA HUMBERT, Assistant Professor

AARON N. JUNI, Assistant Professor

MICHELLE KHO, Assistant Professor

JUDITH E. GOLDSTEIN
Assistant Professor of Ophthalmology, Assistant Professor of Physical Medicine and Rehabilitation

JENNIFER E. STEVENSON, Assistant Professor

KATHLEEN G. STERR, Assistant Professor

DONNA CLARK TIPPETT
Assistant Professor of Otolaryngology-Head and Neck Surgery, Assistant Professor of Physical Medicine and Rehabilitation

PEGAH TOURADJI, Assistant Professor

DORIANNE RACHELLE FELDMAN, Instructor

SUSAN E. HOFKAMP, Instructor

ERIK HANS HOYER, Instructor

LAURA BOYLE JAWEED, Instructor
EDWARD M. LAND, Instructor
R. SEUNG-BOK LEE, Instructor
SCOTT C. SCHULTZ, Instructor
KELLY SHOWALTER, Instructor
LANA WARREN, Instructor
JENNIFER M. ZANNI, Lecturer
XIAOFENG JIA
Research Associate in Biomedical Engineering, Research Associate in Physical Medicine and Rehabilitation
NATHAN M. PARMER, Research Associate
WENDY SWALM SHORE, Research Associate
ALICE E. STONE, Visiting Scientist

FACULTY ASSOCIATED WITH THE DEPARTMENT OF PHYSICAL MEDICINE AND REHABILITATION HOLDING A PRIMARY APPOINTMENT IN:
The School of Medicine:
ERIC MATTHEW ALDRICH
Associate Professor of Neurology
DANIELE RIGAMONTI
Salisbury Family Professor of Neurological Surgery
The Bloomberg School of Public Health:
RENAN CASTILLO
Assistant Professor of Health Policy and Management
ELLEN J. MACKENZIE
Professor of Health Policy and Management

ELECTIVE OPPORTUNITIES—Curricular Consultant: Dr. Mayer. Elective courses must be approved by the preceptor; any member of the department may act as preceptor.

E 1. Advanced Clerkship in Chronic Disease and Disability: Improving Quality of Life. Drs. Mayer, Finucane, Pidcock and staff. Offered all year for half quarter. Ten students per half quarter. Prerequisite: Basic Clerkship in Medicine or Pediatrics
Over 100 million Americans suffer from one or more chronic diseases; over 35 million have severe disability as a result. These will be your patients in the future, irrespective of what specialty you ultimately choose. The goal of this rotation is that all students should possess the knowledge, skills, and attitudes to provide care for persons with chronic diseases and disabilities. The clerkship will focus on issues of chronic disease and disability in a variety of clinical settings, and will have concurrent didactic work, discussion groups, and simulation experiences on an inpatient rehabilitation unit, visits to a sub-acute or chronic care facility, outpatient clinics which emphasize care of disabled and chronically ill patients, and home visits. Inpatient acute care will be de-emphasized. Students will participate in interdisciplinary team meetings and patient/family conferences. Clinical sites will included Johns Hopkins Hospital (general adult rehabilitation), Johns Hopkins Bayview (geriatrics), and Kennedy Krieger (pediatric disabilities). There will be home visits, discussion groups, and simulation exercises. Grading will use participation passports, internet modules, and 360 degree evaluations. There are no overnight call duties. This clerkship will be required for class of 2012.

E 2. Advanced Clerkship in Rehabilitation Research. Dr. Mayer and staff.
Students are invited to participate with faculty in the conduct of research relevant to rehabilitation. Research interests included in the Department of Physical Medicine and Rehabilitation Program are as follows:

DR. CELNICK
Transcranial magnetic stimulation in stroke.

DRS. GERMAN, HUMBERT, and PALMER
Physiology of swallowing.

DR. GONZALEZ-FERNANDEZ
Stroke rehabilitation.

DR. MAYER
Quality improvement in physical medicine and rehabilitation.

DRS. MCDONALD and SADOWSKY
Exercise in long-term spinal cord injury.

DR. STIERS
Professional training outcomes.

DR. WEGENER
Pain management following musculoskeletal injury; improving psychosocial outcomes after traumatic injury.

E 3. Clinical Clerkship in Rehabilitation Medicine. Dr. Mayer and staff. Offered all year for half quarter or three weeks. Prerequisite: At least a second-year student beginning the fourth quarter.
This elective is intended for students considering a career in physical medicine and rehabilitation. Students will care for inpatients on the Good Samaritan Hospital (stroke or spinal cord) or Johns Hopkins Hospital (complex medical) inpatient rehabilitation units. They will also care for outpatients in musculoskeletal medicine, electrodiagnosis, spasticity, prosthetics and pain clinics. There is flexibility in selecting subspecialty interests. Objectives of the course are to increase knowledge and proficiency in the following areas: Basic clinical skills, such as history taking, physical examination, and general knowledge pertaining to inpatient care; diagnosis, pathophysiology and treatment of certain conditions in which severe physical disability is a prominent feature; the contributions of non-physician health professions required for the comprehensive care of certain patients; the importance of patient and family education in reducing the cost of disability and preventing recurrent hospitalization for health crisis.

E 4. Pediatric Rehabilitation. Dr. Pidcock and staff. Two students per half quarter. Prerequisite: Pediatrics.
Students will rotate at Kennedy Krieger Institute. They will focus on care of children with disabilities.
Physiology

WILLIAM B. GUGGINO
Professor of Physiology, Professor of Pediatrics,
Director of the Department of Physiology
WILLIAM SCOTT AGNEW, Professor
VALINA L. DAWSO
Professor of Neurology, Professor of
Neuroscience, Professor of Physiology
MARK DONOWITZ
George LeBoff Professor for Research in
Digestive Diseases in the Department of
Medicine, Professor of Physiology
ANN L. COX HUBBARD
Professor of Cell Biology, Joint Appointment in
Medicine, Professor of Physiology
MIN LI
Professor of Neuroscience, Professor of
Physiology
JOHN W. LITTLEFIELD
Professor Emeritus of Physiology, Professor
Emeritus of Pediatrics
SVETLANA LUTSENKO, Professor
PETER C. MALONEY, Professor
CHARLES M. RIENER
Professor of Medicine, Professor of Physiology
FREDERICK E. WONDISFORD
Professor of Pediatrics, Joint Appointment in
Medicine, Professor of Physiology
THOMAS B. WOOLF
Professor of Physiology, Joint Appointment in
Biophysics and Biophysical Chemistry, Assistant
Professor of Biomedical Engineering
SANDRA E. GUGGINO
Associate Professor of Medicine, Associate
Professor of Physiology
JENNIFER L. PLUZNICK, Assistant Professor
ANDREW WOLFE
Associate Professor of Pediatrics, Assistant
Professor of Physiology
GUANG WILLIAM WONG, Assistant Professor
JIE CHENG, Research Associate
ANN MARIE LAWLER, Research Associate
DONNA L. VOGEL, Research Associate
JERRY M. WRIGHT, Research Associate
WILLIAM FREDERICK HEINZ, Visiting Scientist
CHRISTIAN JAMES KETCHUM
Visiting Scientist in Physiology, Visiting Scientist
in Cell Biology

REQUIRED COURSE WORK FOR Ph.D.
PROGRAM

First Year

360.720 Organ Physiology. Dr. W. Guggino and associates. Fourth quarter; nine weeks
The Organ Physiology Course is an integrative course, bringing together diverse disciplines in an
effort to understand the functioning of living organisms. The course utilizes a variety of innovative
educational methods. These methods range from eLecture learning to traditional/taped lectures, labs,
small group discussions, textbook readings, speakers, and other methods which all focus on heightening
the students' learning experience. The course aims to provide an initial basic understanding of the
many different aspects of the internal structure and function of the body, which includes Respiratory,
Renal, Gastrointestinal, Cardiovascular, Endocrinology, and Reproductive Physiology. The various
organ systems of the body will be discussed in sequence in the lectures, but the interaction of these
systems in the living animal must constantly be kept in mind. Students will be presented a comprehen-
sive survey of many of the complex interrelationships that exist between the structure and function
of cells and organs. Above all, the course seeks to identify the mechanisms by which an organism
maintains the processes that we regard as characteristic of life. The investigations of these mecha-
nisms range from the molecular level to studies of human subjects. In this course, we can consider
only a selected sample from the broad range of physiological science, emphasizing topics that
provide a basis for later independent study. Also, objective should be to not only talk about what is
known, but also discuss what is not known.

360.728 Pathways and Regulation. Dr. William
Wong and associates. Third quarter; nine weeks
This course will cover the principles of membrane
transport, bioenergetics, metabolic pathways, cell
cycle, and cell death with particular emphasis on
regulatory mechanisms including receptor-medi-
ated signaling, small GTPases, lipid molecules,
kineses, and phosphatases.

OTHER COURSES AND ELECTIVE
OPPORTUNITIES— Elective courses must
be approved by the Director of the Cellular
and Molecular Physiology Graduate Program.
Physiology E

360.800 Research.
Interested and qualified students may arrange to work with members of the staff in certain investigations or to begin independent work under supervision.

The research interests represented in the Department of Physiology are as follows:

DR. BOSMANS
Molecular organization and pharmacological properties of the voltage-gated sodium channel signaling complex.

DR. CLAYPOOL
Mitochondrial lipid metabolism and the contribution of phospholipids in mitochondrial function and dysfunction.

DR. DAWSON
Molecular mechanisms of neuronal death and survival.

DR. DONOWITZ
Molecular physiology of intestinal Na absorption and its regulation.

DR. W. GUGGINO
Genetic disorders associated with defective fluid and electrolyte movement; ion channel and epithelial transport physiology.

DR. HOH
Molecular dynamics simulation of membrane proteins; lipid interactions of structure; function relationships for membrane proteins and structure prediction and refinement for membrane proteins.

DR. LI
Renal physiology; the role of sensory receptors in regulating renal function; identifying renal olfactory receptor ligands and relating them to whole-animal physiology.

DR. RABEN
Biochemistry and chemistry of lipids and lipid metabolizing enzymes involved in signaling cascades.

DR. RAO
Ion transporters in human health and disease; calcium signaling in lactation and breast cancer; new roles for endosomal Na⁺/H⁺ exchangers in pH regulation, trafficking, and sodium homeostasis and their contribution to hypertension, autism, and glioblastoma.

DR. REEVES
Molecular genetic basis of Down syndrome using genetic approaches in humans and animal model systems.

DR. SHOUKAS
Systems analysis of the circulatory systems.

DR. WOLFE
Mechanisms underlying the development of infertility associated with obesity; gonadal steroid hormone feedback regulation of neuroendocrine function; development of the hypothalamic GnRH neuron.

DR. WONDIFORD
Transcriptional regulation of the anterior pituitary, adipocyte, and pancreatic beta cell by nuclear hormone receptor, cAMP, and insulin signaling pathway; molecular mechanisms linking obesity and type II diabetes.

DR. WONG
Endocrine physiology; mechanisms governing metabolic homeostasis; function of adipose- and skeletal-derived hormones; mouse models of type 2 diabetes and obesity.

183.683.01 Mechanisms of Cardiopulmonary Control. Dr. Robert Fitzgerald.
Focus of this seminar will be on control of the respiratory and cardiovascular systems. The various receptors, central integration, and effector mechanisms of the two systems will be discussed, examining their roles under resting conditions (e.g., factors involved in respiratory rhythmicity at rest), awake, asleep, anesthetized. Attention will be paid to how the two sub-systems interact and influence each other. Didactic material will be blended with student-led discussion of pertinent journal articles and monographic literature.

183.642.01 The Cardiopulmonary System Under Stress. Dr. Robert Fitzgerald.
This seminar is a sequel to the Mechanisms of Cardiopulmonary Control; it will attend to physiological stresses such as acclimatization to altitude and exercise and to toxicological stresses such as TB, oxidative stress such as occurs in ventilator-induced lung injury and pulmonary inflammation; emotional stress will also be considered. Didactic material will be blended with student-led discussion of pertinent journal articles.

GRADUATE PROGRAM—Students are accepted for graduate work leading to the degree of Doctor of Philosophy (see Graduate Programs).
Psychiatry and Behavioral Sciences

J. RAYMOND DEPAULO
Henry Phipps Professor of Psychiatry, Director of the Department of Psychiatry and Behavioral Sciences

Marilyn S. Albert
Professor of Neurology, Professor of Neuroscience, Professor of Psychiatry

Nancy A. Ator, Professor

Jay M. Baraban
Professor of Neuroscience, Professor of Psychiatry

George E. Bigelow, Professor

Joseph V. Brady
Professor of Behavioral Biology (to 07/29/2011), Professor of Neuroscience (to 07/29/2011)

Jason Brandt
Professor of Psychiatry, Professor of Neurology

William R. Breakey, Professor Emeritus

Robert K. Brooner
Professor of Medical Psychology, Assistant Professor of Gynecology and Obstetrics

Maggie Bruck, Professor

Michael F. Cataldo
Professor of Behavioral Biology, Professor of Pediatrics

Richard A. Chase, Adjunct Professor

Edward Jackson Cone, Adjunct Professor

Paul T. Costa, Jr., Professor

Joel Elkes
University Distinguished Service Professor Emeritus of Psychiatry

Bernard T. Engel, Professor

Marshall F. Folstein, Professor

Susan E. Folstein, Professor

Golda S. Ginsburg, Professor

Roland R. Griffiths
Professor of Behavioral Biology, Professor of Neuroscience

James C. Harris, Jr., Professor of Psychiatry (on leave of absence to 10/01/2011), Professor of Pediatrics (on leave of absence to 10/01/2011)

Jennifer A. Haythornthwaite
Professor of Psychiatry, Professor of Medicine

Jack E. Henningsfield, Adjunct Professor

Rudolf Hoehn-Saric, Professor Emeritus

Steven R. Hursch, Adjunct Professor

Kay Redfield Jamison
Dalio Family Professor of Mood Disorders in the Department of Psychiatry

Rolley E. Johnson, Adjunct Professor

Hendree Evelyn Jones, Adjunct Professor

Walter Erwin Kaufmann
Professor of Pathology, Professor of Neurology, Professor of Pediatrics, Professor of Psychiatry, Professor of Radiology

Zaven S. Khachaturian, Adjunct Professor

Rebecca Landa, Professor

Constantine G. Lyketsos
Elizabeth Plank Althouse Professor of Alzheimer's Research in Psychiatry and Behavioral Sciences

Russell Louis Margolis
Professor of Psychiatry, Professor of Neurology

Michele M. M. MazzoCo, Professor

Una Deirdre Mccann
Professor of Psychiatry, Professor of Neurology

Mary E. McCal
Professor of Behavioral Biology, Associate Professor of Medicine

Paul R. McHugh
University Distinguished Service Professor of Psychiatry

Allan F. Mirsky, Adjunct Professor

Timothy H. Moran
Paul R. McHugh Professor of Motivated Behaviors in the Department of Psychiatry

Gerald Nestadt, Professor

Godfrey D. Pearlson, Professor

David Pickar, Adjunct Professor

James Bennett Potash
Arlene and Robert Kogod Professor of Mood Disorders, Joint Appointment in Medicine

Ann E. Pulver
Professor of Psychiatry, Assistant Professor of Pediatrics

Peter V. Rabins
Professor of Psychiatry, Joint Appointment in Medicine

Mark A. Riddle
Professor of Psychiatry, Professor of Pediatrics

Christopher A. Ross
Professor of Psychiatry, Professor of Neurology, Professor of Neuroscience, Professor of Pharmacology and Molecular Sciences

Akira Sawa
Professor of Psychiatry, Professor of Neuroscience

Chester W. Schmidt, Jr., Professor

Kenneth Silverman, Professor

Phillip R. Slavney
Eugene Meyer III Professor Emeritus of Psychiatry

Gwenn S. Smith, Professor

Solomon H. Snyder
University Distinguished Service Professor of Neuroscience, University Distinguished Service Professor of Pharmacology and Molecular Sciences, University Distinguished Service Professor of Psychiatry

Maxine L. Stitzer, Professor

Eric C. Strain, Professor

Glenn J. Treisman
Professor of Psychiatry, Professor of Medicine

Beneteto Vitiello, Adjunct Professor

John T. Walkup, Adjunct Professor

Gary S. Wand
Alfredo Riviere and Norma Rodriguez de Riviere Professor of Endocrinology in the Department of Medicine, Professor of Psychiatry

Thomas N. Wise, Professor
VINAY KISHOR PAREKH  
Instructor in Psychiatry (from 08/01/2011)

SUSAN PERKINS-PARKS, Instructor

ANTONIS POLITIS, Instructor

MICHAEL D. POTASH, Instructor Emeritus

ALISON ESPOSITO PRITCHARD, Instructor

JENNIFER H. REESMAN, Instructor

LISA C. REICHENBACH, Instructor

BEATRICE M. ROBBINS, Instructor

PATRICIA SARAH ROY, Instructor

ERIC ALAN SAMSTAD, Instructor

GEETA SARPHARE, Instructor

MARCIN C. SATER, Instructor

MARGARET SEIDE, Instructor

LAURA JEAN SEIDEL, Instructor

CYNTHIA A. SMITH, Instructor

MILENA HRUBY SMITH, Instructor

PAUL LEVI SOTO, Instructor

STANISLAV SPIVAK, Instructor

MEENAKSHI SUMAN, Instructor

BOGLARKA TUS, Instructor

ARMAN TAGHIZADEH, Instructor

CAROL FLETCHER TANKARD, Instructor

JACOB TENDLER, Instructor

S. MARC TESTA, Instructor

KATHRYN THOMAS, Instructor

TANYA DENISE TUGGLE, Instructor

ELIZABETH TURIN, Instructor

H. THOMAS UNGER, Instructor Emeritus

PUNIT VIJAY VAIDYA  
Instructor in Psychiatry (to 08/21/2011)

ELIZABETH CAROLINE WINTER, Instructor

JOHN P. WITT, Instructor

NANCY YOUNAN, Instructor

MOHAMMED YOUNUS, Instructor

ALBERT ANTHONY ZACHIK, Instructor

DENIS GODWIN ANTOINE, II, Assistant

NICCOLO DENO DELLA PENNA, Assistant

HELENE S. GOLDBERG, Assistant

JANICE E. HEDBLOM, Assistant

ALEXANDER MACKENZIE, Assistant

LINDA ROGERS, Assistant

SAEED SALEHINIA, Assistant

DANIEL E. FORD  
David M. Levine Professor of Medicine

NORMAN JAMES HAUGHEY  
Associate Professor of Neurology

CHERIE LYNN MARVEL  
Assistant Professor of Neurology

STEWARD H. MOSTOFSKY  
Associate Professor of Neurology

ESTHER S. OH  
Assistant Professor of Medicine

MARTIN GILBERT POMPER  
William R. Brody Professor of Radiology and Radiological Science

CYNTHIA S. RAND  
Professor of Medicine

MARVIN M. SCHUSTER  
Janssen/Strass-Halbreich Professor Emeritus of Digestive and Motility Disorders in the Department of Medicine

BARBARA LYNN STAUH SLUSHER  
Associate Professor of Neurology

DEAN F. WONG  
Professor of Radiology and Radiological Science

ROBERT H. YOLKEN  
The Theodore and Vada Stanley Distinguished Professor of Neurovirology in the Department of Pediatrics

The Bloomberg School of Public Health:

JOHN C.S. BREITNER  
Professor of Mental Health

ROSA M. CRUM  
Professor of Epidemiology

MARY F. CWIK  
Assistant Scientist in International Health

WILLIAM W. EATON  
Professor of Mental Health

MARGARET E. ENSMINGER  
Professor of Health, Behavior and Society

SHEPPARD G. KELLAM  
Professor Emeritus of Mental Health

NEELAM SHAHANI, Research Associate

GESINE MARQUARDT, Visiting Scientist

HIDEMITSU NAKAJIMA, Visiting Scientist

FACULTY ASSOCIATED WITH THE DEPARTMENT OF PSYCHIATRY AND BEHAVIORAL SCIENCES HOLDING A PRIMARY APPOINTMENT IN:

The School of Medicine:

KAREN I. BOLLA  
Associate Professor of Neurology

GAIL L. DAUNIT  
Associate Professor of Medicine

MARTHA BRIDGE DENCKLA  
Professor of Neurology

ANDREW P. FEINBERG  
King Fahd Professor of Molecular Medicine in the Department of Medicine

JOHN A. FLYNN  
D. William Schlott, M.D. Professor of Clinical Medicine

NANCY YOUNAN, Instructor

MOHAMMED YOUNUS, Instructor

ALBERT ANTHONY ZACHIK, Instructor

DENIS GODWIN ANTOINE, II, Assistant

NICCOLO DENO DELLA PENNA, Assistant

HELENE S. GOLDBERG, Assistant

JANICE E. HEDBLOM, Assistant

ALEXANDER MACKENZIE, Assistant

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Assistant Professor of Neurology

STEWARD H. MOSTOFSKY  
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Assistant Professor of Medicine

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Professor of Mental Health

MARGARET E. ENSMINGER  
Professor of Health, Behavior and Society

SHEPPARD G. KELLAM  
Professor Emeritus of Mental Health
Clinical reasoning to mental illnesses that combine with an understanding of case formulation. Thus students will learn to apply the knowledge they gain to the treatment of problems with memory, emotion, and executive functioning, with a focus on the systems, disorders, and general modes of treatment of problems with memory, emotion, and behavior. In small groups, students will gain practice with direct interview of psychiatric patients, and will apply the clinical information they gather to case formulation. Thus students will learn to apply clinical reasoning to mental illnesses that combine with normal brain functioning, maladaptive behavior, trait vulnerabilities, and adverse life experience.

Second Year —

Substance Abuse Intersession. Drs. MacKinnon and Neufeld.
The misuse of mind-altering substances adversely alters the lives of many patients, and can be seen as an enormous dilemma for public health and complication in the care of patients. In this brief intersession course students will expand on the concepts of addiction and behavior encountered in the first year Brain, Mind, Behavior course. Students will learn to differentiate the varieties of addictive substances, patterns of their misuse, and factors that influence successful treatment of addiction. Special focus will be placed on the abuse of prescription drugs, and on the course of recovery and relapse.

Second, Third, or Fourth Year —

Psychiatry Clerkship. Dr. Lehmann (course director), and staff. Four quarters and summer.
The Psychiatry Clerkship is one part of a nine week quarter pairing Psychiatry (four weeks), Neurology (four weeks), and Intersession (one week). The clerkship begins with a day of Preclerkship Clinical Exercises (PRECEDE) and consists of a four-week clinical experience and a series of lectures and case conferences. It may be taken at any time from the fourth quarter of the second year through the first quarter of the fourth year, although students are strongly encouraged to take it as early as possible.

Students serve as clerks in the Meyer building or at the Johns Hopkins Bayview Medical Center Acute Psychiatric Unit or in general hospital psychiatry. Several patients are assigned to each student who takes the initial history and follows the patient's course under supervision of both an attending and a resident. Students also see patients in specialty outpatient settings. They attend departmental rounds, a series of weekly lectures and case conferences, and see acute mental illness while working on-call in the psychiatric area of the emergency room. Principles of diagnosis, psychopathology, etiology, treatment, and prognosis are presented in lectures, case conferences, mental status exam demonstrations, and ward work with attendings and residents. Course goals can be summarized as "making psychiatry real" for students through clinical exposure and practical, care-centered teaching. Specific learning objectives are: 1) developing the professionalism, responsibility, empathy, and consistency essential to superior clinical practice; 2) acquiring a core body of knowledge regarding major psychiatric disorders and treatments; 3) mastering the mental status exam; 4) learning to formulate cases with sophistication, broad reasoning about mental life. Teaching builds on the preclinical course in behavioral medicine, neuroscience foundations, and psychiatric methodology.

Elective courses must be approved by the preceptor; any member of the department may act as preceptor.
Elective work may be done within the Johns Hopkins Medical Institutions or under the supervision of Hopkins’ faculty in affiliated institutions in the Baltimore area. In addition, students may request sponsorship of the department for an assignment to another medical school in the United States or abroad.

In addition to training programs in research and clinical psychiatry, the department offers elective seminars and independent study projects. It is the policy of the Department of Psychiatry and Behavioral Sciences to maintain flexibility in its elective programs, and to attempt, as much as possible, to design programs that meet the needs of the individual students.

Dr. MacKinnon is the coordinator of electives for first and second year students. Dr. Lehmann coordinates electives for third and fourth year students. Students are invited to discuss their interests and needs with them, or with any member of this department they may wish to consult.

Although there are numerous clinical and research electives available in the department, they should not be considered as prerequisites for residency training in psychiatry. For those students who are strongly considering a psychiatry residency, it is recommended they complete a four week subinternship in psychiatry, as well as devote a majority of their elective time to broaden and deepen their education in the other basic science and clinical areas.

The subinternship experience is good for students who wish to find out if they will like psychiatry as a career before making decisions about entering the field. It is also quite helpful for students who are not going into psychiatry, but realize a broadened clinical experience in this field would be useful in their chosen specialty. Students who may be interested in training in psychiatry should consult Dr. Susan Lehmann (410-955-5514) as early as possible to discuss their educational plans.

For all students, elective opportunities in psychiatry will allow them to improve their skills and to develop new areas of interest in the field.

The elective programs described on the following pages are representative of opportunities for elective work that are available in this department, but many other opportunities can be developed through direct collaboration of individual students and individual faculty members.


Research experience in human laboratory or treatment clinic concerning human drug abuse and the subjective and behavioral effects of abused drugs, including opioids, cocaine, sedatives, ethanol, tobacco, caffeine, marijuana and hallucinogens, and of medications that modify their effects or use.


The course will consist of an experience at the Johns Hopkins Hospital and the Medical Service of the Circuit Court for Baltimore City. Experience in criminal forensic psychiatry will involve examination of both juvenile and adult offenders for competency, criminal responsibility and sentencing recommendations. The civil forensic psychiatry experience will include opportunities to attend civil commitment hearings, competency determinations and determinations of psychic injury. Visits to courtrooms and various correctional institutions are included along with reading and discussion. Optional supervised activity at Maryland’s maximum security forensic hospital is available.

E 3. Geriatric Psychiatry. Dr. Rabins. The psychiatric disorders which the elderly experience are similar to those of younger people but unique in some ways. Students will have direct patient care responsibility for both inpatients and outpatients as well as have opportunities to do research.

E 4. Assessment and Treatment of Sexual Disorders. Dr. Berlin.

Students will attend a weekly assessment clinic, as well as a weekly teaching session, and can follow the progress of patients in treatment. Many of the patients have sexual disorders such as pedophilia and exhibitionism and some receive weekly injections of antiandrogenic medication.

E 5. Subinternship in Psychiatry. Dr. Lehmann. Subinternship on any of the Meyer Inpatient or Outpatient Psychiatry Units (affective disorders, eating disorders, motivated behavior disorders, neuropsychiatry disorders, short stay, general, geriatric, chronic pain, community psychiatry, or day hospital) may be arranged.


Clinical research on the reinforcing and cognitive effects of abused drugs, with a focus on nicotine and tobacco. We investigate autonomic and subjective responses to smoking cues, self-administration of cigarette puffs, genetics of nicotine reinforcement, and cognitive effects of nicotine and tobacco withdrawal. Students can participate in various aspects of protocol design, subject testing, and data interpretation. Research is conducted at National Institute on Drug Abuse located on JH Bayview campus.


Opportunity to participate in ongoing human research characterizing behavioral, cognitive, subjective, and physiological effects of novel sedative compounds and hallucinogens. Compounds of interest include GHB, ketamine, dextromethorphan, psilocybin, and the classical benzodiazepines.
E 8. Symptom Patterns in Adolescent Depressed Patients Seeking Outpatient Consultation. Dr. Kastelic.
Systematic assessment of symptoms and recurrence patterns will be ascertained in a consecutive sample of patients seeking consultation in the Adolescent Affective Disorders Consultation Clinic. Previous studies of these patients suggest that seasonal and behavioral variations of depression and responses to it are related to particular subtypes of bipolar and unipolar disorders.

E 9. HIV Psychiatry Service. Dr. Treisman.
Outpatient clinic, inpatient consults and evaluation clinic for HIV-infected patients with psychiatric disorders. Clinical research with HIV-infected patients.

E 10. Research in Molecular Neurobiology of Brain Diseases. Dr. Ross.
The laboratory studies genes expressed in the brain as a means of better understanding brain function and neuropsychiatric disorders. We study the neurodegenerative diseases Huntington's disease and Parkinson's disease by focusing on the relevant gene products such as Huntington, Alpha-Synuclein, and LRRK2, and their interactions. We use biochemical methods, cell culture approaches, and generation of transgenic mouse models in order to better understand the diseases and to develop targets for experimental therapeutics. We are also studying the role of candidate genes in schizophrenia, including DISC1, neuregulin, Ankyrin G, L-type calcium channels, and others. Clinical studies are done in collaboration with clinical investigators in the Department of Psychiatry. Students can learn the basics of molecular cloning techniques and cell culture and mouse model approaches while studying clinically relevant genes expressed in brain, and can participate in the development of experimental therapeutics.

E 11. Child and Adolescent Psychiatry. Dr. Frosch.
Elective experiences are individually designed to meet students' needs and interests. Options include working in outpatient specialty clinics, inpatient services, participating in consultations to Pediatrics, joining a team in the Community Mental Health Center, and research opportunities in clinical treatment studies.

Students rotate on the clinical services of the geriatrics/neuropsychiatry section. They are exposed to patients with a broad range of cognitive, affective, and behavioral disturbances in the context of neurologic disease such as stroke, Huntington's disease, dementia, Alzheimer's.

The Baltimore Huntington's Disease Center (BHDC) follows a large number of patients with HD on a longitudinal basis and conducts multi-disciplinary research into the clinical features, genetic aspects and neurobiology of HD. Students will have the opportunity to participate in research projects, neuroimaging studies, neuropathological studies, or correlation of the causative mutation (the expanding triplet repeat) with clinical features. We pioneered the study of individuals ("presymptomatic") with the HD gene mutation who don't yet have clinical features of the disease in order to determine when and where brain changes begin in order to design preventive interventions. In parallel basic science investigations, we are studying cell and mouse models of HD and other brain diseases. In collaborative studies, we also are studying brain imaging and clinical features of schizophrenia. Other topics of interest can be arranged individually. The goal is to develop novel therapeutic interventions for brain diseases.

E 14. Neuropsychiatry. Dr. Lyketsos.
The subinternship in neuropsychiatry rotates the senior or advanced medical student through the several inpatient, outpatient, and nursing home teaching components of the neuropsychiatry service. The focus is clinical intended to develop expertise in evaluation, differential diagnosis, workup and treatment. Patients with the most common neuropsychiatric disorders are seen, including dementia, Alzheimer's, Parkinson's, Huntington's, stroke, MS, PSP, traumatic brain injury, AIDS, and others.

E 15. Neuropsychiatry Research. Dr. Lyketsos.
Students are exposed to the various ongoing neuropsychiatry research projects of the department. These include studies in neuroimaging, epidemiology, nursing home research, clinical trials, and outcome studies. Students choose and develop one project of their own to complete during the rotation.

A variety of efforts are underway in the Laboratory of Genetic Neurobiology to find and study genetic causes of neurological disorders, particularly those involving abnormal movement and neurodegeneration. A major theme of the lab is the role of unstable DNA in human disease. Current projects focus on the role of RNA in neurotoxicity, the impact of bidirectional transcription at disease loci, and the discovery of new disease mutations. Students will have the opportunity to develop and analyze cell and animal models, to search for new disease mutations and for genetic factors modifying disease phenotype, and potentially to participate in field trips to characterize families with previously undescribed diseases.

E 17. Research in Eating Disorders. Drs. Guarda and Redgrave. Minimum of 6 weeks or half day/week for a whole semester.
Opportunity for clinical research on eating disorders, primarily anorexia nervosa and bulimia nervosa. Experience may involve interviewing or outcome studies, chart reviews and clinical work with patients.

Senior students will evaluate and treat depressed patients and bipolar patients under the supervision of the mood disorder attending psychiatrist (i.e., a group of six psychiatrists whose clinical and research focuses on mood disorders).

Schizophrenia is a devastating disorder of the brain characterized by hallucinations, delusions, and disordered thought, affecting 0.5-1% of the world population. Recent developments in epidemiology, phenotypic analysis, neuroimaging, molecular genetics, and neuropathology have, for the first time, provided the tools for understanding the pathobiology of schizophrenia and developing rational therapeutics. Students will have the opportunity to work with investigators of the Johns Hopkins Schizophrenia Program to gain experience with one or more of these approaches as applied to schizophrenia. Elective activities will focus on participation in the design and implementation of research projects and direct contact with patients and control populations. Students will also engage in a critical review of the relevant literature, and attend schizophrenia teaching rounds.


Schizophrenia is a devastating disorder of the brain characterized by hallucinations, delusions, and disordered thought, affecting 0.5-1% of the world population. Recent advances in understanding the schizophrenia phenotype and in molecular genetics provide considerable optimism that we now have the tools for finding and characterizing the genetic risk factors for schizophrenia. Students will have the opportunity to work at the bench in the Laboratory of Genetic Neurobiology to gain experience with contemporary strategies for finding and characterizing genetic risk factors. Current projects emphasize copy number variation in the human genome as a rich source of genetic variation that may contribute to the risk of schizophrenia and other complex disorders. Other efforts take advantage of families with multiple affected members to find rare mutations in promising candidate genes. Students will also engage in a critical review of the relevant literature, and will have the opportunity to attend schizophrenia clinical and teaching rounds.


Prerequisite: Basic clerkships in Psychiatry and Internal Medicine.

Students will have the opportunity to function in the capacity of a resident, taking primary responsibilities for the care of patients in the schizophrenia inpatient and day hospital programs. Subinterns will work directly with patients, meet with family members, and coordinate care with consultants and other care providers. In addition, subinterns will play an active role in weekly teaching rounds, perform literature reviews of topics relevant to their patients, and work extensively with the non-physician members of the treatment team.


Clinical research projects with particular patient populations emphasizing psychiatric methodology, phenomenology, and epidemiology. These include patients with chronic symptoms such as pain or dizziness. Other projects focus on aspects of course, prognosis, and treatment of medical conditions with comorbid psychiatric disorders.


Clinical genetic and epidemiology research experience in obsessive compulsive disorder. Students will participate in projects, research meetings, and evaluation.


Evidence linking neuronal immediate early genes to enduring forms of neuronal plasticity has heightened interest in their role in mediating behavioral alterations induced by drugs of abuse and other forms of brain stimulation. As these genes are rapidly induced by neuronal stimulation, they represent a mechanism by which drug administration could elicit long-term adaptations in neuronal function that underlie their reinforcing properties. We have focused on one of these immediate early genes, Narp, which clusters AMPA receptors and is expressed selectively in limbic brain regions regulating behavior. A series of studies we are conducting suggest Narp signaling pathways may represent a potential therapeutic target for drug addiction and possibly other motivated behaviors. For example, we have found that Narp knockout mice are deficient in extinction of drug craving. To learn more about molecular mechanisms and circuitry underlying this finding, we are utilizing viral vectors to locally regulate Narp expression in vivo and filed recordings to determine how Narp deletion affects learning in brain reward pathways. The student will have an opportunity to learn about anatomical, biochemical, and behavioral techniques. Ideally, students should have some experience working with rodents.

E 25. ECT and Novel Brain Stimulating Therapies. Dr. Irving Reti.

Electroconvulsive therapy is the most effective available therapy for treating depression however little is known about its mechanism of action. Mice genetically engineered to lack key genes which are inducible by electroconvulsive stimulation and which regulate synaptic plasticity may yield clues to how it works. Although ECT is highly effective, it is not without side-effects and so there has been keen interest in developing alternate forms of therapeutic brain stimulation for depression, such as repetitive transcranial magnetic stimulation (rTMS) and deep brain stimulation, that are more focal and do not involve anesthesia. We are now offering rTMS as a clinical service to treat depression and are also setting up clinical trials using the technique. The student will have the opportunity to focus on bench work that may yield clues to ECT’s mechanism of action and/or to focus on clinical work related to ECT and novel brain stimulation techniques. Ideally, students should have some experience working with rodents.


An opportunity to work with clinicians who are treating patients with chronic mental illness. The main area of focus will be the ACT team, which works with patients both in the hospital and home setting.
Must be comfortable traveling with staff in the East Baltimore area.

RESEARCH ELECTIVES
As a general guide for students, the research interests of members of the Department of Psychiatry and Behavioral Sciences are listed below:

DR. DePAULO
Depression and Bipolar Disorder: their impact on society, their causes, outcomes, and research prospects; a guided reading series.

DR. GRIFFITHS
Human behavioral pharmacology of abused drugs.

DR. GUARDIA
Eating disorders: anorexia nervosa and bulimia nervosa.

DR. JANOFSKY
Psychiatry and law; prediction and treatment of violent behavior in psychiatric populations; demographic description of forensic psychiatric populations; competency evaluation and informed consent in general hospital populations.

DR. NESTADT
Obsessive-compulsive disorder; psychiatric epidemiology; personality disorders/schizophrenia.

DR. RABINS
Psychiatric problems of the elderly and the neurologically ill.

DR. TREISMAN
Psychopharmacology, HIV, affective disorders, motivated behavior.
Public Health

REQUIRED WORK FOR M.D. DEGREE

First Year

Foundations in Public Health and Ethics. Dr. Eric Bass.

The course occurs one afternoon per week beginning with the end of the Introduction to Human Anatomy and runs until the winter break. The goals of the course are to present organizational and ethical challenges that students will encounter as physicians in the U.S. health care system and stimulate interest in students being effective advocates for patients. Seven sessions are required lecture and discussion; the remainder sessions allow students to select a topic of interest for reading and small group discussion, from a range of topics including Addiction Medicine, Health and Human Rights, and Health Disparities in Youth.

Instruction in public health is available for medical students at the Johns Hopkins Bloomberg School of Public Health. A combined M.P.H.-M.D. Program is offered. See page 64 of School of Medicine Catalog for program description. See the School of Public Health Catalog for detailed listings of courses and faculty.

Medical students may wish to consider enrolling in courses offered by the Bloomberg School of Public Health. Details concerning these courses may be obtained from the Office of Records and Registration at the School of Public Health or at http://commprojects.jhsph.edu/courses/.
Radiation Oncology and Molecular Radiation Sciences

THEODORE L. DEWEESE
Professor of Radiation Oncology and Molecular Radiation Sciences, Professor of Oncology, Professor of Urology, Director of the Department of Radiation Oncology and Molecular Radiation Sciences

C. NORMAN COLEMAN
Visiting Professor of Radiation Oncology and Molecular Radiation Sciences, Visiting Professor of Oncology

JOHN F. DICELLO, Professor Emeritus

DAVID S. ETTINGER
Alex Grass Professor of Oncology, Professor of Gynecology and Obstetrics, Professor of Medicine, Professor of Otolaryngology-Head and Neck Surgery, Professor of Radiation Oncology and Molecular Radiation Sciences

ARLENE A. FORASTIERE
Professor of Oncology, Professor of Otolaryngology-Head and Neck Surgery, Professor of Radiation Oncology and Molecular Radiation Sciences

MARIKKI K. LAIHO
Professor of Radiation Oncology and Molecular Radiation Sciences, Professor of Oncology

WILLIAM G. NELSON
Marion I. Knott Director and Professor of Oncology, Professor of Medicine, Professor of Pathology, Professor of Pharmacology and Molecular Sciences, Professor of Urology, Professor of Radiation Oncology and Molecular Radiation Sciences

MARTIN GILBERT POMPER
William R. Brody Professor of Radiology and Radiological Sciences, Professor of Oncology, Professor of Pharmacology and Molecular Sciences, Joint Appointment in Psychiatry, Professor of Radiation Oncology and Molecular Radiation Sciences

DANIELE RIGAMONTI
Salisbury Family Professor of Neurological Surgery, Professor of Oncology, Professor of Radiology, Joint Appointment in Physical Medicine and Rehabilitation, Professor of Radiation Oncology and Molecular Radiation Sciences

GREGG L. SEMENZA
Professor of Pediatrics in Genetic Medicine, C. Michael Armstrong Professor of Medicine, Professor of Biological Chemistry, Professor of Oncology, Professor of Radiation Oncology and Molecular Radiation Sciences

GEORGE SGOUROS
Professor of Radiology, Professor of Oncology, Professor of Radiation Oncology and Molecular Radiation Sciences

MOODY D. WHARAM, JR.
Professor of Radiation Oncology and Molecular Radiation Sciences, Professor of Neurological Surgery, Professor of Oncology, Professor of Pediatrics, Professor of Radiology

JOHN WAI-CHIU WONG
Professor of Radiation Oncology and Molecular Radiation Sciences, Professor of Oncology

FRED BUNZ
Associate Professor of Radiation Oncology and Molecular Radiation Sciences, Associate Professor of Oncology

DEBORAH ANNE FRASSICA
Associate Professor of Radiation Oncology and Molecular Radiation Sciences, Associate Professor of Oncology

JOSEPH M. HERMAN
Associate Professor of Radiation Oncology and Molecular Radiation Sciences, Associate Professor of Oncology, Associate Professor of Surgery

LAWRENCE R. KLEINBERG
Associate Professor of Radiation Oncology and Molecular Radiation Sciences, Associate Professor of Neurological Surgery, Associate Professor of Oncology

HARRY QUON
Visiting Associate Professor of Radiation Oncology and Molecular Radiation Sciences, Visiting Associate Professor of Oncology, Visiting Associate Professor of Otolaryngology-Head and Neck Surgery

RONALD RODRIGUEZ
Associate Professor of Urology, Associate Professor of Oncology, Associate Professor of Radiation Oncology and Molecular Radiation Sciences

DANNY YEONG SONG
Associate Professor of Radiation Oncology and Molecular Radiation Sciences, Associate Professor of Oncology

RICHARD CEDRIC ZELLARS
Associate Professor of Radiation Oncology and Molecular Radiation Sciences, Associate Professor of Oncology

COURTNEY LEWIS BUI, Assistant Professor

SALLY BRIDGMAN CHESTON, Assistant Professor

ERIC C. FORD
Assistant Professor of Radiation Oncology and Molecular Radiation Sciences, Assistant Professor of Oncology

SONIA FRANCO
Assistant Professor of Radiation Oncology and Molecular Radiation Sciences, Assistant Professor of Oncology

IRENE GAGE
Assistant Professor of Radiation Oncology and Molecular Radiation Sciences, Assistant Professor of Oncology

ROBERT IVKOV, Assistant Professor

MIHOKO KAI
Assistant Professor of Radiation Oncology and Molecular Radiation Sciences, Assistant Professor of Oncology

MICHAEL KWON LIM
Assistant Professor of Neurological Surgery, Assistant Professor of Oncology, Assistant Professor of Radiation Oncology and Molecular Radiation Sciences
Research interests represented in the Department of Radiation Oncology and Molecular Radiation Sciences are as follows:

DR. BUNZ  
Responses of cancer cells to DNA damage; human cell genetics.

DR. DEWEESE  
Genitourinary system tumors; molecular basis of radiation response.

DR. FRANCO  
Genetic response to DNA damage.

DR. HALES  
Lung cancer and thoracic oncology.

DR. HERMAN  
Clinical radiation therapy; GI cancers; lymphomas.

DR. IVKOV  
Nanomaterials in targeting cancers.

DR. KAI  
DNA damage response.

DR. KLEINBERG  
Central nervous system cancer; lung cancer.

DR. LAIHO  
Genetic response to DNA damage; cell cycle; p53 response

DR. MCNUTT  
Radiation physics; treatment planning and personalized radiotherapy through clinical informatics.

DR. REDMOND  
Central nervous system cancers.

DR. SONG  
Genitourinary system tumors; prostate brachytherapy; lung.

DR. TEREZAKIS  
Pediatric malignancies; lymphomas.

DR. TRAN  
Genitourinary tumors; oligometastatic disease; molecular biology in cancer.

DR. TRYGGESTAD  
Medical physics.

DR. WHARAM  
Pediatric malignancies; CNS tumors.

DR. WONG  
Medical physics.

DR. ZELLARS  
Breast and gynecologic neoplasms.

DR. ZHANG  
Radiobiology.

E1. Radiation Oncology: Consult Service. Drs. Asrari, DeWeese, Hales, Herman, Kleinberg, Redmond, Song, Terezakis, and Zellars. All year; 3 or 4 1/2 weeks.

Prerequisites: Basic clerkship in medicine or surgery. 
This course focuses on the evaluation and management of patients with malignant diseases at various sites who are being considered for radiation therapy. Students will have the opportunity to assist faculty with new patient consultations, follow-up evaluations, simulation, treatment planning, and on-treatment patient management. Students will work with a variety of faculty members to assure a broad experience in such areas as head & neck, pediatrics, CNS, GI, GU, breast, hemato logic, and musculoskeletal radiation oncology. This elective opportunity will be particularly valuable to students considering a career in oncology.

E2. Advanced Clerkship in Radiation Oncology. Dr. Terezakis. All year; 4 weeks.

Prerequisites: Radiation Oncology Consult Service. 
This course focuses on the examination and multidisciplinary management of patients with malignant diseases at various sites, supervised by a member of the faculty. Emphasis is on the natural history and biological behavior of malignant diseases and the use of ionizing radiation in patient management. Students will be assigned to work with one to three faculty members only in order to gain in-depth knowledge of particular areas of radiation oncology. The student will be expected to attend multidisciplinary conferences with the faculty member as well as the radiation oncology academic sessions. The course is particularly valuable to those considering a career in radiation oncology.

E3. Introduction to Cancer Research. Dr. Song. 
Prostate, brachytherapy, lung tumors.

510.702 Basic Radiologic Physics. Dr. Wong and staff. First quarter; Monday and Wednesday; 5:00-6:00 p.m.

Prerequisites: General physics and mathematics and consent of instructor. 
Essential radiation physics concepts for individuals pursuing careers in radiology, radiotherapy or medical physics. Lecture and laboratory topics include radioactive decay, x-ray production, interaction of ionizing radiation with matter and the measurement of radiation.

510.703 Radiation Oncology Physics. Dr. Wong and staff. Second quarter; Monday and Wednesday; 5:00-6:00 p.m.
Prerequisites: Basic radiologic physics or equivalent and consent of instructor.

Application of radiation physics in radiation oncology. Topics include isodose distributions, dose calculation, computerized dosimetric calculation, brachytherapy, radiation protection and quality assurance.

510.704 Special Topics in Radiation Oncology Physics. Dr. Wong and staff. Year long; Friday, 2:00-3:00 p.m.

Prerequisites: Consent of instructor.
An advanced course dedicated to the discussion of developing technology and special techniques, including radiolabeled antibody dosimetry, stereotactic radiosurgery, total body irradiation, three dimensional treatment planning, hyperthermia and digital portal imaging.

E4. Clinical Clerkship and Research Project in Radiotherapy. Dr. DeWeese and staff.
Emphasis is on the natural history and biological behavior of malignant diseases. The radiation biology, physical parameters of treatment, simulator technology, computerized treatment planning, examination of patients with malignancy, literature review, and direct patient contact in several multidisciplinary clinics is the basis of daily teaching and instructions. Treatment under faculty supervision utilizing two simulators, five accelerators and computers is reviewed with students.

E5. Treatment Planning Tutorial for External Beam Radiation Therapy. Dr. McNutt and staff. Second quarter; Friday 3:30-4:30 p.m.
Hands on tutorials teach basic 3D treatment planning skills to the participants.
The Russell H. Morgan Department of Radiology and Radiological Science

JONATHAN S. LEWIN
Martin W. Donner Professor of Radiology, Professor of Biomedical Engineering, Professor of Oncology, Professor of Neurological Surgery, Director of the Department of Radiology and Radiological Sciences

JEFF W.M. BULTE
Professor of Radiology, Professor of Biomedical Engineering

DANIEL W. CHAN
Professor of Pathology, Professor of Oncology, Professor of Radiology, Professor of Biomedical Engineering, Professor of Urology

MICHAEL A. CHOTI
Jacob C. Handelsman Professor of Abdominal Surgery, Professor of Oncology, Professor of Radiology

HARRIS L. COHEN, Visiting Professor

WILLIAM A. EDELSTEIN, Visiting Professor

ALBERT GJEDDE, Adjunct Professor

HENRY R. HALPERIN
David J. Carver Professor of Medicine, Professor of Biomedical Engineering, Professor of Radiology

WALTER ERWIN KAUFMANN
Professor of Pathology, Professor of Neurology, Professor of Pediatrics, Professor of Psychiatry, Professor of Radiology

PAUL W. LADENSON
John Eager Howard Professor of Endocrinology and Metabolism, University Distinguished Professor of Medicine, Professor of Oncology, Professor of Pathology, Professor of Radiology

SHENGHAN LAI
Professor of Pathology, Joint Appointment in Medicine, Professor of Radiology

GEORGE SGOUROS
Professor of Radiology, Professor of Oncology, Professor of Radiation Oncology and Molecular Radiation Sciences

STANLEY S. SIEGELMAN, Professor

MATTHIAS STUBER
Professor of Radiology (on leave of absence), Professor of Medicine (on leave of absence)

MOODY D. WHARAM, JR.
Professor of Radiation Oncology and Molecular Radiation Sciences, Professor of Neurological Surgery, Professor of Oncology, Professor of Pediatrics, Professor of Radiology

ELIAS A. ZERHOUNI
Professor of Biomedical Engineering

HARVEY A. ZIESSMAN, Professor

SYED ZULFIQAR ALI
Professor of Pathology, Associate Professor of Radiology

LAURA MARIE FAYAD
Associate Professor of Radiology, Associate Professor of Oncology, Assistant Professor of Orthopaedic Surgery

CHRISTOS S. GEORGIADES, Associate Professor

JOSEPH N. GITLIN, Associate Professor

IHAB R. KAMEL
Associate Professor of Radiology, Associate Professor of Oncology

SATOMI KAWAMOTO, Associate Professor

CHRISTINE H. LORENZ, Visiting Associate Professor

KATARZyna J. MACURA
Associate Professor of Radiology, Assistant Professor of Urology

RONNIE CHARLES MEASE
Associate Professor of Radiology, Associate Professor of Oncology

VENU RAMAN
Associate Professor of Radiology, Associate Professor of Oncology

DAVID J. SCHRETLIN
Associate Professor of Medical Psychology, Associate Professor of Radiology

KHAN M. SIDDQUI, Visiting Associate Professor

JEFFREY H. SIEWERDSEN
Associate Professor of Biomedical Engineering, Associate Professor of Radiology

ROBERT DAVID STEVENS
Associate Professor of Anesthesiology and Critical Care Medicine, Assistant Professor of Neurology, Assistant Professor of Neurological Surgery, Associate Professor of Radiology

JAY L. ZWEIER
Visiting Professor of Medicine, Visiting Associate Professor of Radiology

ALEXANDER LEWIS COON
Assistant Professor of Neurological Surgery, Assistant Professor of Neurology, Assistant Professor of Radiology

BRUCE EUGENE COPELAND, Assistant Professor

ADITYA R. DAFTARY, Adjunct Assistant Professor

ERLINDA F. DELEON-GASTON, Assistant Professor Emerita

BRADLEY ROGER FOERSTER, Assistant Professor

IYAN KUMAR JAIN
Associate Professor of Pediatrics, Assistant Professor of Radiology

PAMELA TECCE JOHNSON, Assistant Professor

YOSHINORI KATO
Assistant Professor of Radiology, Assistant Professor of Oncology
HONG LAI  
Assistant Professor of Radiology, Assistant Professor of Ophthalmology

MARK LEWIS LESSNE, Assistant Professor

LORALIE D. MA, Adjunct Assistant Professor

ANNA NIDECKER, Assistant Professor

RONALD OUWERKERK, Adjunct Assistant Professor

GALIT PELLED, Assistant Professor

MARTIN GEZA RADVANY  
Assistant Professor of Radiology, Assistant Professor of Neurology, Assistant Professor of Neurological Surgery

DANIEL SALO REICH  
Adjunct Assistant Professor of Neurology, Adjunct Assistant Professor of Radiology

HARIS IQBAL SAIR, Assistant Professor

JEAN-MICHEL SERFATY, Visiting Assistant Professor

YUN ZHOU, Assistant Professor

GAUTAM A. AGRAWAL, Instructor

ANDREW STEPHEN AKMAN, Instructor

KIRAN BATRA, Instructor

KAREN BETH BLEICH, Instructor

LEMORE CARMI, Instructor

JOSEPH PETER DIPIETRO, Instructor

JOHN MICHAEL FALLUCCA, Instructor

CATHERINE ANNE FOSS, Instructor

GEORGE SHIU-KAI FUNG, Instructor

STEVEN LI-WEN HSU, Instructor

GEORGE PETER KUO, Instructor

ELENI APOSTOLOS LIAPI, Instructor

QIN QIN, Instructor

SANGEETA RAY, Instructor

STANLEY B. WADSWORTH, Instructor

ANASUYA BASU, Research Associate

YING CHEN, Research Associate

YONGJUN GAO, Research Associate

ROBERT FRANCOIS HOBBS, Research Associate

CRAIG JONES, Research Associate

XIN LI, Research Associate

JAMES PHILBIN  
Research Associate in Radiology, Joint Appointment in Health Sciences Informatics

GORKEM SEVINC, Research Associate

SHOKO YOSHIDA, Research Associate

BERND B. FRERICKS, Visiting Scientist

LI JIANG, Visiting Scientist

FRANK V. SCHRAML, Visiting Scientist

STEVEN M. SHEA, Visiting Scientist

ADELE W. FIELDS  
Instructor in Radiology (from 09/09/2011)

Division of Cardiovascular and Interventional Radiology

JEAN-FRANCOIS H. GESCHWIND  
Professor of Radiology, Professor of Oncology, Director of the Division of Cardiovascular and Interventional Radiology

SALLY E. MITCHELL  
Professor of Radiology, Associate Professor of Pediatrics

ARAHAVD AREPALLY, Associate Professor

MARTIN AUSTER, Assistant Professor

NIKHIL BHAGAT, Assistant Professor

SUDHIR KATHURIA  
Assistant Professor of Radiology, Assistant Professor of Neurological Surgery

JONATHAN K. MARX, Assistant Professor

MUSTAFA SHAKIR VALI, Assistant Professor

KENNETH CHUNG-YI WANG, Adjunct Assistant Professor

CLIFFORD RAABE WEISS, Assistant Professor

HEIDI BEILIS, Instructor

SHOKO YOSHIDA, Research Associate

GORKEM SEVINC, Research Associate

BERND B. FRERICKS, Visiting Scientist

LI JIANG, Visiting Scientist

MING DE LIN, Visiting Scientist

ULRIKE M. HAMPER, Visiting Scientist

STEVEN M. SHEA, Visiting Scientist

Division of Diagnostic Imaging at Johns Hopkins Bayview

MARK E. BOHLMAN  
Associate Professor of Radiology, Director of the Division of Diagnostic Imaging at Bayview

ERICH K. LANG, Visiting Professor

JOHN D. PETRONIS, Associate Professor

JOHN CAVALUZZI, Assistant Professor

DAVID J. EISNER, Assistant Professor

ROBERT E. ENSOR, Assistant Professor Emeritus

GARY XIN GONG, Assistant Professor

KELVIN K. HONG, Assistant Professor

ANTHONY KAM, Assistant Professor

RON KHAZAN  
Assistant Professor of Radiology (on leave of absence)

YOUNG CHOO KIM, Assistant Professor

MARK ALLAN LOTTES, Instructor

SERENA LYNN MCCLAM, Instructor

JOEL MARK FRADIN, Assistant

NATHAN R. SKLAR, Assistant

Division of Diagnostic Radiology

ELLIOT K. FISHMAN  
Professor of Radiology, Professor of Oncology, Professor of Surgery, Director of the Division of Diagnostic Radiology

DAVID A. BLUEMEKE  
Professor of Radiology, Professor of Medicine

ULRIKE M. HAMPER  
Professor of Radiology, Professor of Pathology, Professor of Urology
REQUARED WORK

Radiology—First Year
Radiology-Gross Anatomy Correlation. Dr. Magid and staff.
Introduction to basic imaging principles and to future clinical relevancy of gross anatomy. www.Teamrads.com

Radiology—Second Year
Radiology: Transition to Wards. Dr. Magid.
Further discussion of dose, risk, and selection of imaging studies on the wards; how to consult with Radiology; introduction to basic image interpretation (chest studies). www.Teamrads.com

ELECTIVE OPPORTUNITIES—Curricular Consultants: Radiology faculty. Elective courses must be approved by the preceptor. Any member of the department may act as preceptor.

Radiology E

E 1. Diagnostic Radiology. Dr. Magid and staff.
Full-time, structured introduction to diagnostic radiology, including most forms of diagnostic imaging. Given each half quarter during the regular academic year (no summer session, but see E 17). Seminars, lectures, learning file, web resources (www.teamrads.com)and tutorials. Oral presentation and written final. Additional emphasis on conference skills, Medical English, and descriptive precision. Each student will prepare and make one or two clinical presentations and collect at least five teaching cases.

E 2. Special Diagnostic Radiology. Section Heads for specific subspecialty areas. All year. Four and one-half weeks, or entire quarter. A clinical experience in a specific area of interest to the student. In larger divisions, subspecialty areas are available.
DR. BOHLMAN
General Diagnostic Radiology, Bayview.
DR. KAMAL
Magnetic Resonance Imaging.
DRS. MACURA, P. JOHNSON, A. ZAHEER, & S. RAMAN
Computed Tomography.
DRS. GESCHWIND, GEORGIADES, & WEISS
Cardiovascular/Interventional Radiology.

DR. GAILLOUD
Neurointerventional Radiology.
DRS. WAHL & SUBRAMANIAM
Nuclear Medicine.
DRS. YOUSEM, BLITZ, & KRAUT
Neuroradiology.

E 3. Investigative Radiology. Dr. Dean Wong in collaboration with clinical faculty members. Entire quarter.
Opportunities to pursue special investigative topics in diagnostic radiology, nuclear medicine, radiotherapy, radiobiology, radiological engineering, radiological physics, and physiological optics. Facilities of Radiologic Animal Research Lab will be available for utilization in selected projects.

Clinical Collaborators
DR. KAMAL
Magnetic resonance imaging and research.
DR. DANNALS
Radiochemistry.
DR. HAMPER
Ultrasound.
DRS. GESCHWIND & WEISS
Interventional radiology including laser and balloon angioplasty; pharmacological angioplasty and radiology research.
DR. JONES
Gastrointestinal radiology.

E 4. Physiological Research in Radiology. Dr. Wong and staff. Hours to be arranged.
Current laboratory animal research is largely physiologically oriented, clinically applicable, and directed toward therapeutic applications of vascular radiology. Areas of work include experimental transcatheter vascular occlusion and intraarterial drug infusion therapy, and experimental vascular reconstruction. Projects related to other areas of diagnostic radiology are also pursued.

E 5. Clinical Clerkship and Research Project in Radiotherapy. Dr. DeWeese and staff.
Emphasis is on the natural history and biological behavior of malignant diseases. The radiation biology, physical parameters of treatment, simulator technology, computerized treatment planning, examination of patients with malignancy, literature review, and direct patient contact in several multidisciplinary clinics is the basis of daily teaching and instruction. Treatment under faculty supervision utilizing two simulators, five accelerators and computers is reviewed with students.

E 7. Clinical Nuclear Medicine. Dr. Wahl. All Quarters, 8 a.m.-5 p.m.; 2-6 weeks, as desired.
The clinical applications of nuclear medicine in the medical division can be appreciated by firsthand experience in the nuclear medicine clinic. Under the supervision of the staff of the Division of Nuclear Medicine, students will participate in the evaluation of patient’s clinical problems, select the appropriate tracer procedure to solve these problems, observe the performance of these tracer examinations and interpret the data.

Introduction to planning and clinical application of investigational studies, i.e., those projects still under
auspices of FDA. Preparation of IND, and explanation of Phases I, II, III of clinical investigation.

**E 9. Special Studies and Research-Nuclear Medicine.** Dr. Wahl. All year.
Under direction of faculty, individual research projects will be undertaken.

Prepresents the physical foundations of radiation use in medicine and industry and the public health problems associated with it. Optional laboratory experience in an area of student’s interest available. Designed for students without strong backgrounds in the physical sciences. Student evaluation based on an exam.

**E 15. Introduction to Nuclear Medical Sciences.** (PH 186.680) Dr. Wong and faculty. Summer; 5 days/week, 8 a.m.-4 p.m.; eight weeks, July-August. 
Prerequisite: PH 186.601 or comparable training in radiation physics.
Covers the fundamental physical and chemical principles of the use of radionuclides in clinical medicine and research. Material taken selectively from PH 186.601, PH 186.620, PH 186.630, and PH 186.851 is covered in breadth through lectures, laboratory exercises, and demonstrations. Affords practice in using radioactive isotopes safely and effectively in thyroid, liver, renal, and cardiopulmonary function testing; preparation, testing, and administration of radiopharmaceuticals; radioimmunoassays; isotope dilution; absorption and retention studies; and scanning and imaging procedures. Designed primarily for physicians entering nuclear medicine and radiology. Student evaluation based on exams.

**E 17. Preceptorship in Diagnostic Radiology.** Dr. Bohlman and staff. Johns Hopkins Bayview Medical Center.
A Preceptorship in Diagnostic Radiology will be offered to medical students in their clinical years similar to the E 1 Diagnostic Radiology course offered at Johns Hopkins Hospital. Through observing film interpretation, attending daily departmental teaching conference, and observing the performance of x-ray procedures in the clinical setting, the student will be taught the basic fundamentals of how to read conventional x-ray films on their patients. Throughout the elective, the role of imaging in the proper management of patient care will be stressed. Special procedures, ultrasound, CT will also be shown to the student.

**E 18. Interventional Radiology.** Drs. Georgiades, Weiss, Mitchell, and Geschwind. One to three months, Third and Fourth Year Medical Students.
This elective would familiarize the student with the techniques of interventional radiology including angiography (selective and sub-selective), angioplasty, atherectomy, vascular embolization, intravascular ultrasound, thrombolysis, IVC filters, percutaneous abscess drainage, biliary endoscopy, biliary and urinary tract, interventions, tunneled catheter placement and dialysis fistula interventions. Fifteen to 25 procedures are performed daily in the cath lab. In addition, selected patients are admitted to the interventional radiology service for some of these procedures and the student will participate in their workup and evaluation including clinic follow up. In addition, the latest technique of digital subtraction angiography using computer reconstruction will be available for the student to gain experience.

**E 19. Radiochemistry.** (PH 186.620) Drs. S. Lever and J. Lever. Second quarter/one quarter; 3 days per week. 
Prerequisite: E 11 or E 15 or the equivalent or consent of instructor.
Provides a background in the chemical and physical aspects of radioactive tracer techniques as applied to work in physical, organic, and biological chemistry. Topics include preparation and counting of samples and standards; microchemical techniques, techniques for the separation and identification of radionuclides and tagged compounds, radioisotope tagging, tracer techniques, radiometric analysis and neutron activation analysis. Student evaluation based on written exams and laboratory reports.

**E 22. Pediatric Radiology.** Drs. Huisman and Benson. All year; four and one-half weeks. 
Prerequisite: Elective in Diagnostic Radiology.
Students will attend conferences in pediatric radiology and observe fluoroscopy, ultrasound, CT, and other examinations, observe and participate in film interpretations. They are expected to add new cases to the teaching file under staff supervision.
Section of Surgical Sciences

Department of General Surgery

JULIE ANN FREISCHLAG
William Steward Halsted Professor of Surgery, Director of the Department of Surgery
R. ROBINSON BAKER
Warfield M. Firor Professor Emeritus of Surgery
CHARLES M. BALCH
Professor of Surgery, Professor of Dermatology, Professor of Oncology
GREGORY B. BULKLEY, Professor Emeritus
JAMES F. BURDICK, Professor
JOHN L. CAMERON
University Distinguished Service Professor and Alfred Blalock Professor of Surgery, Professor of Oncology
MICHAEL A. CHOTI
Jacob C. Handelsman Professor of Abdominal Surgery, Professor of Oncology, Professor of Radiology
FREDERIC E. ECKHAUSER
Mark M. Ravitch Professor of Surgery
GERSHON EFRON, Professor
Elliott K. Fishman, Professor
JOHN W. HARMON, Professor
STEVEN D. LEACH
Paul K. Neumann Professor of Pancreatic Cancer in the Department of Surgery, Professor of Cell Biology, Professor of Oncology
FREDERICK E. ECKHAUSER
Mark M. Ravitch Professor of Surgery
PAMELA A. LIPSETT
Professor of Surgery, Assistant Professor of Anesthesiology and Critical Care Medicine
ROBERT A. MONTGOMERY
Margery K. and Thomas Pozefsky Professor of Kidney Transplant Surgery
JOHN E. NIEDERHUBER
Adjunct Professor of Oncology, Adjunct Professor of Surgery
BRUCE A. PERLER
Julius H. Jacobson II Professor of Vascular Surgery
HAMID RABB
Professor of Medicine, Professor of Surgery
RICHARD DAVID SCHULICK
John L. Cameron Professor of Alimentary Tract Diseases in the Department of Surgery, Associate Professor of Biomedical Engineering, Associate Professor of Gynecology and Obstetrics, Professor of Oncology
MARK ADAMS TALAMINI, Adjunct Professor
SUZANNE LOUISE TOPALIAN
Professor of Surgery, Professor of Oncology
GEORGE MELVILLE WILLIAMS
Professor Emeritus of Surgery
STEPHEN C. YANG
Arthur B. and Patricia B. Modell Professor of Thoracic Surgery, Professor of Oncology

MARTHA ALLEN ZEIGER
Professor of Surgery, Professor of Oncology
MICHAEL E. ZENILMAN, Visiting Professor
NITA AHUJA
Associate Professor of Surgery, Associate Professor of Oncology
JAMES HAMILTON BLACK, III
Associate Professor of Surgery, Occupying the Bertram M. Bernheim Research Professorship in Surgery
MALCOLM VERNON BROCK
Associate Professor of Surgery, Associate Professor of Oncology
KURTIS ALAN CAMPBELL, Associate Professor
RICHARD A. CURRIE, Associate Professor Emeritus
MUKUND S. DIDOLKAR, Associate Professor
TODD DORMAN
Professor of Anesthesiology and Critical Care Medicine, Joint Appointment in Medicine, Associate Professor of Surgery
MARK DOUGLAS DUNCAN
Associate Professor of Surgery, Associate Professor of Oncology
DAVID THOMAS EFRON
Associate Professor of Surgery, Associate Professor of Anesthesiology and Critical Care Medicine, Joint Appointment in Emergency Medicine
JONATHAN E. EFRON
Associate Professor of Surgery, Occupying the Mark M. Ravitch Chair in Surgery
RONALD H. FISHBEIN, Associate Professor Emeritus
JAMES C. FUCHS, Associate Professor Emeritus
ALEJANDRO GANDSAS, Associate Professor
PATRICIA J. GEARHART
Adjunct Professor of Medicine, Adjunct Associate Professor of Pathology, Adjunct Associate Professor of Surgery
SUSAN LYN GEARHART
Associate Professor of Surgery, Assistant Professor of Medicine (from 10/01/2011), Assistant Professor of Surgery (to 09/30/2011), Assistant Professor of Oncology (from 10/01/2011), Assistant Professor of Oncology (to 09/30/2011)
TODD DORMAN
Associate Professor of Surgery, Occupying the Mark M. Ravitch Chair in Surgery
ADIL HUSSAIN HAIDER
Professor of Surgery, Associate Professor of Anesthesiology and Critical Care Medicine
JACOB C. HANDELSMAN, Associate Professor Emeritus
NANCY L. HARTHUN, Associate Professor
ELLIOTT RICHARD HAUT
Professor of Surgery, Associate Professor of Anesthesiology and Critical Care Medicine, Joint Appointment in Emergency Medicine
RICHARD FRANK HEITMILLER
Associate Professor of Surgery, Associate Professor of Oncology
Division of Cardiac Surgery
DUKE E. CAMERON
James T. Dresher, Sr. Professor of Cardiac Surgery, Professor of Pediatrics, Director of the Division of Cardiac Surgery
WILLIAM A. BAUMGARTNER
Vincent L. Gott, M.D. Professor of Cardiac Surgery
JOHN VICTOR CONTE, JR., Professor
VINCENT L. GOTT
Richard Bennett Darnall Professor Emeritus of Cardiac Surgery
LEVI WATKINS, JR., Professor
ROBERT K. BRAWLEY, Associate Professor Emeritus
PETER SCHUYLER GREENE
Associate Professor of Cardiac Surgery, Joint Appointment in Health Sciences Informatics
KEITH A. HORVATH, Adjunct Associate Professor
LUCA A. VRICELLA
Associate Professor of Cardiac Surgery, Assistant Professor of Pediatrics
GLENN J.R. WHITMAN, Associate Professor
DAVID DAIHO YUH
Associate Professor of Cardiac Surgery (to 07/31/2011)
KAUSHIK MANDAL, Assistant Professor
ASHISH S. SHAH, Assistant Professor
ORLANDO DEBESA, Assistant

Division of Pediatric Surgery
PAUL M. COLOMBANI
Robert Garrett Professor of Pediatric Surgery, Professor of Oncology, Professor of Pediatrics, Director of the Division of Pediatric Surgery
J. ALEX HALLER, JR.
Professor Emeritus of Pediatric Surgery, Professor Emeritus of Emergency Medicine, Professor Emeritus of Pediatrics
FIZAN ABDULLAH, Associate Professor
J. LAURANCE HILL, Associate Professor
HENRY TIEN LAU, Associate Professor
JEFFREY RYAN LUKISH, Visiting Associate Professor
SAMUEL M. ALAISH, Assistant Professor
FRAY DYLAN STEWART, Assistant Professor
ERIC DAVID STRAUCH, Assistant Professor
QIHONG WANG, Research Associate

Department of Neurological Surgery
HENRY BREM
Harvey Cushing Professor of Neurosurgery, Professor of Oncology, Joint Appointment in Ophthalmology, Director of the Department of Neurological Surgery
PETER C. BURGER
Professor of Pathology, Professor of Neurological Surgery, Professor of Oncology
JAMES N. CAMPBELL, Professor

BENJAMIN S. CARSON
Benjamin S. Carson, Sr. M.D. and Dr. Evelyn Spiron, RN Professor of Pediatric Neurosurgery, Professor of Oncology, Professor of Pediatrics, Professor of Plastic and Reconstructive Surgery
DAVID R. CORNBLATH
Professor of Neurology, Professor of Neurological Surgery
A. LEE DELLON
Professor of Plastic and Reconstructive Surgery, Professor of Neurological Surgery
THOMAS B. DUCKER, Professor Emeritus
ZIYA L. GOKASLAN
Donlin M. Long Professor of Neurosurgery, Professor of Oncology, Professor of Orthopaedic Surgery
STUART A. GROSSMAN
Professor of Oncology, Professor of Medicine, Professor of Neurological Surgery
JUSTIN SCOT HANES
Lewis J. Ort Professor of Ophthalmology, Professor of Biomedical Engineering, Professor of Neurological Surgery, Professor of Oncology
DANIEL F. HANLEY
Jeffrey and Harriet Legum Professor of Acute Neurological Medicine in the Department of Neurology, Professor of Anesthesiology and Critical Care Medicine, Professor of Neurological Surgery
GEORGE ISSA JALLO
Professor of Neurological Surgery, Professor of Oncology, Professor of Pediatrics
FREDERICK A. Lenz
A. Earl Walker Professor of Functional Neurosurgery, Professor of Neuroscience
RONALD P. LESSER
Professor of Neurology, Professor of Neurological Surgery
JONATHAN S. LEWIN
Martin W. Donner Professor of Radiology, Professor of Biomedical Engineering, Professor of Neurological Surgery, Professor of Oncology
DONLIN MARTIN LONG
University Distinguished Service Professor Emeritus of Neurological Surgery
RICHARD A. MEYER, Professor Emeritus
NEIL RICHARD MILLER
Frank B. Walsh Professor of Neuro-ophthalmology in the Department of Ophthalmology, Professor of Neurology, Professor of Neurological Surgery
MAREK A. Z. MIRSKI
Professor of Anesthesiology and Critical Care Medicine, Professor of Neurology, Professor of Neurological Surgery
ERNST F.L. NIEDERMEYER
Professor Emeritus of Neurological Surgery, Professor Emeritus of Neurology
ALESSANDRO OLIVI
Professor of Neurological Surgery, Professor of Oncology
DANIELE RIGAMONTI
Salisbury Family Professor of Neurological Surgery, Professor of Oncology, Professor of Radiology, Joint Appointment in Physical Medicine and Rehabilitation, Professor of Radiation Oncology and Molecular Radiation Sciences

GREGORY J. RIGGINS
Irving J. Sherman Research Professor of Neurosurgery, Professor of Oncology

ANDREW SIMPSON, Adjunct Professor

DAN STOJANOVIC
Professor of Urology, Professor of Neurological Surgery

ROBERT L. STRAUSBERG, Adjunct Professor

RAFAEL J. TAMARGO
Walter E. Dandy Professor of Neurosurgery, Professor of Otolaryngology-Head and Neck Surgery

JOHN A. ULATOWSKI
Professor of Anesthesiology and Critical Care Medicine, Professor of Neurology, Professor of Neurological Surgery

JOHN A. ULATOWSKI
Professor of Anesthesiology and Critical Care Medicine, Professor of Neurology, Professor of Neurological Surgery

MOODY D. WHARAM, JR.
Professor of Radiation Oncology and Molecular Radiation Sciences, Professor of Neurological Surgery, Professor of Pediatrics, Professor of Radiology

MICHAEL C. AIN
Associate Professor of Orthopaedic Surgery, Associate Professor of Neurological Surgery

ALLAN JOEL BELZBERG, Associate Professor

JUAN RICARDO CARHUAPOMA
Associate Professor of Neurology, Associate Professor of Anesthesiology and Critical Care Medicine, Associate Professor of Neurological Surgery

ANDREA M. CORSE
Associate Professor of Neurology, Associate Professor of Neurological Surgery

RANDY FRANK DAVIS
Associate Professor of Orthopaedic Surgery, Associate Professor of Neurological Surgery

DHEERAJ GANDHI
Professor of Radiology, Associate Professor of Neurology, Associate Professor of Neurological Surgery

ROMERGRYKO GUANCE GEOCADIN
Associate Professor of Neurology, Associate Professor of Anesthesiology and Critical Care Medicine, Associate Professor of Neurological Surgery

MICHAEL J. HOLLIDAY
Associate Professor of Otolaryngology-Head and Neck Surgery, Associate Professor of Neurological Surgery

JUDY HUANG, Associate Professor

KHALED M. KEBAISH
Associate Professor of Orthopaedic Surgery, Associate Professor of Neurological Surgery

LAWRENCE R. KLEINBERG
Associate Professor of Radiation Oncology and Molecular Radiation Sciences, Associate Professor of Neurological Surgery, Associate Professor of Oncology

MICHAEL A. KRAUT
Professor of Radiology, Associate Professor of Neurological Surgery, Professor of Oncology

PAUL ALAN NYQUIST
Associate Professor of Neurology, Associate Professor of Anesthesiology and Critical Care Medicine, Assistant Professor of Medicine, Associate Professor of Neurological Surgery

ALFREDO QUINONES-HINOJOSA
Associate Professor of Neurological Surgery, Associate Professor of Neuroscience, Associate Professor of Oncology

LEE HUNTER RILEY, III
Associate Professor of Orthopaedic Surgery, Associate Professor of Neurological Surgery

MATTIAS RINGKAMP, Associate Professor

PREM SAGAR SUBRAMANIAN
Associate Professor of Ophthalmology, Associate Professor of Neurology, Associate Professor of Neurological Surgery

IAN SUK
Associate Professor of Neurological Surgery, Associate Professor of Art as Applied to Medicine

TIMOTHY FRANCIS WITHAM, Associate Professor

JEAN-PAUL WOLINSKY
Associate Professor of Neurological Surgery, Associate Professor of Oncology

EDWARD SANGHOON AHN
Assistant Professor of Neurological Surgery, Joint Appointment in Plastic and Reconstructive Surgery

WILLIAM STANLEY ANDERSON, Assistant Professor

JAISHRI O'NEILL BLAKELEY
Assistant Professor of Neurology, Assistant Professor of Neurological Surgery, Assistant Professor of Oncology

ALI BYDON, Assistant Professor

RONALD JAY COHEN, Assistant Professor

ALEXANDER LEWIS COON
Assistant Professor of Neurological Surgery, Assistant Professor of Neurology, Assistant Professor of Radiology

REGINALD JAMES DAVIS, Assistant Professor

HARRY C. DIETZ
Victor A. McKusick Professor of Medicine and Genetics in the Department of Pediatrics, Joint Appointment in Molecular Biology and Genetics, Associate Professor of Medicine, Assistant Professor of Neurological Surgery, Investigator of the Howard Hughes Medical Institute

FRANCESCO DIMECO, Adjunct Assistant Professor

PHILIPPE EDMOND GAUILLAUD
Associate Professor of Radiology, Associate Professor of Neurology, Assistant Professor of Neurological Surgery
GARY LOUIS GALLIA
Assistant Professor of Neurological Surgery, Assistant Professor of Oncology
IRA MARTIN GARONZIK, Assistant Professor
SUDHIR KATHURIA
Assistant Professor of Radiology, Assistant Professor of Neurological Surgery
MICHAEL KWON LIM
Assistant Professor of Neurological Surgery, Assistant Professor of Oncology, Assistant Professor of Radiation Oncology and Molecular Radiation Sciences
SHERIF M. MELEKA, Assistant Professor
NATHAN MOSKOWITZ, Assistant Professor
NEAL JAMISON NAFF, Assistant Professor
SHINJI OHARA, Adjunct Assistant Professor
MARTIN GEZA RADVANY
Assistant Professor of Radiology, Assistant Professor of Neurology, Assistant Professor of Neurological Surgery
JOHN D. RYBOCK, Assistant Professor
DANIEL M. SCIUBBA
Assistant Professor of Neurological Surgery, Assistant Professor of Oncology, Assistant Professor of Orthopaedic Surgery
NAVIN SINGH
Assistant Professor of Plastic and Reconstructive Surgery, Assistant Professor of Neurological Surgery
CLIFFORD T. SOLOMON, Assistant Professor
ROBERT DAVID STEVENS
Associate Professor of Anesthesiology and Critical Care Medicine, Assistant Professor of Neurology, Assistant Professor of Neurological Surgery, Associate Professor of Radiology
BETTY TYLER, Assistant Professor
BRADFORD D. WINTERS
Associate Professor of Anesthesiology and Critical Care Medicine, Assistant Professor of Neurology, Assistant Professor of Neurological Surgery, Assistant Professor of Surgery
XIAOBU YE
Assistant Professor of Neurological Surgery (from 09/01/2011), Assistant Professor of Oncology (from 09/01/2011) Research Associate in Oncology (to 08/31/2011)
QI ZHAO, Adjunct Assistant Professor
YONG-DI ZHOU, Adjunct Assistant Professor
WENDY CATHARINA ZIAI
Assistant Professor of Neurology, Assistant Professor of Anesthesiology and Critical Care Medicine, Assistant Professor of Neurological Surgery
COLETTE M.J. AP RHYS
Instructor in Neurological Surgery (to 09/30/2011)
ALI A. BAAJ, Instructor
RENYUAN BAI, Instructor
KATHLEEN BRELSFORD FRENCH, Instructor
RYAN MICHAEL KRETZER, Instructor
JOHN B. POSEY, Instructor
I-MEI SIU, Instructor
MICHAEL D. WALKER, Visiting Lecturer
GILSON BAIA, Research Associate
JOEL DANIEL GRENSPAN, Research Associate
MICHAEL GUARNIERI, Research Associate Emeritus
HUGO GUERRERO-CAZARES, Research Associate
CHANG-CHIA LIU
Research Associate in Neurological Surgery (from 09/01/2011)
MOMEN AHMED SHARAB, Visiting Scientist
XUEWEI XIA, Visiting Scientist
FACULTY ASSOCIATED WITH THE DEPARTMENT OF NEUROLOGICAL SURGERY HOLDING A PRIMARY APPOINTMENT IN:

The School of Medicine:

THOMAS J. K. TUNG
Professor of Anesthesiology and Critical Care Medicine

Orthopaedic Surgery

FRANK JOHN FRASSICA
Robert A. Robinson Professor of Orthopaedic Surgery, Professor of Oncology, Director of the Department of Orthopaedic Surgery (to 07/31/2011)
CHARLES W. CUMMINGS
Distinguished Service Professor of Otolaryngology-Head and Neck Surgery, Professor of Oncology, Interim Director of the Department of Orthopaedic Surgery (from 08/01/2011)
THOMAS M. BRUSHART
Thomas M. Brushart Professor of Hand Surgery in the Department of Orthopaedic Surgery, Professor of Neurology, Professor of Plastic and Reconstructive Surgery
ANDREW R. BURGESS, Professor
XU CAO
Lee H. Riley Professor of Orthopaedic Surgery
EDMUND Y. S. CHAO, Professor Emeritus
THOMAS LANDES CLEMENS, Professor
ANDREW JOHN COSGAREA, Professor
ZIYA L. GOKASLAN
Donlin M. Long Professor of Neurosurgery, Professor of Oncology, Professor of Orthopaedic Surgery
DAVID S. HUNGERFORD
Dugger Hungerford Professor of Orthopaedic Surgery
WEI-PING ANDREW LEE
Milton T. Edgerton Professor of Plastic Surgery, Professor of Orthopaedic Surgery (from 07/28/2011)
EDWARD F. MCCARTHY, JR.
Professor of Pathology, Professor of Orthopaedic Surgery
EDWARD G. MCFARLAND
Wayne H. Lewis Professor of Orthopaedics and Shoulder Surgery
ELIZABETH ANNE MONTGOMERY
Professor of Pathology, Professor of Oncology, Professor of Orthopaedic Surgery
M. CATHERINE SARGENT, Adjunct Assistant Professor
LEW C. SCHON
Assistant Professor of Orthopaedic Surgery,
Assistant Professor of Biomedical Engineering
DANIEL M. SCIUBBA
Assistant Professor of Neurological Surgery,
Assistant Professor of Oncology, Assistant Professor of Orthopaedic Surgery
WOODROW SEAMONE, Assistant Professor Emeritus
KEITH A. SEGALMAN, Assistant Professor
ANN N. SIEBER, Assistant Professor
RICHARD LEROY SKOLASKY, JR., Assistant Professor
UMASUTHAN SRIKUMARAN
Assistant Professor of Orthopaedic Surgery
from 09/01/2011
CLAUDIA LYNN THOMAS, Assistant Professor
JOHN E. TIS, Assistant Professor
P. JUSTIN TORTOLANI, Assistant Professor
MICHAEL EDWARD TRICE, Assistant Professor
DANIEL J. VALAIK, Assistant Professor
KIRBY L.C. VONKESSELLER, Assistant Professor Emeritus
ROBERT E. ZADEK, Assistant Professor Emeritus
FENG-QUAN ZHOU
Assistant Professor of Orthopaedic Surgery,
Assistant Professor of Neuroscience
BASHIR AHMED ZIKRIA, Assistant Professor
PAUL L. ASDOURIAN, Instructor
WEI-ZHONG CHANG, Instructor
ZACHARY LEE CHATTLER, Instructor
TIMOTHY P. CODD, Instructor
SRIDHAR M. DURBHAKULA, Instructor
DAVID GANNON, Instructor
NORTON I. GETTES, Instructor Emeritus
JAMES M. HITZROT, II, Instructor Emeritus
BRUCE S. LEBOWITZ, Instructor
JAMES MARK LEIPZIG, Instructor
ENZO J. LEONE, Instructor
RICHARD J. MASON, Instructor
AVIGDOR I. NIV, Instructor
JOHN B. O’DONNELL, Instructor
JEROME P. REICHMISTER, Instructor
MICHAEL B. SHAPIRO, Instructor
RONALD L. SHERMAN, Instructor
MYRON J. SZCZUKOWSKI, JR., Instructor
THOMAS B. VOLATILE, Instructor
BARRY JAY WALDMAN, Instructor
RAYMOND A. WITTSTADT, Instructor
BRUCE S. WOLOCK, Instructor
NEAL B. ZIMMERMAN, Instructor
JESSE AFFONSO, Assistant
MICHAEL F. ALAPATT
Assistant in Orthopaedic Surgery
from 08/01/2011
FIRAS M. CHAMAS, Assistant
NICHOLAS ALBERT JARMON
Assistant in Orthopaedic Surgery
from 08/01/2011
MEREDITH A. LAZAR-ANTMAN, Assistant
MATTHEW C. LEE
Assistant in Orthopaedic Surgery
from 08/01/2011
JOHN PATRICK MALLOY, IV, Assistant
CAROLINE SHARAREH MOAZZAM
Assistant in Orthopaedic Surgery
from 08/01/2011
MICHAEL PALOSKI
Assistant in Orthopaedic Surgery
from 07/15/2011
DAVID M. SHEPHARD, II
Assistant in Orthopaedic Surgery
from 08/01/2011
SWASTIK KUMAR SINHA
Assistant in Orthopaedic Surgery
from 08/01/2011
EUN MI HUR, Research Associate
ALKA ARVINDKUMAR VYAS, Research Associate
DONGQING WANG, Research Associate
LINGLING XIAN, Research Associate
BING YU, Research Associate
GEHUA ZHEN, Research Associate
KAI JIAO, Visiting Scientist
CHUNYI WEN, Visiting Scientist
FACULTY ASSOCIATED WITH THE DEPARTMENT OF ORTHOPAEDIC SURGERY HOLDING A PRIMARY APPOINTMENT IN:
The School of Medicine:
JENNIFER H. ELISSEEFF
Visiting Professor of Ophthalmology
DONNA MAGID
Associate Professor of Radiology and Radiological Science
WILLIAM W. SCOTT, JR.
Associate Professor of Radiology and Radiological Science
The Applied Physics Laboratory:
MEHRAN ARMAND
Senior Scientist
Department of Otolaryngology-Head and Neck Surgery
JOHN K. NIPARKO
George T. Nager Professor of Otolaryngology/Head and Neck Surgery, Interim Director of the Department of Otolaryngology - Head and Neck Surgery
DANA BOATMAN
Professor of Neurology, Professor of Otolaryngology-Head and Neck Surgery
JOSEPH A. CALIFANO, III
Professor of Otolaryngology-Head and Neck Surgery, Professor of Oncology
JOHN PATRICK CAREY, Professor
CHARLES W. CUMMINGS  
Distinguished Service Professor of Otolaryngology-Head and Neck Surgery, Professor of Oncology

CHARLES COLEMAN DELLA SANTINA  
Professor of Otolaryngology-Head and Neck Surgery, Professor of Biomedical Engineering

ANA BELEN ELGOYHEN, Adjunct Professor

DAVID S. ETTINGER  
Alex Grass Professor of Oncology, Professor of Gynecology and Obstetrics, Professor of Medicine, Professor of Otolaryngology-Head and Neck Surgery, Professor of Radiation Oncology and Molecular Radiation Sciences

ARLENE A. FORASTIERE  
Professor of Oncology, Professor of Otolaryngology-Head and Neck Surgery, Professor of Radiation Oncology and Molecular Radiation Sciences

PAUL ALBERT FUCHS  
John E. Bordley Professor of Otolaryngology-Head and Neck Surgery, Professor of Biomedical Engineering, Professor of Neuroscience

JEROME C. GOLDSTEIN, Visiting Professor

WAYNE M. KOCH  
Professor of Otolaryngology-Head and Neck Surgery, Professor of Oncology

ANDREW PETER LANE, Professor

LLOYD B. MINOR  
University Distinguished Professor of Otolaryngology-Head and Neck Surgery, Professor of Biomedical Engineering, Professor of Neuroscience

JEFFREY B. PALMER  
Lawrence Cardinal Shehan Professor of Physical Medicine and Rehabilitation, Professor of Otolaryngology-Head and Neck Surgery, Professor of Functional Anatomy and Evolution

RANDALL R. REED  
Professor of Molecular Biology and Genetics, Professor of Neuroscience, Professor of Otolaryngology-Head and Neck Surgery

DAVID K. RYUGO, Professor Emeritus

MURRAY B. SACHS  
University Distinguished Service Professor of Biomedical Engineering, Professor of Neuroscience, Professor of Otolaryngology-Head and Neck Surgery

DAVID SIDRANSKY  
Professor of Otolaryngology-Head and Neck Surgery, Professor of Oncology, Professor of Pathology, Professor of Urology

RAFAEL J. TAMARGO  
Walter E. Dandy Professor of Neurosurgery, Professor of Otolaryngology-Head and Neck Surgery

XIAOQIN WANG  
Professor of Biomedical Engineering, Professor of Neuroscience, Professor of Otolaryngology-Head and Neck Surgery

WILLIAM H. WESTRA  
Professor of Pathology, Associate Professor of Dermatology, Professor of Oncology, Professor of Otolaryngology-Head and Neck Surgery

ERIC D. YOUNG  
Professor of Biomedical Engineering, Professor of Neuroscience, Professor of Otolaryngology-Head and Neck Surgery

DAVID S. ZEE  
Professor of Neurology, Professor of Neuroscience, Professor of Ophthalmology, Professor of Otolaryngology-Head and Neck Surgery

S. JAMES ZINREICH  
Professor of Radiology, Professor of Otolaryngology-Head and Neck Surgery

WILLIAM H. WESTRA  
Professor of Pathology, Associate Professor of Dermatology, Professor of Oncology, Professor of Otolaryngology-Head and Neck Surgery

ERIC D. YOUNG  
Professor of Biomedical Engineering, Professor of Neuroscience, Professor of Otolaryngology-Head and Neck Surgery

DAVID S. ZEE  
Professor of Neurology, Professor of Neuroscience, Professor of Ophthalmology, Professor of Otolaryngology-Head and Neck Surgery

S. JAMES ZINREICH  
Professor of Radiology, Professor of Otolaryngology-Head and Neck Surgery
MARGARET LEIGH SKINNER
Assistant Professor of Otolaryngology-Head and Neck Surgery, Assistant Professor of Pediatrics

DAVID SOLOMON
Assistant Professor of Neurology, Assistant Professor of Otolaryngology-Head and Neck Surgery

HEATHER MAUREEN STARMER, Assistant Professor

CHARLES MATTHEW STEWART, Assistant Professor

DONNA CLARK TIPPETT
Assistant Professor of Otolaryngology-Head and Neck Surgery, Assistant Professor of Physical Medicine and Rehabilitation

BARRY TRINK, Assistant Professor

KIM WEBSTER, Assistant Professor

ALYSON WELLS
Assistant Professor of Plastic and Reconstructive Surgery, Assistant Professor of Otolaryngology-Head and Neck Surgery

MARK F. WILLIAMS, Assistant Professor

XIAOFEI CHANG, Instructor

ADITI CHATTERJEE, Instructor

RYAN M. COLLAR, Instructor

MARTIN P. CURRY, Instructor

KENNETH CHARLES FLETCHER, JR., Instructor

THOMAS S. HIGGINS, Instructor

MYOUNG SOOK KIM, Instructor

AMANDA MARIE LAUER, Instructor

MARK A. LEVINE
Instructor in Oncology, Instructor in Otolaryngology-Head and Neck Surgery

SCOTT D. LONDON, Instructor

MELISSA ORTIZ, Instructor

RITA M. ANELLI, Assistant

DEBORAH G. BERVINCHAK, Assistant

STEPHEN BOWDITCH, Assistant

COURTNEY L. CARVER, Assistant

KRISTIN MARIE CEEH, Assistant

RONI E. DINKES, Assistant

KRISTA J. FOLLMER, Assistant

HILLARY GANEK, Assistant

JALEH SUE GARMAN, Assistant

ANGELA TERESA LATAILLE, Assistant

ANDREA MARLOWE, Assistant

DAWN L. MARSIGLIA, Assistant

MARIAH P. MENICHINO, Assistant

LYNN REENI RIDER
Assistant (Audiology & Speech) in Otolaryngology-Head and Neck Surgery (to 08/12/2011)

COLLEEN E. RYAN-BANE, Assistant

ALICIA D. WHITE, Assistant

JENNIFER DOBSON YEAGLE, Assistant

RAFAEL ENRIQUE GUERRERO-PRESTON, Research Associate

HAKIM HEL, Research Associate

ZUBAIR KHAN, Research Associate

MOHAMED LEHAR, Research Associate

GYU CHEOL HAN, Visiting Scientist

DAVID MARCEL VASQUEZ, Visiting Scientist

YANFEI ZHOU, Visiting Scientist

FACULTY ASSOCIATED WITH THE DEPARTMENT OF OTOLARYNGOLOGY-HEAD AND NECK SURGERY HOLDING A PRIMARY APPOINTMENT IN:

The School of Medicine:

MICHAEL ROBERT CLARK
Associate Professor of Psychiatry

Division of Dental and Oral Medicine

WILLIAM M. HENDERSON
Assistant Professor, Director of the Division of Dental and Oral Medicine

RAKSHA MIRCHANDANI, Assistant Professor

JOHN PETRONE, Assistant Professor

DANIEL T. RICHARDSON, Assistant Professor

MICHAEL K. SCHWARTZ, Assistant Professor

SYLVAN M.E. SHANE, Assistant Professor Emeritus

WILBUR KING SMITH, Assistant Professor

DAVID C. BASTACKY, Instructor

Department of Plastic and Reconstructive Surgery

WEI-PING ANDREW LEE
Milton T. Edgerton Professor of Plastic Surgery, Professor of Orthopaedic Surgery (from 07/28/2011), Director of the Department of Plastic Surgery

THOMAS M. BRUSHART
Thomas M. Brushart Professor of Hand Surgery in the Department of Orthopedic Surgery, Professor of Neurology, Professor of Plastic and Reconstructive Surgery

BENJAMIN S. CARSON
Benjamin S. Carson, Sr. M.D. and Dr. Evelyn Spiro, RN Professor of Pediatric Neurosurgery, Professor of Oncology, Professor of Pediatrics, Professor of Plastic and Reconstructive Surgery

A. LEE DELLON
Professor of Plastic and Reconstructive Surgery, Professor of Neurological Surgery

NICHOLAS TAYLOR ILIFFE, Adjunct Professor

JOHN E. HOOPES, Professor Emeritus

ETHYLWING WANG JABS
Adjunct Professor of Pediatrics, Adjunct Professor of Medicine, Adjunct Professor of Plastic and Reconstructive Surgery

PAUL N. MANSON, Professor

STEPHEN M. MILNER
Professor of Plastic and Reconstructive Surgery, Professor of Dermatology, Professor of Pediatrics
FACULTY ASSOCIATED WITH THE
DEPARTMENT OF PLASTIC AND
RECONSTRUCTIVE SURGERY HOLDING A
PRIMARY APPOINTMENT IN:

The School of Medicine:
EDWARD SANGHOON AHN
Assistant Professor of Neurological Surgery

Department of Urology
ALAN W. PARTIN
David Hall McConnell Professor of Urology,
Professor of Oncology, Professor of Pathology,
Director of the Department of Urology
ARTHUR LOUIS BURNETT, II
Patrick C. Walsh Professor of Urology

EDWARD SANGHOON AHN
Assistant Professor of Neurological Surgery

ALAN W. PARTIN
David Hall McConnell Professor of Urology,
Professor of Oncology, Professor of Pathology,
Director of the Department of Urology

ARTHUR LOUIS BURNETT, II
Patrick C. Walsh Professor of Urology

EDWARD SANGHOON AHN
Assistant Professor of Neurological Surgery

ALAN W. PARTIN
David Hall McConnell Professor of Urology,
Professor of Oncology, Professor of Pathology,
Director of the Department of Urology

ARTHUR LOUIS BURNETT, II
Patrick C. Walsh Professor of Urology
JAY D. PEARSON, Adjunct Associate Professor
WILLIAM G. REINER
Associate Professor of Psychiatry, Associate Professor of Urology
RONALD RODRIGUEZ
Associate Professor of Urology, Associate Professor of Oncology, Associate Professor of Radiation Oncology and Molecular Radiation Sciences
EDWARD MATTHEW SCHAEFFER
Associate Professor of Urology, Associate Professor of Oncology
HORST K.A. SCHIRMER, Associate Professor
LORI JEAN SOKOLL
Associate Professor of Pathology, Associate Professor of Oncology, Associate Professor of Urology
DANNY YEONG SONG
Associate Professor of Radiation Oncology and Molecular Radiation Sciences, Associate Professor of Oncology, Associate Professor of Urology
RAY E. STUTZMAN, Associate Professor Emeritus
ROBERT W. VELTRI
Associate Professor of Urology, Associate Professor of Oncology
EDWARD JAMES WRIGHT, Associate Professor
HAROLD JOSEPH ALFERT, Assistant Professor Emeritus
ALESSANDRO G. BASSO, Assistant Professor
DAVID MONTY BERMAN
Associate Professor of Pathology, Associate Professor of Oncology, Assistant Professor of Urology
TRINITY JUDE BIVALACQUA
Assistant Professor of Urology, Assistant Professor of Oncology
G. STEVEN BOVA
Assistant Professor of Pathology, Joint Appointment in Health Sciences Informatics, Assistant Professor of Oncology, Assistant Professor of Urology
JENNIFER LOCKWOOD DODSON, Assistant Professor
CHARLES GEORGE DRAKE
Associate Professor of Oncology, Assistant Professor of Urology
NATHANIEL MICHAEL FRIED, Adjunct Assistant Professor
WALED A. HASSEN, Assistant Professor
MOHAMMAD OBAIDUL HOQUE
Assistant Professor of Otolaryngology-Head and Neck Surgery, Assistant Professor of Oncology, Assistant Professor of Urology
PRAKASH KULKARNI
Assistant Professor of Urology, Assistant Professor of Oncology
JUN LUO
Assistant Professor of Urology, Assistant Professor of Oncology
KATARZYNA J. MACURA
Associate Professor of Radiology, Assistant Professor of Urology
ALAN KEITH MEEKER
Assistant Professor of Pathology, Assistant Professor of Oncology, Assistant Professor of Urology
BILJANA MUSICI, Assistant Professor
STEPHEN SCHATZ, Assistant Professor
MING-HSIE N WANG, Assistant Professor
SIMON ALEXANDER WILLIAMS
Assistant Professor of Urology, Assistant Professor of Oncology
JAMES D. BILES, Instructor
JOHN A.C. COLSTON, JR., Instructor Emeritus
ALAN M. GERINGER, Instructor
PAULA JILL HURLEY, Instructor
ELIAS S. HYAMS, Instructor
IRWIN J. NUDEL MAN, Instructor
ADAM CRAIG REESE, Instructor
NASER UDDIN, Instructor
KRISTEN ANN BURNS, Assistant
STEVEN C. HORTOPAN, Assistant
NIQUICHE M. GUI TY, Research Associate
DORU STEFANITA PETRISOR, Research Associate
SENA FERIDE SEZEN, Research Associate
YU ZENG, Research Associate
FACULTY ASSOCIATED WITH THE DEPARTMENT OF UROLOGY HOLDING A PRIMARY APPOINTMENT IN:
The Bloomberg School of Public Health:
ELIZABETH A. PLATZ
Professor of Epidemiology
REQUIRED WORK FOR M.D. DEGREE

General Surgery and Surgical Specialties
The Basic Surgical Clerkship is a prerequisite for advanced elective courses in clinical surgery. Research electives may be scheduled with faculty members by arrangement, with the assistance of the faculty advisors.

Second, Third or Fourth year
An eight week basic clinical clerkship will be offered each quarter and can be taken at any time from the last quarter of the second year through the first quarter of the fourth year. One half of the quarter will consist of a clerkship experience in General Surgery. These consist of Cameron (hepatopancreatobiliary), Halsted (trama, general), Handelman (surgical oncology/endocrinology), and Ravitch (GI, minimally invasive) services. The other half of the quarter will be divided between two of the following Surgical Specialties: Orthopaedic Surgery, Otolaryngology, Pediatric Surgery, Plastic Surgery, Urological Surgery, Thoracic Surgery, Cardiac Surgery, Transplant Surgery, Neurosurgery, or Vascular Surgery.
Outpatient and ward work.

(a) GENERAL SURGERY BASIC CLERKSHIP. Drs. Freischlag, Yang, and staff.
Each student will be assigned to a major teaching service for 4 1/2 weeks. These will include the general surgical services of The Johns Hopkins Hospital or the Bayview Medical Center.

(b) ORTHOPAEDIC SURGERY. Orthopaedic Surgery staff.
One or two students will be assigned to this department for approximately 16 consecutive days either at the Johns Hopkins Hospital or at the Johns Hopkins Bayview Medical Center.

(c) OTOLARYNGOLOGY. Dr. Minor and staff.
One or two students will be assigned to this department for approximately 16 consecutive days at the Johns Hopkins Hospital.

(d) UROLOGY. Dr. Partin and staff.
One or two students will be assigned to this department for approximately 16 consecutive days at the Johns Hopkins Hospital.

(e) PEDIATRIC SURGERY. Dr. Colombani and staff.
One or two students will be assigned to this department for approximately 16 consecutive days at the Johns Hopkins Hospital.

(f) PLASTIC SURGERY. Dr. Lee and staff.
One or two students will be assigned to this department for approximately 16 consecutive days at the Johns Hopkins Hospital.

(g) CARDIAC SURGERY. Dr. D. Cameron and staff.
One or two students will be assigned to this department for approximately 16 consecutive days at the Johns Hopkins Hospital.

(h) THORACIC SURGERY. Dr. Yang and staff.
One or two students will be assigned to this department for approximately 16 consecutive days at the Johns Hopkins Hospital.

(i) TRANSPLANT SURGERY. Dr. Montgomery and staff.
One or two students will be assigned to this department for approximately 16 consecutive days at the Johns Hopkins Hospital.

(j) NEUROSURGERY. Dr. Brem and staff.
One or two students will be assigned to this department for approximately 16 consecutive days at the Johns Hopkins Hospital.

(k) VASCULAR SURGERY. Dr. Perler and staff.
One or two students will be assigned to this department for approximately 16 consecutive days at the Johns Hopkins Hospital.

Topics in General Surgery. Staff in General Surgery. All students assigned to surgery quarter at the Johns Hopkins Bayview Medical Center. Lectures covering core material basic to general surgery and trauma. Monday through Friday mornings.

Surgical Specialty Conference. Drs. D. Cameron, Colombani, Lee, Minor, Partin, Yang and staff in the surgical specialties. All students assigned to surgery quarter. All lectures covering core material basic to the surgical specialties.

Surgery Grand Rounds. Dr. Freischlag and staff. Surgical Quarter. Thursday, 7:30-8:30.

ELECTIVE OPPORTUNITIES—General Surgery and Surgical Specialties. Elective courses must be approved by the preceptor; any member of the department may act as preceptor.

A subinternship in surgery is designed to give the advanced student supervised participation in clinical care of patients. This elective must be applied for at least two months before the starting date to insure appropriate credentialing by the Department of Surgery and the hospital.

An advanced clerkship is designed to expose the student to patients with surgical problems. The student is given very limited clinical responsibilities and is not involved in any direct patient care. Approval of the curriculum consultant for surgery is needed to qualify for this elective.

Section of Surgical Sciences. Curricular Consultant: Dr. Yang.

MAJOR CLINICAL COURSES—The prerequisite of all major clinical electives is the Surgery Basic Clerkship.

Department of General Surgery

E 1. Sub-Internship. Drs. Freischlag, Yang, and staff. The students will be given more clinical responsibilities and will participate in the management and care of surgical patients. The activities of the student will be supervised by the attending and house staff. Services available: GI surgery, vascular surgery, Halsted-trauma, oncology-endocrine. Four and 1/2 week experience.

This course is designed to provide extensive, in-depth experience in the management of the surgical patient. The student will be an integral part of the surgical team and will be assigned specific patients. Registration must be 8 weeks before this elective since credentialing is required by the Medical Board.

E 2. Advanced Clinical Clerkship in Cardiac Surgery. Dr. D. Cameron and staff.
Includes participation in ward and operative work and research (either clinical or in animal laboratory). Full time; 4 1/2 to 9 weeks, two students for clinical portion, one student for research laboratory. Preference given to senior students.

E 3. Advanced Clerkship in Surgical Oncology (Handelsman Service). Dr. Choti and staff.
This elective is designed to provide students with an academic multidisciplinary approach to solid tumors. Both clinical and research experiences are available. The clinical exposure is provided by rotating through the Surgical Oncology/Endocrinology service, and the research interests are centered around immunologic manipulations of the host in solid tumor rejection. Elective is offered full time, 4 1/2 to 9 weeks.

E 4. Advanced Clinical Clerkship in General Pediatric Surgery. Dr. Colombani. 4 1/2 or 9 weeks. Same as Pediatrics E30.

On completion of the core clerkship in either Pediatrics or Surgery, a limited number of students may serve as substitute interns on the General Pediatric Surgery service in the Johns Hopkins Children’s Center. This externship in Pediatric Surgery includes ward and operating room experience as well as Pediatric Surgery out-patient clinic and teaching rounds.


Includes participation in management of patients undergoing renal dialysis and renal transplantation at the Johns Hopkins Hospital and the Johns Hopkins Bayview Medical Center. Experience will include immunology as it applies to transplantation, and may be coordinated with laboratory investigation in progress. Full time; 4 1/2 to 9 weeks; limited to two students.

E 9. Advanced Clerkship in General Surgery at Johns Hopkins Bayview Medical Center. Dr. Duncan and staff.

Experience similar to E1. Available in June, July, August only.

E 10. Advanced Clerkship in Vascular Surgery. Dr. Perler and staff.

This elective provides exposure to vascular surgery patients. Students will participate in all aspects of patient care: preop evaluation, operative procedures, postop care. Four and 1/2 weeks.

E 11. Advanced Clinical Clerkship in Surgical Intensive Care. Dr. Lipsett and staff.

This elective provides an opportunity for students to work in one of the Surgical Intensive Care Units and obtain experience in the management of critically ill surgical patients. Students will participate in all aspects of care: preop evaluation, operative procedures, and postop care. Four and 1/2 weeks.


This is an elective designed to provide clinical experience in the management of patients with thoracic surgical problems, primarily malignant tumors of the lung, esophagus and mediastinum. The elective is offered in units of four and one half or nine weeks.


This elective provides comprehensive exposure to GI surgery patients. Students will participate in all aspects of care: preop evaluation, operative procedures, and postop care. Four and 1/2 weeks.

Research Interests
DR. BAUMGARTNER
Cardiac transplantation.

DR. CHOTI
Portal hypertension.

DR. COLOMBANI
Immunopharmacology and transplantation.

DR. DELLON
Mechanism in peripheral sensibility.

DR. FREISCHLAG
Carotid plaque analysis and abdominal aortic aneurysm surgery.

DR. LEACH
Pancreatic cancer.

DR. LIPSETT
Surgical critical care.

DR. MANSON
Tissue ischemia; bone repair; facial fractures.

DR. MONTGOMERY
Transplant immunology.

DR. PERLER
Vascular physiology.

DR. SCHULICK
Hepatic metastases.

DR. SPENCE
Burn reconstruction.

DR. YANG
Lung and esophageal cancer.

DR. ZEIGER
Thyroid physiology.

Department of Neurological Surgery

E 1. Advanced Clinical Clerkship in Neurorsurgery. Dr. Huang and staff.

The neurosurgical service will provide in-depth experience in the management of the neurosurgical patient. The student will be integrated into the house staff and will be expected to assume responsibilities similar to the resident staff. Two students, 4 weeks. Available either at The Johns Hopkins Hospital or at the Johns Hopkins Bayview Medical Center.

E 2. Subinternship in Neurosurgery. Dr. Huang and staff.

Students are given significant responsibilities in patient care and a broad exposure in neurosurgical operating room techniques. Time is divided between the neurosurgical oncology, spine, cerebrovascular, and pediatric services. Students will participate in daily rounds, inpatient care, departmental conferences, operating rooms, and outpatient clinic. Subinterns will participate in overnight call with a supervising resident. Rotations will be at the Johns Hopkins Hospital and Johns Hopkins Bayview Medical Center campuses.

Research Interests
DR. AHN
Pediatric neurosurgery

DR. BELZBERG
Neurophysiological mechanisms of pain sensation; schwannomas; peripheral nerve.

DR. BETTEGOWDA
Microbiology of brain tumors.
by attending the General Pediatric, Birth Defects, and Genetics clinics at Johns Hopkins Hospital. The participant will learn the basics of musculoskeletal examination and history taking, and will participate in operative procedures on children. There is extensive experience in pediatric sports medicine. Students are given responsibility according to their experience. There are three teaching conferences per week. Reading materials are provided and extensive mentoring is given by our excellent resident staff. One position offered at a time. Duration is four weeks.

E 3. Advanced Clinical Clerkship in Adult Limb Reconstruction. Dr. Carl Johnson.

This elective at the Johns Hopkins Bayview Medical Center provides an in-depth clinical experience in arthroscopic and reconstructive surgery of the knee and foot/ankle. Students are actively involved in all aspects of clinical patient care as well as resident educational activities. One position offered at a time. Preference given to second semester third year students and to fourth year students. Duration is four weeks.

E 4. Advanced Clinical Clerkship in Adult Orthopaedics at the Union Memorial Hospital. Experience similar to E4.


This elective is offered at The Johns Hopkins Hospital and Johns Hopkins Greenspring for students interested in sports related injuries. Students will learn the basics of musculoskeletal examination of a variety of joints. This is a great elective for students interested in Sports Medicine or primary care subspecialties. Students participate in admission work-ups, pre and post-op care and rehabilitation, and assist in the operating room. One position offered at a time. Preference given to second semester third year students and to fourth year students. Duration is four weeks.


This elective provides a one-month exposure to hand and upper extremity surgery on the Johns Hopkins Hand Service. Students will receive individual instruction in the examination of the upper extremity and in the recognition and treatment of common upper extremity problems. Special emphasis is placed on the treatment of injuries and diseases of the peripheral nervous system, including reconstruction with tendon transfers. There is also an extensive exposure to congenital deformities of the upper extremity.


This is a clinical elective where the student attends clinics at Green Spring Station and scrubs for surgery performed on the East Baltimore campus. This is a fun elective where the student attends all clinics and surgical procedures and learns how to assess orthopaedic patients with predominantly shoulder, but also some elbow problems. We see athletic and non-athletic patients. The student will learn the basics of joint arthroscopy and has the opportunity to become involved in case reports as first author if they wish.
Research Interests

DR. AIN
Skeletal dysplasia.

DR. BELKOFF
Biomechanics.

DR. BRUSHART
Nerve regeneration.

DR. COHEN
Clinical outcomes in spinal surgery; spinal deformity in adults; spinal disorders.

DR. COSGAREA
Sports medicine; knee injuries; ACL injuries.

DR. C. JOHNSON
Arthroscopy; reconstruction of the knee.

DR. COMINSKY
Oncology.

DR. KULIK
Foot and ankle.

DR. LEMMA
Spine.

DR. MCFARLAND
Sports medicine; shoulder injuries.

DR. RILEY III
Clinical outcomes in spinal surgery; cervical spine; mechanism of disc degeneration.

DR. SPONSELLER
Spinal deformities; pediatric trauma; myelodysplasia.

Department of Otolaryngology-Head and Neck Surgery

E 1. Advanced Clinical Clerkship in Otolaryngology. Dr. Sara Pai and staff.

Clerkships in general clinical otolaryngology are offered in addition to more specialized clerkships in otology, neuro-otology, facial plastic and reconstructive surgery, clinical audiology and speech pathology, endoscopy and the management of head and neck tumors. These clerkships provide experience in the various diagnostic procedures related to the specialty as well as experience in the medical and surgical management of patients. Preference is given to senior students, 4 1/2 or 9 weeks. Available either at the Johns Hopkins Hospital or at the Johns Hopkins Bayview Medical Center.

Research Interests

DR. AGRAWAL
Vestibular function and aging; implications for gait and falls; vestibular compensation; vestibular rehabilitation.

DR. AKST
Voice, swallowing, and airway disorders.

DR. BHATTI
Management of challenging airway problems; innovative tracheostomy techniques and use of alternative modes of therapy in chronic sinus disease.

DR. BOAHENE
Tissue engineering; outcomes of reconstructive surgery.

DR. BOSS
Racial, ethnic, and socioeconomic disparities in pediatric otolaryngology; service excellence; patient satisfaction and clinical outcome correlation.

DR. BYRNE
Facial nerve rehabilitation; telemedicine and international cleft palate care; outcomes in reconstructive surgery.

DR. CALIFANO
Molecular biology of head and neck cancer, including early detection of head and neck cancer; use of molecular techniques for detection of disease in saliva and blood; network based analysis of novel therapeutic targets; epigenetic regulation in head and neck cancers.

DR. CAREY
Define the physiologic and histologic changes in the vestibular organs of the inner ear after treatment with gentamicin; treatment of vertigo due to Meniere’s disease.

DR. DEANS
The molecular biology of auditory and vestibular system development.

DR. DELLA SANTINA
Development of a “bionic ear” (neuroelectronic vestibular prosthesis) to restore inner ear balance function; development of new methods for testing vestibular function in humans and in transgenic mice; epidemiology of vestibular disorders; molecular genetics of Meniere’s disease; normal and patho-physiology of the 3D vestibulo-ocular reflex; laser stimulation of the vestibular nerve; stimulation of the inner ear with high strength magnetic fields.

DR. FRANCIS
Biologic mechanisms in the cochlea that lead to hearing loss as a result of aging, noise and other factors; neural plasticity in the auditory pathway; language and educational outcomes in deaf children with cochlear implants.

DR. FRIDMAN
Applied research toward developing novel methods and devices for neural interfacing and toward developing electronic prostheses for the treatment of central and peripheral neural disorders.

DR. FUCHS
The ionic mechanisms involved in excitability and synaptic function of mechanosensory hair cells of the inner ear.

DR. GLOMERO PRESTON
Integrated genomic and epigenomic regulation in head and neck to identify early detection biomarkers that can be used for personalized medicine and for cancer prevention and control efforts.

DR. GLOWATZKI
Investigating mechanisms underlying peripheral hearing and vestibular function; synaptic transmission in the inner ear investigated with electrophysiological approaches.

DR. GOURIN
Head and neck cancer; outcomes research; cost effectiveness analysis and quality of life.

DR. HA
The molecular biology and epigenetic changes associated with salivary gland neoplasms.
DR. HILLEL
Laryngeal tissue engineering; management of the difficult airway; pathogenesis of laryngotracheal fibrosis.

DR. HOLLIDAY
Clinical research in diseases of temporal bone and skull base.

DR. HOQUE
Study of cancer biology and identification of biomarkers for early detection; therapeutic response prediction; prognosis and monitoring of cancer.

DR. L. ISHII
Objective analysis of facial deformities using gaze-tracking and investigating the role of nasal obstruction in the pathophysiology and treatment of obstructive sleep apnea.

DR. M. ISHII
Gas transport in the nasal cavity and paranasal sinuses.

DR. L. ISHII
Clinical and basic science research in chronic rhinosinusitis and nasal polyposis; immune dysfunction and upper airway epithelial cell biology; clinical, translational and basic science research in autoimmune sinusitis and salivary gland disease.

DR. Y. KIM
Mechanisms of immune tolerance against human malignancy; development of immunomodulatory adjuvant therapy for head and neck cancer.

DR. KOCH
Clinical application of molecular biology of head and neck cancer.

DR. LANE
Clinical and basic science research of chronic sinusitis, olfaction, and transnasal endoscopic surgery.

DR. LIMB
Neural mechanisms of musical perception and production; music perception in cochlear implant users.

DR. REH
Outcomes in sinus surgery; biomolecular and genetic causes of sinusitis.

DR. RICHMON
Clinical outcomes of head and neck surgery and free tissue reconstruction; robotic surgery of the head and neck.

DR. SHELHAMER
Describe mechanisms responsible for improving gaze stability during rapid head impulses and to develop new gaze stability strategies for rehabilitation.

DR. TUFANO
Clinical and translational research of thyroid and parathyroid disease process.

DR. YOUNG
Auditory neurophysiology; sensory processes; application of computers in research.

Department of Plastic Surgery
E 1. Subinternship in Plastic Surgery. Dr. Lee, Dr. Dorafshar and staff.

Research Interests
DR. BRANDACHER
Reconstructive transplantation.

Department of Urology

This elective provides students with the opportunity to pursue a study of urology in-depth, gearing such study to the needs or goal of the individual student. Thus, this experience may be oriented to clinical urology research or a combination of both. 4 1/2 or 9 weeks. Available either at the Johns Hopkins Hospital or at the Johns Hopkins Bayview Medical Center.

Research Interests
DR. ALLAF
Minimally invasive surgery; robotics; kidney cancer; prostate cancer.
DR. BIVALACQUA
Neurobiology of cavernous nerve injury repair mechanisms after pelvic surgery for prostate and bladder cancer; gene therapy for erectile dysfunction; biomarkers for detention and staging of bladder cancer.

DR. BURNETT
Pelvic neurophysiology; pelvic anatomy; erectile dysfunction; urinary continence; pelvic reconstructive surgery; prostate cancer.

DR. CARTER
Longitudinal studies of prostate disease, etiology, detection, and management.

DR. CESPEDES
Male and female incontinence; obstructive voiding dysfunction; vaginal prolapsed reconstruction; geriatric incontinence; urourology.

DR. COFFEY
Prostate tumor biology; regulation of normal and abnormal growth of the prostate; role of nuclear matrix in DNA replication; telomerase; stem cell biology.

DR. DODSON
Epidemiology and patient reported outcomes in pediatric urology; health related quality of life; continence.

DR. GEARHART
Endocrine manifestations of ambiguous genitalia; bladder muscle nerve and collagen function in bladder extrophy; long term outcomes in ambiguous genitalia.

DR. GETZENBERG
Biomarkers-prostate cancer, BPH, bladder cancer; nanoparticle based thermal therapy; evolutionary aspects of cancer biology and treatment.

DR. HAN
Oncology; outcomes research in prostate cancer; robotics in prostate cancer diagnostics and treatment.

DR. J. ISAACS
Development of new therapies for prostatic cancer and molecular mechanisms for control of metastasis.

DR. W. ISAACS
Molecular genetics of prostate cancer and benign prostatic hyperplasia.

DR. JAROW
Erectile dysfunction, male infertility.

DR. KULKARNI
Understanding molecular mechanisms underlying prostate diseases; aberrant expression of Cancer/Testis Antigens; intrinsically disordered proteins and network theory.

DR. LUO
High-throughput oriented approaches to study molecular carcinogenesis of human prostate cancer and translational research on novel prostate markers identified using these approaches.

DR. LUPOLD
Prostate cancer; experimental therapeutics and diagnostics; aptamers and microRNA.

DR. MATHEWS
Minimally invasive pediatric urology; hypospadias; vesico-ureteral reflux; undescended testis.

DR. MATLAGA
Kidney stone disease and surgical treatment.

DR. MOSTWIN
Continence; bladder function; pelvic anatomy; medical ethics.

DR. PARTIN
Prostate cancer; benign prostatic hyperplasia; prostate cancer biomarkers research.

DR. PAVLOVICH
Minimally-invasive urologic oncologic surgery; urinary biomarkers for prostate cancer and prostatic diseases.

DR. RODRIGUEZ
Advanced prostate cancer; bladder cancer; kidney cancer; gene therapy; experimental therapeutics and diagnostics; molecular imaging.

DR. SCHAEFFER
The molecular biology of low and high grade prostate cancer; the biology of urogenital development and injury/repair and the relationship between these processes and cancers of the bladder, prostate, and kidneys.

DR. SCHATZ
Bladder cancer; benign prostatic hyperplasia; salvage therapy for recurrent prostate cancer.

DR. SCHOEENBERG
Molecular biology and early detection of bladder cancer; novel therapeutic strategies for invasive bladder cancer; focal therapy for treatment of urologic malignancies and regenerative medicine approaches to urinary tract reconstruction.

DR. STOIANOVICI
Urology robotics; image guided interventions; new technologies.

DR. TROCK
Epidemiology, prevention, and clinical outcomes of prostate and breast cancer; biomarkers for early detection and progression.

DR. VELTRI
Biomarkers for diagnosis and prognosis of urological cancers; the quantitation of tissue architecture and cell nuclear structure and molecular biomarkers using digital computer-assisted image analysis in cancer; applied proteomics for biomarker discovery, identification, and characterization; and algorithms that combine pathology and biomarkers to predict urological cancer outcomes.

DR. WALSH
Benign prostatic hyperplasia; prostatic cancer.

DR. WRIGHT
Male and female voiding dysfunction; neurourology; pelvic reconstructive surgery; urogynecology.

DR. WANG
General pediatric urology; urinary tract infections; vesicoureteral reflux; penile and bladder development; hypospadias; undescended testicles; disorder of sexual differentiation; hydronephrosis; neurogenic bladder.
Multi-Department Courses

REQUIRED WORK FOR M.D. DEGREE

First and Second Year

Topics in Interdisciplinary Medicine

Topics in Interdisciplinary (TIME) courses are designed to present the behavioral and social science content pertinent to the practice of medicine in the 21st century and provide additional clinical skill development in the preclinical years. They are taught by interdisciplin ary faculty and placed at times in the calendar when students have no other competing coursework. In AY 2011-12, the following TIME courses are presented:

• Health Care Disparities. This course launches Year 1 and is used to introduce students to the city of Baltimore and the concepts of health disparities that occur at both the local and regional level, as well as the concepts of cultural competence. Students participate in seminars led by clinical faculty, faculty from the school of public health, community leaders, and patients. They have an opportunity to participate in a service learning activity with mentors from the second year class.

• Health Promotion and Disease Prevention Change. This course is presented prior to the winter break, and focuses on Obesity as a model for health promotion and disease prevention. In addition to learning basic nutritional information and knowledge of the burden of disease related to obesity, students explore behavioral change and are introduced to motivational counseling. They are asked to assess their own nutritional behaviors and participate in a personal behavior change during the week. Students will choose the area of concentration and meet for the first time in their Scholarly Concentrations course this week.

• Global Health. This course is directed by the Center for Global Health education. Students have the opportunity to participate in teleconferences with medical students and faculty from Uganda, Malaysia and Ethiopia, and develop an understanding of global burden of disease, social determinants of health, knowledge of other health delivery systems, and awareness of their own biases about global health.

• Pain Care Medicine. This course is delivered during a break in the GTS Nervous System section, and presents students with an introduction to the complex care of pain, including initial assessment of pain, cross-cultural issues, medicolegal issues, pharmacology of analgesia, chronic pain and disability and alternative and complementary medicine.

• Disaster Medicine. In this final week of the school year, students will participate in a disaster drill and pandemic simulation, explore the ethics of triage and review the impact of disaster response.

• Substance Abuse Care. The misuse of mind-altering substances adversely alters the lives of many patients, and can be seen as an enormous dilemma for public health and complication in the care of patients. In this brief course students will expand on the concepts of addiction and behavior encountered in the first year Brain, Mind, Behavior course. Students will learn to differentiate the varieties of addictive substances, patterns of their misuse, and factors that influence successful treatment of addiction. Special focus will be placed on the abuse of prescription drugs, and on the course of recovery and relapse.

• End of Life and Palliative Care. This course focuses on an overview of palliative care and core principles dealing with issues focused on palliation and end of life care. The specific content areas include defining palliative care, hospice, communication skills including breaking bad news/goal setting, spiritual and cultural issues around life threatening illnesses, grief and bereavement, self care, ethical and legal issues, didactics and small group sessions on family meetings, and symptom management. Students go to a hospice for one half day and are given the opportunity to practice giving/breaking bad news to a simulated patient.

• Patient Safety. The objectives of the Patient Safety course are 1) Students will acquire basic knowledge of pain neurobiology and pain interventions; 2) Students will gain awareness of the prevalence and multi-dimensional impact of pain; 3) Students will appreciate key challenges of providing pain care, e.g. assessment, impairment, abuse and addiction; and 4) Students will develop increased understanding of the emotional and psychological consequences of physical pain.

Scholarly Concentrations

Scholarly concentrations was designed to provide students an opportunity as early as possible in the curriculum to develop additional expertise in a particular area of interest, and guide students in applying a scholarly approach to an independent mentored project. Students begin by meeting in seminars in their particular area of interest during the intersessions, and subsequently identify a mentor and project timeline. The goal is completion of the project by the end of Year 2. The five areas of concentration from which students may choose are Basic Science, Clinical Research, History of Medicine, Medical Humanities, Bioethics and the Healing Arts, or Public Health and Community Service.

Second Year

Transitions to the Wards

In the third quarter, Year 2 students spend two afternoons per week in Transitions to the Wards, a course designed to prepare students for learning in the clinical clerkships that follow. The course uses a combination of small group discussion and team-based learning to explore clinical problem solving, direct observation of advanced physical diagnosis and presentation skills with college faculty, and proce-
dural and simulation exercise. Every student recertifies in Basic Life Support.

**Third Year**

**Translational Science Intersessions** The Translational Science Intersessions occur in the last week of each quarter, and are taken by students who have completed one of the eight-week core clerkship rotations in that quarter. Students will generally complete four Translational Science Intersessions during their clinical curriculum. These intersessions are meant to present more advanced understanding of state-of-the-art translational science research with students who have some clinical training. In general the format includes lecture, seminar-type discussions, journal clubs and student presentations with both basic science and clinical faculty. Students choose one small group topic within the general topic to focus the week. One afternoon in each of these weeks is devoted to a discussion of ethics, using a lecture, case presentation and small group presentation led by faculty from the Berman Institute of Bioethics. In the second afternoon session, students participating in the intersessions meet in small groups with their College Advisory Program to discuss critical incidents from the core clerkships.
# Schedules

(All hours are approximate)

## FIRST YEAR 2011-12 – 8/17/11-6/15/12

### August

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| **TIME Health Disip** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Foundations of Human Anatomy** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Scientific Foundations of Medicine** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Clinical Foundations of Medicine** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **TIME Prevention** | **Break** | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Genes to Society I** | **Immunology** | **Micro/ID** | **Dermatology** | | | | | | | | | | | | | | | | | | | | | | | | |
| **Longitudinal Clerkship** | **Scholarly Concentration** |

### January

| 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 |
| **TIME Prevention** | **Break** | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Genes to Society I** | **Immunology** | **Micro/ID** | **Dermatology** | | | | | | | | | | | | | | | | | | | | | | | | |
| **Longitudinal Clerkship** | **Scholarly Concentration** |

### March

| 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 |
| **GTS I Immun. Micro/ID Derm.** | **GTS I Heme/Onc** | **BMB** | **GTS II BMBNSS** | **LC** | **TIME Sub Abuse** | **TIME Pain** | **Genes to Society II** | **NSS** | **TIME Disaster** | **Summer Break** | **(9 weeks)** |
| **Break** | **LC** | **SC** | **Break** | **Longitudinal Clerkship** | **Scholarly Concentration** |

### June

| 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 |
| **Longitudinal Clerkship** | **Scholarly Concentration** | **TIME Pain Safety** | **Genes to Society IV** | **Repro. Musculoskel.** |

### Additional Responsibilities:

- CPR Training – one four hour session and a one hour simulated session

## SECOND YEAR 2011-12 – 8/22/11-5/25/12

### August

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| **Genes to Society III Pulm Renal Cardiac** | **Genes to Society IV GI/Liver Endocrine** | **TIME Pain Safety** | **Genes to Society IV Repro. Musculoskel.** |
| **Longitudinal Clerkship** | **Longitudinal Clerkship** | **Scholarly Concentration** | **Scholarly Concentration** |

### January

| 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 |
| **Genes to Society IV GI/Liver Endocrine** | **TIME Pain Safety** | **Genes to Society IV Repro. Musculoskel.** |
| **Genes to Society IV** | **Longitudinal Clerkship** | **Scholarly Concentration** | **Scholarly Concentration** |

### March

| 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 |
| **Transition to Wards** | **Break** | **CLINICAL BLOCK 1** | **CLINICAL BLOCK 2** | **CLIN. BLOCK 3** |
| **Break** | **Med, Peds, Surg, Women’s Health** | **Med, Peds, Women’s Health** | **AC/CDD/ICU** |
| **Neuro/Psych** | **AC/CDD/ICU** | **Neuro/Psych** | **AC/CDD/ICU** |
| **Elective, E-Med** | **Elective, E-Med** | **Elective, E-Med** | **Elective, E-Med** |
| **Break** | **Break** | **Break** | **Break** |

### June

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| **CLINICAL BLOCK 1** | **CLINICAL BLOCK 2** | **CLIN. BLOCK 3** |
| **Break** | **Med, Peds, Surg, Women’s Health** | **Med, Peds, Women’s Health** |
| **Neuro/Psych** | **AC/CDD/ICU** | **Neuro/Psych** |
| **Elective, E-Med** | **AC/CDD/ICU** | **Elective, E-Med** |
| **Break** | **Break** | **Break** |

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* = PRECEDE

PRECEDE = Preclerkship Education Exercises

BMB = Brain, Mind & Behavior

NSS = Nervous System & Special Senses

GTS = Genes to Society

LC = Longitudinal Clerkship

SC = Scholarly Concentration

TIME = Topics in Interdisciplinary Medicine

MPSWH = Med, Peds, Surg, Women’s Health

NP = Neuro / Psych

EEM = Elective, E-Med

TRIPLE = Transition to Internship and Residency and Preparation for Life

AC/CDD/ICU = Advanced Clerkship, Chronic Disease and Disability, and Critical Care
## THIRD YEAR 2011-12 – 8/22/11-5/25/12

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### FOURTH YEAR 2011-12 – 8/22/11-5/18/12

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### March

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Subroto B. Chatterjee, Ph.D.
Professor of Pediatrics [1996; 1975]

Vinay Chaudhry, M.B.B.S.
Professor of Neurology [2004; 1989]

Arthur B. Chausmer, M.D., Ph.D.
Adjunct Professor of Medicine [2007]

Lieping Chen, M.D., Ph.D.
Adjunct Professor of Oncology [2011; 2004], Adjunct Professor of Dermatology [2011; 2004]

Tina Lee Cheng, M.D., M.P.H.
Professor of Pediatrics [2008; 2002]

Bart Chernow, M.D.
Adjunct Professor of Medicine [1999; 1990]

Michael A. Choti, M.D.
Jacob C. Handelsman Professor of Abdominal Surgery [2006; 1992], Professor of Oncology [2006; 1995], Professor of Radiology [2009]

Horacio Cingolani, M.D.
Visiting Professor of Medicine [1990; 1988]

Curt I. Civin, M.D.
Adjunct Professor of Oncology [2009; 1979], Adjunct Professor of Pediatrics [2009; 1979]
Douglas Paul Clark, M.D.
Professor of Pathology [2008; 1994] (on leave of absence), Professor of Oncology [2008; 2001] (on leave of absence)

Thomas Landes Clemens, Ph.D.
Professor of Orthopaedic Surgery [2009]

Janice E. Clements, Ph.D.
Mary Wallace Stanton Professor for Faculty Affairs [2004], University Distinguished Service Professor of Molecular and Comparative Pathobiology [1990; 1988], Joint Appointment in Molecular Biology and Genetics [1984], Professor of Neurology [1991; 1978], Professor of Pathology [1998], Vice Dean for Faculty [2000], Director of the Department of Molecular and Comparative Pathobiology [2006; 2002]

Donald S. Coffey, Ph.D.
Catherine Iola and J. Smith Michael Distinguished Service Professor of Urology [1975], Professor of Oncology [1974; 1973], Professor of Pathology [1998], Professor of Pharmacology and Molecular Sciences [1974; 1965]

Bernard A. Cohen, M.D.
Professor of Dermatology [2005; 1993], Professor of Pediatrics [2005; 1991]

Harris L. Cohen, M.D.
Visiting Professor of Radiology [2000]

Philip Arthur Cole, M.D., Ph.D.
E.K. Marshall and Thomas H. Maren Professor of Pharmacology [1999], Professor of Oncology [2000], Director of the Department of Pharmacology and Molecular Sciences [1999]

C. Norman Coleman, M.D.
Visiting Professor of Radiation Oncology and Molecular Radiation Sciences [2000; 2003], Visiting Professor of Oncology [2000]

Paul M. Colombani, M.D.
Robert Garrett Professor of Pediatric Surgery [1994; 1983], Professor of Oncology [1994; 1986], Professor of Pediatrics [1995; 1984]

Carolyn Corlies Compton, M.D., Ph.D.
Adjunct Professor of Pathology [2005]

Edward Jackson Cone, Ph.D.
Adjunct Professor of Psychiatry [2005; 1998]

Charles Edward Connor, Jr., Ph.D.
Professor of Neuroscience [2009; 1996]

John Victor Conte, Jr., M.D.
Professor of Cardiac Surgery [2008; 1998]

David S. Cooper, M.D.
Professor of Medicine [1996; 1985]

Lisa A. Cooper, M.D., M.P.H.
James F. Fries Professor of Medicine [2007; 1994]

Jeffry L. Corden, Ph.D.
Professor of Molecular Biology and Genetics [1998; 1982]

Brendan P. Cormack, Ph.D.
Professor of Molecular Biology and Genetics [2011; 1998]

David R. Cornblath, M.D.
Professor of Neurology [1995; 1982], Professor of Neurological Surgery [2007]

Andrew John Cosgarea, M.D.
Professor of Orthopaedic Surgery [2008; 1998]

Paul T. Costa, Jr., Ph.D.
Professor of Behavioral Biology in the Department of Psychiatry [1999; 1979]

Robert J. Cotter, Ph.D.
Professor of Pharmacology and Molecular Sciences [1992; 1978], Professor of Biophysics and Biophysical Chemistry [1994]

Nancy L. Craig, Ph.D.
Professor of Molecular Biology and Genetics [1993; 1991], Investigator of the Howard Hughes Medical Institute

Susan W. Craig, Ph.D.
Professor of Biological Chemistry [1989; 1975], Professor of Pathology [1994]

Charles W. Cummings, M.D.
Distinguished Service Professor of Otolaryngology-Head and Neck Surgery [1990], Professor of Oncology [1993], Director of the Department of Otolaryngology-Head and Neck Surgery [2003; 1990], Interim Director of the Department of Orthopedic Surgery [2011]

Garry R. Cutting, M.D.
Aetna U.S. Healthcare Professor of Medical Genetics in the Department of Pediatrics [1998; 1989], Professor of Medicine [1998; 1990]

Chi Van Dang, M.D., Ph.D.
Professor of Medicine [1997; 1987], Professor of Cell Biology [2000], Joint Appointment in Molecular Biology and Genetics [1995], Professor of Oncology [1997], Professor of Pathology [1997; 1995]

Robert F. Dannals, Ph.D.
Professor of Radiology [1996; 1982]

Nancy E. Davidson, M.D.
Adjunct Professor of Oncology [2009; 1986]

Ted M. Dawson, M.D., Ph.D.
Leonard and Madlyn Abramson Professor of Neurodegenerative Diseases in the Department of Neurology [2000; 1992], Professor of Neuroscience [2000; 1992]

Valina L. Dawson, Ph.D.
Professor of Neurology [2001; 1994], Professor of Neuroscience [2001; 1994], Professor of Physiology [2001; 1994]

Catherine DeAngelis, M.D., M.P.H.
Professor of Pediatrics [1986; 1978] (on Leave of Absence)

Charles Coleman Della Santina, M.D., Ph.D.
Professor of Otolaryngology-Head and Neck Surgery [2002; 2001], Professor of Biomedical Engineering [2011; 2002]

A. Lee Dellon, M.D.
Professor of Plastic and Reconstructive Surgery [1994; 1978], Professor of Neurological Surgery [1994; 1984]

Angelo Michael DeMarzo, M.D., Ph.D.
Professor of Oncology [2008; 1998], Professor of Pathology [2008; 2000], Professor of Urology [2008; 1999]
Martha Bridge Denckla, M.D.
Professor of Neurology [1986; 1982], Professor of Pediatrics [1986], Joint Appointment in Psychiatry [1994]

Samuel Ray Denmeade, M.D.
Professor of Oncology [2010; 1998], Professor of Pharmacology and Molecular Sciences [2010; 2005], Professor of Urology [2010; 2008]

J. Raymond Depaulo, Jr., M.D.
Henry Phipps Professor of Psychiatry [1993; 1977], Director of the Department of Psychiatry and Behavioral Sciences [2002]

Stephen Vincent Desiderio, M.D., Ph.D.
Professor of Molecular Biology and Genetics [1995; 1984], Director of the Institute for Basic Biomedical Sciences [2003]

Barbara Detrick, Ph.D.
Professor of Pathology [2010; 1999]

Peter N. Devreotes, Ph.D.
Isaac Morris Hay and Lucille Elizabeth Hay Professor of Embryology in the Department of Cell Biology [2000], Professor of Biological Chemistry [1987; 1979], Director of the Department of Cell Biology [2000]

Theodore L. DeWeese, M.D.
Professor of Radiation Oncology and Molecular Radiation Sciences [2003; 1995], Professor of Urology [2003; 1995], Director of the Department of Radiation Oncology and Molecular Radiation Sciences [2003]

Harry C. Dietz, M.D.
Victor A. McKusick Professor of Medicine and Genetics in the Department of Pediatrics [1999; 1992], Associate Professor of Medicine [1994; 1992], Joint Appointment in Molecular Biology and Genetics [1994], Assistant Professor of Neurological Surgery [1994], Investigator of the Howard Hughes Medical Institute

Adrian S. Dobs, M.D.
Professor of Medicine [2000; 1984], Professor of Oncology [2002]

Ross C. Donehower, M.D.
Virginia and Daniel K. Ludwig Professor of Clinical Investigation of Cancer in the Department of Oncology [1997; 1980], Professor of Medicine [1997; 1980]

Mark Donowitz, M.D.
George LeBoff Professor for Research in Digestive Diseases in the Department of Medicine [1987], Professor of Physiology [2004; 1988]

Todd Dorman, M.D.
Professor of Anesthesiology and Critical Care Medicine [2007; 1991], Joint Appointment in Medicine [1999], Associate Professor of Surgery [2000; 1994], Associate Dean for Continuing Medical Education [2004]

George J. Dover, M.D.
Given Foundation Professor of Pediatrics [1988; 1977], Joint Appointment in Medicine [1980; 1977], Professor of Oncology [1991], Director of the Department of Pediatrics [1996]

Daniel B. Drachman, M.D.
W.W. Smith Charitable Trust Professor of Immunology in the Department of Neurology [1974; 1969], Professor of Neuroscience [1983]

Anne L.K. Duggan, Sc.D.
Professor of Pediatrics [2005; 1986]

J. Stephen Dumler, M.D.
Professor of Pathology [2003; 1993]

Samuel C. Durso, M.D.
Mason F. Lord Professor of Geriatric Medicine [2010; 1995]

Christopher J. Earley, M.B.B.Ch., Ph.D.
Professor of Neurology [2008; 1992]

Frederic E. Eckhauser, M.D.
Professor of Surgery [2001]

William A. Edelstein, Ph.D.
Visiting Professor of Radiology [2007]

Deepak Paul Edward, M.B.B.S.
Visiting Professor of Ophthalmology [2011]

Gershon Efron, M.B.B.CH.
Professor of Surgery [1997; 1977]

David W. Eisele, M.D.
Andelot Professor of Otolaryngology [2012], Professor of Oncology [2012], Professor of Anesthesiology [2012], Director of the Department of Otolaryngology-Head and Neck Surgery [2012] (from 03/01/2012)

Mario A. Eisenberger, M.D.
R. Dale Hughes Professor of Oncology [1998]; 1993, Professor of Urology [1998; 1993]

Ana Belen Elgoyhen, Ph.D.
Adjunct Professor of Otolaryngology-Head and Neck Surgery [2009]

Jennifer H. Elisseeff, Ph.D.
Visiting Professor of Ophthalmology [2010], Joint Appointment in Orthopaedic Surgery [2003]

Jonathan Mark Ellen, M.D.
Professor of Pediatrics [2006; 1999]

Jerrold Jay Ellner, M.D.
Visiting Professor of Medicine [2008]

Bernard T. Engel, Ph.D.
Professor of Behavioral Biology in the Department of Psychiatry [1982; 1969]

Jonathan I. Epstein, M.D.
Rose-Lee and Keith Reinhard Professor of Urologic Pathology [1994; 1984], Professor of Oncology [1995], Professor of Urology [1994; 1987]

Joshua M. Epstein, Ph.D.
Professor of Emergency Medicine [2010]

Yener S. Erozan, M.D.
Professor of Pathology [1995; 1968]

James R. Eshleman, M.D., Ph.D.
Professor of Pathology [2010; 1997], Professor of Oncology [2010; 1998]

Susan H. Shakin Eshleman, M.D., Ph.D.
Professor of Pathology [2007; 1997]
David S. Ettinger, M.D.
Alex Grass Professor of Oncology [1992; 1975],
Professor of Gynecology and Obstetrics [2002; 1983],
Professor of Medicine [1993; 1975],
Professor of Otolaryngology-Head and Neck Surgery [2001; 1986],
Professor of Radiation Oncology and Molecular Radiation Sciences [2003]

Neal S. Fedarko, Ph.D.
Professor of Medicine [2008; 1992]

Elizabeth Fee, Ph.D.
Professor of History of Medicine [2005; 1988]

David S. Feigin, M.D.
Visiting Professor of Radiology [2005]

Andrew Paul Feinberg, M.D., M.P.H.
King Fahd Professor of Molecular Medicine in the Department of Medicine [1994],
Joint Appointment in Molecular Biology and Genetics [1994],
Professor of Oncology [1994],
Joint Appointment in Psychiatry [2009]

Luigi Ferrucci, M.D., Ph.D.
Adjunct Professor of Medicine [2007]

Daniel Finkelstein, M.D.
Professor of Ophthalmology [1993; 1974]

Thomas E. Finucane, M.D.
Professor of Medicine [2001; 1987]

Elliot K. Fishman, M.D., M.P.H.
Professor of Radiology [1991; 1980],
Professor of Oncology [1993],
Professor of Surgery [2010]

Mary E. Fissell, Ph.D.
Professor of History of Medicine [2005; 1992]

Barbara Fivush, M.D.
Professor of Pediatrics [2001],
Associate Dean for Women in Science and Medicine [2011]

Nicholas A. Flavahan, Ph.D.
Edward D. Miller Professor of Anesthesiology Research [2006]

Lee Alan Fleisher, M.D.
Adjunct Professor of Health Sciences Informatics [2004; 1996]

Charles Williams Flexner, M.D.
Professor of Medicine [2005; 1989],
Professor of Pharmacology and Molecular Sciences [2005; 1989]

John A. Flynn, M.D.
D. William Schlott, M.D.
Professor of Clinical Medicine [2008; 1990],
Joint Appointment in Psychiatry [1997]

Marshall F. Folsom, M.D.
Professor of Psychiatry [2004]

Steven Ross Gambert, M.D.
Professor of Medicine [1998]

Estelle B. Gauda, M.D.
Professor of Pediatrics [2008; 1988]

Charlotte A. Gaydos, Dr.P.H., M.P.H.
Professor of Medicine [2008; 1993],
Joint Appointment in Emergency Medicine [2007]

Patricia J. Gearhart, Ph.D.
Adjunct Professor of Surgery [2009; 1995],
Adjunct Associate Professor of Pathology [2009; 2008],
Adjunct Associate Professor of Surgery [2009; 1997]
Gail Geller, Sc.D.
Professor of Medicine in Genetic Medicine [2008; 2005], Professor of Pediatrics [2008; 1992]

Rebecca Z. German, Ph.D.
Professor of Physical Medicine and Rehabilitation [2005], Professor of Functional Anatomy and Evolution [2005]

Gregory G. Germino, M.D.
Adjunct Professor of Medicine [2009; 1993], Joint Appointment in Molecular Biology and Genetics [2001]

Winold R. Gerritsen, M.D., Ph.D.
Adjunct Professor of Oncology [2009]

Gary Gerstenblith, J.D., M.D.
Professor of Medicine [1989; 1976], Professor of Pharmacology and Molecular Sciences [2005]

Francis M. Giardiello, M.D.
John G. Rangos Sr. Professor of Adult Medicine [2001; 1986], Professor of Oncology [2001; 1986], Professor of Pathology [2001]

D. Wade Gibson, Ph.D.
Professor of Pharmacology and Molecular Sciences [1989; 1976], Professor of Oncology [2000]

Golda S. Ginsburg, Ph.D.
Professor of Psychiatry [2011; 1999]

David D. Ginty, Ph.D.
Professor of Neuroscience [2004; 1995], Investigator of the Howard Hughes Medical Institute

Albert Gjedde, D.Sc., M.D.
Adjunct Professor of Radiology [2006]

Michael G. Goggins, M.B.B.CH.
Professor of Pathology [2008; 1999], Professor of Medicine [2008; 2000], Professor of Oncology [2008; 1998]

Ziya L. Gokaslan, M.D.
Donlin M. Long Professor of Neurosurgery [2002], Professor of Oncology [2002], Professor of Orthopaedic Surgery [2002]

Morton F. Goldberg, M.D.
Margaret C. Mosher Professor of Ophthalmology [1999; 1985]

William B. Greenough, III, M.D.
Professor of Medicine [1984; 1967]

Carol Widney Greider, Ph.D.
Professor of Molecular Biology and Genetics [2007; 1998], Investigator of the Howard Hughes Medical Institute

Constance A. Griffin, M.D.
Professor of Pathology [2008; 1994], Associate Professor of Medicine [1992; 1980], Professor of Oncology [2008; 1981]

Lawrence S. Griffith, M.D.
Professor of Medicine [1988; 1971], Joint Appointment in Radiology [1980; 1974]

Roland R. Griffiths, Ph.D.
Professor of Behavioral Biology in the Department of Psychiatry [1987; 1972], Professor of Neuroscience [1987; 1983]

Jacques H. E. Grosset, M.D.
Visiting Professor of Medicine [2002]

Stuart A. Grossman, M.D.
Professor of Oncology [1998; 1981], Professor of Medicine [1998; 1981], Professor of Neurological Surgery [1998; 1985]

William B. Guggino, Ph.D.
Professor of Physiology [1993; 1982], Professor of Pediatrics [1993; 1988], Professor of the Department of Physiology [2006]

David L. Guyton, M.D.
Zanvyl Krieger Professor of Pediatric Ophthalmology [1989; 1977]

Henry R. Halperin, M.D.
Professor of Medicine [2001; 1984], Professor of Biomedical Engineering [1990; 2001], Professor of Radiology [2001]

Robert G. Hamilton, Ph.D.
Professor of Pediatrics [1993; 1982], Professor of the Department of Pediatrics [2006; 1992]

Ada Hamosh, M.D., M.P.H.
Dr. Frank V. Sutland Professor of Pediatric Genetics in the Department of Pediatrics [2006; 1992]
Ulrike M. Hamper, M.D.
Professor of Radiology [2001; 1982], Professor of Pathology [2005], Professor of Urology [2001; 1997]

James Tahara Handa, M.D.

Robert B. Welch M.D. Professor of Ophthalmology [2008; 2001]

Victoria L. Handa, M.D.
Professor of Gynecology and Obstetrics [2010; 2001]

Justin Scot Hanes, Ph.D.
Lewis J. Ort Professor of Ophthalmology [2009], Professor of Biomedical Engineering [2009; 1998], Professor of Neurological Surgery [2009], Professor of Oncology [1998; 2005]

Daniel F. Hanley, M.D.
Jeffrey and Harriet Legum Professor of Acute Neurological Medicine in the Department of Neurology [1996; 1983], Professor of Anesthesiology and Critical Care Medicine [1996; 1983], Professor of Neurological Surgery [1996; 1984]

Joshua Michael Hare, M.D.
Adjunct Professor of Medicine [2007; 1995], Adjunct Professor of Biomedical Engineering [2007; 2003]

Merel H. Harmel, M.D.
Visiting Professor of Anesthesiology and Critical Care Medicine [1987; 1985]

John W. Harmon, M.D.
Professor of Surgery [1996]

James C. Harris, Jr., M.D.

Gerald Warren Hart, Ph.D.
DeLamar Professor of Biological Chemistry [1997], Director of the Department of Biological Chemistry [1997]

Paul M. Hassoun, M.D.
Professor of Medicine [2007; 2002]

Jennifer A. Haythornthwaite, Ph.D.
Professor of Psychiatry [2005; 1995], Professor of Medicine [2010]

Gary S. Hayward, Ph.D.
Professor of Oncology [1991], Professor of Pathology [1997], Professor of Pharmacology and Molecular Sciences [1988; 1976]

S. Diane Hayward, Ph.D.
Professor of Oncology [1995; 1991], Associate Professor of Neurology [1989; 1988], Professor of Pharmacology and Molecular Sciences [1995; 1976]

David Bruce Hellmann, M.D.
Aliki Perroti Professor of Medicine [1996; 1970], Vice Dean for the Bayview Campus [2005]

Lee J. Helman, M.D.
Professor of Oncology [1999], Professor of Pediatrics [1999]

Craig Walter Hendrix, M.D.
Professor of Medicine [2009; 1994], Professor of Pharmacology and Molecular Sciences [2009; 1999]

Stewart H.C. Hendry, Ph.D.
Professor of Neuroscience [1999; 1978]

Jack E. Henningfield, Ph.D.
Adjunct Professor of Behavioral Biology in the Department of Psychiatry [2002; 1992]

James Gordon Herman, M.D.
Professor of Oncology [2009; 1996]

Allan D. Hess, Ph.D.
Professor of Oncology [1993; 1978], Professor of Pathology [1993]

Gary S. Hill, M.D.
Adjunct Professor of Pathology [2004; 1978]

Argye Elizabeth Hillis, M.D.
Professor of Neurology [2006; 1999], Professor of Physical Medicine and Rehabilitation [2006; 2004]

Charles W. Hogue, Jr., M.D.
Professor of Anesthesiology and Critical Care Medicine [2010; 2005]

Ahmet Hoke, M.D., Ph.D.
Professor of Neurology [2009; 1999], Professor of Neuroscience [2009; 2002]

H. Logan Holtgrewe, M.D.
Professor of Urology [2001; 1988]

Karen Margaret Horton, M.D.
Professor of Radiology [2008; 1997]

Ralph Harvey Hruban, M.D.
Professor of Pathology [1999; 1990], Professor of Oncology [1999; 1995]

Steven Shih-ting Hsiao, Ph.D.
Professor of Neuroscience [2008; 1992], Professor of Biomedical Engineering [2008; 1999]

Shau-Ku Huang, Ph.D.
Professor of Medicine [1999; 1990]

Ann L. Cox Hubbard, Ph.D.
Professor of Cell Biology [1986; 1980], Joint Appointment in Medicine [1987], Professor of Physiology [1993]

Richard L. Huganir, Ph.D.
Professor of Neuroscience [1993; 1988], Joint Appointment in Biological Chemistry [1989], Director of the Department of Neuroscience [2006], Investigator of the Howard Hughes Medical Institute

Thierry A.G.M. Huisman, M.D.
Professor of Radiology [2007]

David S. Hungerford, M.D.
David Hungerford Professor of Orthopaedic Surgery [1986; 1972]

Steven R. Hursh, Ph.D.
Adjunct Professor of Behavioral Biology in the Department of Psychiatry [1997]

Nicholas Taylor Iliff, M.D.
Charles E. Iliff, III M.D. Professor of Ophthalmology [2003; 1978], Professor of Plastic and Reconstructive Surgery [2003; 1984]
John T. Isaacs, Ph.D.
Professor of Oncology [1993; 1980], Professor of Urology [1993; 1980]

William B. Isaacs, Ph.D.
William Thomas Gerrard, Mario Anthony Duhon and Jennifer and John Chalsty Professor of Urology [1998; 1988], Professor of Oncology [1998; 1992]

Ethylin Wang Jabs, M.D.
Adjunct Professor of Pediatrics [2007; 1984],
Adjunct Professor of Medicine [2007; 1990],
Adjunct Professor of Plastic and Reconstructive Surgery [2007; 1984]

David L. Jackson, M.D., Ph.D.
Adjunct Professor of Medicine [1994]

Jay Brooks Jackson, M.D.
Baxley Professor of Pathology [1996], Director of the Department of Pathology [2001]

Elizabeth M. Jaffee, M.D.
Adjunct Professor of Pediatrics [2007; 1984],
Adjunct Professor of Medicine [2007; 1990],
Adjunct Professor of Plastic and Reconstructive Surgery [2007; 1984]

David L. Jackson, M.D., Ph.D.
Adjunct Professor of Medicine [1994]

Jonathan C. Javitt, M.D., M.P.H.
Adjunct Professor of Ophthalmology [1999; 1988]

Robert E. Jensen, Ph.D.
Professor of Cell Biology [2004; 1988], Professor of Biological Chemistry [2010]

Roger Anthony Johns, M.D.
Professor of Anesthesiology and Critical Care Medicine [1999], Professor of Medicine [2006],
Director of the Department of Anesthesiology and Critical Care Medicine [2003; 1999]

Richard T. Johnson, M.D.
University Distinguished Service Professor of Neurology [1969], Professor of Neuroscience [1983], Director of the Department of Neurology [1997; 1988]

Rolley E. Johnson, D.Pharm.
Adjunct Professor of Psychiatry [1992; 1990]

Michael V. Johnston, M.D.
Professor of Neurology [1988], Professor of Pediatrics [1988], Professor of Physical Medicine and Rehabilitation [2005]

Bronwyn Jones, M.D.
Professor of Radiology [1991; 1981]

Hendree Evelyn Jones, Ph.D.
Adjunct Professor of Behavioral Biology in the Department of Psychiatry [2010; 1998]

Richard J. Jones, M.D.
Professor of Oncology [1999; 1987], Professor of Medicine [2005]

Anthony N. Kalloo, M.B.B.S.
Moses and Helen Golden Paulson Professor of Medicine [2006; 1988]

Sewon Kang, M.D.
Noxell Professor of Dermatology [2008], Director of the Department of Dermatology [2008]

Peter W. Kaplan, M.B.B.S.
Professor of Neurology [2003; 1987]

Judith E. Karp, M.D.
Professor of Oncology [2002; 1985], Professor of Medicine [2002; 1975]

Edward Kevin Kasper, M.D.
E. Cowles Andrus Professor of Cardiology in the Department of Medicine [2007; 1992]

David A. Kass, M.D.
Abraham and Virginia Weiss Professor of Cardiology in the Department of Medicine [1998; 1986], Professor of Biomedical Engineering [1998; 1982]

Walter Erwin Kaufmann, M.D., Ph.D.
Professor of Pathology [2007; 1994], Professor of Neurology [2007; 1992], Professor of Pediatrics [2007; 1996], Professor of Psychiatry [2007; 1996], Professor of Radiology [2007; 2000]

Haig H. Kazazian, Jr., M.D.
Professor of Pediatrics in Genetic Medicine [2010], Professor of Molecular Biology and Genetics [2010]

Gabor D. Kelen, M.D.
Professor of Emergency Medicine [1993; 1984], Director of the Department of Emergency Medicine [1993]

Richard Ian Kelley, M.D., Ph.D.
Professor of Pediatrics [2003; 1988]

Thomas J. Kelly, Jr., M.D., Ph.D.
Professor of Molecular Biology and Genetics [1980; 1972] (on leave of absence), Director of the Department of Molecular Biology and Genetics [2002; 1982]

David E. Kern, M.D., M.P.H.
Professor of Medicine [2007; 2004]

Scott E. Kern, M.D.
Everett and Marjorie Kowler Professor of Pancreas Cancer Research in the Department of Oncology [2002; 1992], Professor of Pathology [2002; 1990]

Zaven S. Khachaturian, Ph.D.
Adjunct Professor of Psychiatry [2005]

Thomas S. Kickler, M.D.
Professor of Pathology [1997; 1980], Professor of Medicine [1997; 1980], Professor of Oncology [1997; 1995]

Kwang Sik Kim, M.D.
Professor of Pediatrics [2000]

Landon Stuart King, M.D.
David Marine Professor of Medicine [2011; 1997], Professor of Biological Chemistry [2011; 1997], Vice Dean for Research [2011]

Kenneth W. Kinzler, Ph.D.
Professor of Oncology [1999; 1990]
Michael J. Klag, M.D., M.P.H.
Professor of Medicine [1998; 1987], Dean of the Bloomberg School of Public Health [2005]

Harvey Gordon Klein, M.D.
Adjunct Professor of Pathology [2005; 1999],
Adjunct Professor of Medicine [2005; 1975]

Wayne M. Koch, M.D.
Professor of Otolaryngology-Head and Neck Surgery [2000; 1987], Professor of Oncology [2001; 1993]

Raymond C. Koehler, Ph.D.
Professor of Anesthesiology and Critical Care Medicine [1996; 1980]

Vassilis E. Koliatsos, M.D.
Professor of Pathology [2009; 1989], Professor of Neurology [2009; 1987], Associate Professor of Psychiatry [1997]

Alex Leo Kolodkin, Ph.D.
Professor of Neuroscience [2004; 1994], Joint Appointment in Molecular Biology and Genetics [1996], Investigator of the Howard Hughes Medical Institute

Mayuresh V. Kothare, Ph.D.
Visiting Professor of Biomedical Engineering [2008]

John W. Krakauer, M.D.
Professor of Neurology [2010], Professor of Neuroscience [2011]

Gregory Lewis Krauss, M.D.
Professor of Neurology [2009; 1991]

Michael A. Kraut, M.D., Ph.D.
Professor of Radiology [2011; 1991], Associate Professor of Neurological Surgery [2002], Professor of Oncology [2011; 2005]

Abraham Kupfer, Ph.D.
Professor of Cell Biology [2004]

Robert J. Kurman, M.D.
Richard W. Telinde Distinguished Professor of Gynecologic Pathology in the Department of Gynecology and Obstetrics [1989], Professor of Oncology [2003], Professor of Pathology [1989]

Hideo Kusuoka, M.D., Ph.D.
Visiting Professor of Medicine [1999; 1985]

Peter O. Kwiterovich, Jr., M.D.
Professor of Pediatrics [1984; 1972], Professor of Medicine [1984; 1975]

Paul W. Ladenson, M.D.
John Eager Howard Professor of Endocrinology and Metabolism and University Distinguished Professor of Medicine [1996; 1983], Professor of Oncology [1996], Professor of Pathology [1996; 1994], Professor of Radiology [2003]

Shenghan Lai, M.D., M.P.H.
Professor of Pathology [2005; 2004], Joint Appointment in Medicine [2003], Professor of Radiology [2005]

Mariikki K. Laiho, M.D., Ph.D.
Professor of Radiation Oncology and Molecular Radiation Sciences [2007], Professor of Oncology [2007]

Edward G. Lakatta, M.D.
Professor of Medicine [1987; 1973]

Rebecca Landa, Ph.D.
Professor of Psychiatry [2011; 1986]

Andrew Peter Lane, M.D.
Professor of Otolaryngology-Head and Neck Surgery [2011; 1999]

Erich K. Lang, M.D.
Visiting Professor of Radiology [2006]

Richard A. Lange, M.D.
Professor of Medicine [2004; 2003]

John J. LaTerra, M.D., Ph.D.
Professor of Neurology [2002; 1988], Professor of Neuroscience [2002; 1992], Professor of Oncology [2002; 1992]

Beth L. Laube, Ph.D.
Professor of Pediatrics [2008; 1997], Joint Appointment in Medicine [1990; 1986], Joint Appointment in Radiology [1990; 1986]

Edward Earle Lawson, M.D.
Josephine S. Sutland Professor of Newborn Medicine in the Department of Pediatrics [1999]

Gerald S. Lazarus, M.D.
Professor of Dermatology [2002], Professor of Medicine [2008]

Steven D. Leach, M.D.
Paul K. Neumann Professor of Pancreatic Cancer in the Department of Surgery [2003; 2000], Professor of Cell Biology [2005], Professor of Oncology [2003; 2000]

Daniel J. Leahy, M.D., Ph.D.
Professor of Biophysics and Biophysical Chemistry [2004; 1993], Professor of Oncology [2005], Professor of Pharmacology and Molecular Sciences [2004; 2011]

Howard M. Lederman, M.D., Ph.D.
Professor of Pediatrics [2001; 1983], Joint Appointment in Medicine [2000]

Se-Jin Lee, M.D., Ph.D.
Professor of Molecular Biology and Genetics [2001; 1991]

Wei-Ping Andrew Lee, M.D.
Milton T. Edgerton Professor of Plastic Surgery [2010], Professor of Orthopaedic Surgery [2011] (from 07/28/2011), Director of the Department of Plastic Surgery [2010]

Bruce Allen Leff, M.D.
Professor of Medicine [2010; 1994]

Mary Sue Leffell, Ph.D.
Professor of Medicine [2001; 1989]

Marianne J. Legato, M.D.
Adjunct Professor of Medicine [2006]

Frederick A. Lenz, M.D.
A. Earl Walker Professor of Functional Neurosurgery [1998; 1988], Professor of Neuroscience [2010; 2007]

Ronald P. Lesser, M.D.
Professor of Neurology [1993; 1986], Professor of Neurological Surgery [1994; 1987]
David M. Levine, M.D.  
Samsung Professor of Medicine [1991; 1976]  
Michael A. Levine, M.D.  
Visiting Professor of Pediatrics [2003; 1998]  
Hyam Isaac Levitsky, M.D.  
Professor of Oncology [2002; 1991], Professor of Medicine [2002; 2000], Professor of Urology [2002; 2001]  
Jonathan S. Lewin, M.D.  
Martin W. Donner Professor of Radiology [2004], Professor of Biomedical Engineering [2006], Professor of Neurological Surgery [2005], Professor of Oncology [2004], Director of the Department of Radiology and Radiological Science [2004]  
Min Li, Ph.D.  
Professor of Neuroscience [2004; 1994], Professor of Physiology [2004; 1994]  
Tsanyang Jake Liang, M.D.  
Adjunct Professor of Medicine [2004]  
Joao A.C. Lima, M.D.  
Professor of Medicine [2007; 1992], Associate Professor of Radiology [1998; 1996]  
David J. Linden, Ph.D.  
Professor of Neuroscience [2001; 1992]  
Pamela A. Lipsett, M.D.  
Professor of Surgery [2003; 1989], Assistant Professor of Anesthesiology and Critical Care Medicine [1995]  
Jun Liu, Ph.D.  
Professor of Pharmacology and Molecular Sciences [2001], Professor of Oncology [2005]  
Jon R. Lorsch, Ph.D.  
Professor of Biophysics and Biophysical Chemistry [2009; 1999]  
Gerald M. Loughlin, M.D.  
Visiting Professor of Pediatrics [2002; 1984]  
Charles J. Lowenstein, M.D.  
Adjunct Professor of Medicine [2009; 1973]  
Svetlana Lutsenko, Ph.D.  
Professor of Physiology [2009]  
Gerard A. Lutty, Ph.D.  
Constantine G. Lyketsos, M.D.  
Elizabeth Plank Althouse Professor of Alzheimer’s Research in Psychiatry and Behavioral Sciences [2000; 1993]  
Susan M. MacDonald, M.D.  
Professor of Medicine [2004; 1984]  
Donald Welton MacGlashan, Jr., M.D., Ph.D.  
Professor of Medicine [1996; 1983]  
Carolyn E. Machamer, Ph.D.  
Professor of Cell Biology [2004; 1988]  
Anirban Maity, M.B.B.S.  
Professor of Pathology [2010; 2001], Professor of Oncology [2010; 2003]  
Peter C. Maloney, Ph.D.  
Professor of Physiology [1988; 1976], Associate Dean for Graduate Student Affairs [2001]  
Paul N. Manson, M.D.  
Professor of Plastic and Reconstructive Surgery [1987; 1978]  
Eduardo Marban, M.D., Ph.D.  
Professor of Medicine [2007; 1985]  
Russell Louis Margolis, M.D.  
Professor of Psychiatry [2005; 1992], Professor of Neurology [2005; 2003]  
Kieren Anne Marr, M.D.  
Professor of Medicine [2008], Professor of Oncology [2009]  
Jackie L. Martin, M.D.  
Professor of Anesthesiology and Critical Care Medicine [2005; 1988]  
Lee J. Martin, Ph.D.  
Professor of Pathology [2007; 1989], Professor of Neuroscience [2007; 1993]  
Robert W. Massof, Ph.D.  
Professor of Ophthalmology [1991; 1976]  
Mark P. Mattson, Ph.D.  
Adjunct Professor of Neuroscience [2010; 2000]  
W. Lowell Maughan, M.D.  
Professor of Medicine [1995; 1978], Professor of Biomedical Engineering [1997; 1989]  
Bradford J. May, Ph.D.  
Professor of Otolaryngology-Head and Neck Surgery [2003; 1990]  
Michele M. Mazzocco, Ph.D.  
Professor of Psychiatry [2008; 1993]  
Justin C. McArthur, M.B.B.S., M.P.H.  
Professor of Neurology [1996; 1985], Professor of Medicine [2009], Professor of Pathology [2005], Director of the Department of Neurology [2008]  
Una Deirdre McCann, M.D.  
Professor of Psychiatry [2008; 1999], Professor of Neurology [2010]  
Edward F. McCarthy, Jr., M.D.  
Professor of Pathology [2000; 1977], Professor of Orthopaedic Surgery [2000; 1989]  
Mary E. McCaul, Ph.D.  
Professor of Behavioral Biology in the Department of Psychiatry [2001; 1983], Associate Professor of Medicine [1985]  
Peter John McDonnell, III, M.D.  
William Holland Wilmer Professor of Ophthalmology [2003], Director of the Department of Ophthalmology [2003]  
Edward G. McFarland, M.D.  
Wayne H. Lewis Professor of Orthopaedics and Shoulder Surgery [2005; 1992]  
Paul R. McHugh, M.D.  
University Distinguished Service Professor of Psychiatry [1975], Director of the Department of Psychiatry and Behavioral Sciences [2001; 1975]  
Guy Mead McKhann, M.D.  
Professor of Neurology [1969], Professor of Neuroscience [1988], Director of the Department of Neurology [1988; 1969]
Julia A. McMillan, M.D.
Professor of Pediatrics [2001; 1991], Associate Dean for Graduate Medical Education [2004]

Elliot R. McVeigh, Ph.D.
Bessie Darling Massey Professor of Biomedical Engineering, Professor of Radiology [2007; 1988], Director of the Department of Biomedical Engineering [2007]

Barry Ross Meisenberg, M.D.
Visiting Professor of Oncology [2008]

Stephen J. Meltzer, M.D.
Harry and Betty Meyerberg/Thomas R. Hendrix Professor of Gastroenterology in the Department of Medicine [2007], Professor of Oncology [2006]

William G. Merz, Ph.D.
Professor of Pathology [1998; 1974], Joint Appointment in Dermatology [1980; 1973]

Esteban Mezey, M.D.
Professor of Medicine [1982; 1968]

Susan Michaelis, Ph.D.
Professor of Cell Biology [2002; 1987]

Barbara R. Migeon, M.D.
Professor of Pediatrics in Genetic Medicine [1979; 1962]

Claude J. Migeon, M.D.
Professor of Pediatrics [1971; 1954]

Edward D. Miller, M.D.
Dr. Frances Watt Baker and Dr. Lennox D. Baker, Jr. Dean of the School of Medicine and CEO, Johns Hopkins Medicine [1997], Professor of Anesthesiology and Critical Care Medicine [1994], Director of the Department of Anesthesiology and Critical Care Medicine [1999; 1994]

Marlene R. Miller, M.D.
Professor of Pediatrics [2010; 1999]

Myron Miller, M.D.
Professor of Medicine [1997]

Neil Richard Miller, M.D.
Frank B. Walsh Professor of Neuro-ophthalmology in the Department of Ophthalmology [1987; 1975], Professor of Neurological Surgery [1987; 1979], Professor of Neurology [1987; 1976]

Stephen M. Milner, M.B.B.S.
Professor of Plastic and Reconstructive Surgery [2005], Professor of Dermatology [2009], Professor of Pediatrics [2007]

Lloyd B. Minor, M.D.
Provost and Senior Vice President for Academic Affairs for Johns Hopkins University [2009], University Distinguished Professor of Otolaryngology-Head and Neck Surgery [2001; 1993], Professor of Biomedical Engineering [2001; 1994], Professor of Neuroscience [2001; 1993], Director of the Department of Otolaryngology-Head and Neck Surgery [2009; 2003]

Marek A. Z. Mirkisi, M.D., Ph.D.
Professor of Anesthesiology and Critical Care Medicine [2009; 1999], Professor of Neurological Surgery [2009; 2008], Professor of Neurology [2009; 1999]

Allan F. Mirsky, Ph.D.
Adjunct Professor of Psychiatry [2006; 1993]

Sally E. Mitchell, M.D.
Professor of Radiology [2007; 1982], Associate Professor of Pediatrics [2003]

David R. Moller, M.D.
Professor of Medicine [2010; 1989]

Craig Montell, Ph.D.
Professor of Biological Chemistry [1998; 1988], Professor of Neuroscience [1998; 1988]

Denise J. Montell, Ph.D.
Professor of Biological Chemistry [2002; 1992]

Elizabeth Anne Montgomery, M.D.
Professor of Pathology [2008; 1999], Professor of Oncology [2008; 2002], Professor of Orthopaedic Surgery [2009]

Robert A. Montgomery, M.D., Ph.D.
Margery K. and Thomas Pozefsky Professor of Kidney Transplant Surgery [2009; 1995]

Richard D. Moore, M.D.
Professor of Medicine [1999; 1983]

Timothy H. Moran, Ph.D.
Paul R. McHugh Professor of Motivated Behaviors in the Department of Psychiatry [1992; 1984]

Susumu Mori, Ph.D.
Professor of Radiology [2006; 1997], Professor of Oncology [2006; 2005]

Warwick L. Morison, M.D.
Professor of Dermatology [1995; 1981]

Hamilton Moses, III, M.D.
Adjunct Professor of Neurology [2009]

Jacek L. Mostwin, D.Phil., M.D.
Professor of Urology [1996; 1983]

Anne Margaret Murphy, M.D.
Professor of Pediatrics [2010; 1992]

Douglas B. Murphy, Ph.D.
Adjunct Professor of Cell Biology [2006; 1978]

Gary Jan Nabel, M.D., Ph.D.
Visiting Professor of Medicine [1999]

Sakkubai Naidu, M.B.B.S.
Professor of Neurology [2001; 1984], Professor of Pediatrics [2001; 1985]

Avindra Nath, M.D.
Adjunct Professor of Neurology [2011; 2002]

Jeremy Nathans, M.D., Ph.D.
Professor of Molecular Biology and Genetics [1996; 1988], Professor of Neuroscience [1996; 1988], Professor of Ophthalmology [1996; 1993], Investigator of the Howard Hughes Medical Institute

Barry D. Nelkin, Ph.D.
Professor of Oncology [2004; 1982]

William G. Nelson, M.D., Ph.D.
Marion I. Knott Director and Professor of Oncology [2003; 1992], Professor of Medicine [2003; 1995], Professor of Pathology [2003; 2000], Professor of Pharmacology and Molecular Sciences [2003; 1995], Professor of Radiation Oncology and Molecular Radiation Sciences [2003], Professor of Urology [2003; 1992]
Paul M. Ness, M.D.
Professor of Pathology [1995; 1979], Professor of Medicine [1995; 1979], Joint Appointment in Oncology [1983]

Gerald Nestadt, M.B.B.Ch., M.P.H.
Professor of Psychiatry [2002; 1981]

John Nicholas, Ph.D.
Professor of Oncology [2010; 1992]

David G. Nichols, M.D.
Mary Wallace Stanton Professor of Education, Professor of Anesthesiology and Critical Care Medicine [1998; 1984], Professor of Pediatrics [1998; 1984], Vice Dean for Education [2000]

John E. Niederhuber, M.D.
Adjunct Professor of Oncology [2011], Adjunct Professor of Surgery [2011]

John K. Niparko, M.D.
George T. Nager Professor of Otolaryngology/Head and Neck Surgery [1998; 1991], Interim Director of the Department of Otolaryngology-Head and Neck Surgery [2009] (to 02/28/2012)

Lawrence Mark Nogee, M.D.
Professor of Pediatrics [2008; 1992]

Philip S. Norman, M.D.
Professor of Medicine [1999; 1956]

Daniel Nyhan, M.B.B.CH.
Professor of Anesthesiology and Critical Care Medicine [2002; 1985], Associate Professor of Surgery [2001]

G. Johan Offerhaus, M.D., Ph.D., M.P.H.
Adjunct Professor of Pathology [2009; 1997]

Maria Magdalena Oliva-Hemker, M.D.
Stermer Family Professor of Pediatric Inflammatory Bowel Disease in the Department of Pediatrics [2011; 1993]

Alessandro Olivi, M.D.
Professor of Neurological Surgery [2002; 1991], Professor of Oncology [2002; 1994]

Jonathan Brett Orens, M.D.
Professor of Medicine [2007; 1998]

Brian O’Rourke, Ph.D.
Professor of Medicine [2004; 1993]

Pamela Ouyang, M.B.B.CH.
Professor of Medicine [2005; 1980]

Randall M. Packard, Ph.D.
William H. Welch Professor of the History of Medicine [2002], Director of the Department of the History of Medicine [2002]

Jeffrey B. Palmer, M.D.
Lawrence Cardinal Shehan Professor of Physical Medicine and Rehabilitation [2002; 1983], Professor of Functional Anatomy and Evolution [2005], Professor of Otolaryngology-Head and Neck Surgery [2002; 1989], Director of the Department of Physical Medicine and Rehabilitation [2004]

Duojia Pan, Ph.D.
Professor of Molecular Biology and Genetics [2009; 2004], Professor of Oncology [2009; 2004], Professor of Pharmacology and Molecular Sciences [2010]

Akhilesh Pandey, M.D., Ph.D.
Professor of Biological Chemistry in Genetic Medicine [2010; 2002], Professor of Oncology [2010; 2004], Professor of Pathology [2010; 2006]

Drew Mark Pardoll, M.D., Ph.D.
Martin D. Abeloff Professor of Oncology [1998; 1990], Professor of Medicine [1998; 1988], Professor of Pathology [1998; 1996]

Giovanni Parmigiani, Ph.D.
Adjunct Professor of Oncology [2010; 1999], Joint Appointment in Health Sciences Informatics [2006]

Alan Wayne Partin, M.D., Ph.D.
David Hall McConnell Professor of Urology [1999; 1995], Professor of Oncology [2000], Professor of Pathology [2001], Director of the Department of Urology [2004]

Jean-Francois Payen de la Garanderie, M.D., Ph.D.
Visiting Professor of Radiology [2000]

Godfrey D. Pearlson, M.B.B.S.
Professor of Psychiatry [1993; 1979]

Peter L. Pedersen, Ph.D.
Professor of Biological Chemistry [1975; 1967], Professor of Oncology [1975; 2011]

Trish M. Perl, M.D.
Professor of Medicine [2007; 1996], Associate Professor of Pathology [2002; 1998]

Bruce A. Perler, M.D.
Julius H. Jacobson II Professor of Vascular Surgery [1997; 1982]

Michelle Petri, M.D., M.P.H.
Professor of Medicine [2001; 1986]

David Pickar, M.D.
Adjunct Professor of Psychiatry [2003]

Herbert Michael Pinedo, M.D., Ph.D.
Visiting Professor of Oncology [2000]

Paula M. Pitha-Rowe, Ph.D.
Professor of Oncology [1985; 1973], Joint Appointment in Molecular Biology and Genetics [1984; 1972]

Leslie P. Plotnick, M.D.
Professor of Clinical Care and Research of Pediatric Endocrinology in the Department of Pediatrics [2001; 1974]

Paul Hunter Plotz, M.D.
Adjunct Professor of Medicine [2004]

Gianna Pomata, Laura
Professor of History of Medicine [2007]

Martin Gilbert Pomper, M.D., Ph.D.
William R. Brody Professor of Radiology and Radiological Sciences [2007; 1995], Professor of Oncology [2010; 2002], Professor of Pharmacology and Molecular Sciences [2007; 2003], Joint Appointment in Psychiatry [2009], Professor of Radiation Oncology and Molecular Radiation Sciences [2008]

Aleksander S. Popel, Ph.D.
Professor of Biomedical Engineering [1988; 1984], Professor of Medicine [2007], Professor of Oncology [2009]
James Bennett Potash, M.D., M.P.H.
Arlene and Robert Kogod Professor of Mood Disorders in the Department of Psychiatry [2011; 1998], Joint Appointment in Medicine [2009]

Neil R. Powe, M.D., M.P.H.
Distinguished Service Professor of Medicine [2009; 1986]

Peter John Pronovost, M.D., Ph.D.
Professor of Anesthesiology and Critical Care Medicine [2005; 1997], Joint Appointment in Health Sciences Informatics [2007], Associate Professor of Surgery [2001; 1997]

Thomas T. Provost, M.D.
University Distinguished Service Professor of Dermatology [1983; 1978], Director of the Department of Dermatology [1996; 1981]

Ann E. Pulver, Sc.D.
Professor of Psychiatry [2002; 1989], Assistant Professor of Pediatrics [1990; 1981]

Naresh M. Punjabi, M.D., Ph.D.
Professor of Medicine [2011; 1999]

Harry Alan Quigley, M.D.
A. Edward Maumenee Professor of Ophthalmology [1985; 1977]

Thomas C. Quinn, M.D.
Professor of Medicine [1991; 1981]

Hamid Rabb, M.D.
Professor of Medicine [2007; 2001], Professor of Surgery [2008]

Daniel M. Raben, Ph.D.
Professor of Biological Chemistry [2007; 2002], Professor of Oncology [2007; 1996], Professor of Physiology [2007; 1986]

Peter V. Rabins, M.D., M.P.H.
Richman Family Professor of Alzheimer’s and Related Diseases in the Department of Psychiatry [1993; 1978], Joint Appointment in Medicine [1993]

Lorraine C. Racusen, M.D.
Professor of Pathology [2001; 1983]

Sally Radovick, M.D.
Lawson Wilkins Professor of Pediatric Endocrinology in the Department of Pediatrics [2005]

Srinivasa Naga Raja, M.B.B.S.
Professor of Anesthesiology and Critical Care Medicine [1997; 1981], Professor of Neurology [2006]

Cynthia S. Rand, Ph.D.
Professor of Medicine [2003; 1987], Joint Appointment in Behavioral Biology in the Department of Psychiatry [1988; 1985]

Kanann Rangaramanujam, Ph.D.
Visiting Professor of Ophthalmology [2011] (from 08/01/2011)

Rajini Rao, Ph.D.
Professor of Physiology [2004; 1993]

Stuart Campbell Ray, M.D.
Professor of Medicine [2011; 1995], Joint Appointment in Health Sciences Informatics [2008], Professor of Oncology [2011; 2005]

Gerald V. Raymond, M.D.
Professor of Neurology [2010; 1993]

Randall R. Reed, Ph.D.
Professor of Molecular Biology and Genetics [1992; 1984], Professor of Neuroscience [1992; 1986], Professor of Otolaryngology-Head and Neck Surgery [2005]

Roger H. Reeves, Ph.D.
Professor of Physiology in Genetic Medicine [1999; 1985]

Michael X. Repka, M.D.
Robert and Maureen Feduniak Professor of Ophthalmology [1997; 1985], Professor of Pediatrics [2001; 1990]

George A. Ricaurte, M.D., Ph.D.
Professor of Neurology [2006; 1987]

Joan T. Richntsmeier, Ph.D.
Visiting Professor of Functional Anatomy and Evolution [2000; 1986]

Mark A. Riddle, M.D.
Professor of Psychiatry [2002], Professor of Pediatrics [2002; 1993]

Daniele Rigamonti, M.D.
Salisbury Family Professor of Neurological Surgery [1997; 1993], Professor of Oncology [2003], Joint Appointment in Physical Medicine and Rehabilitation [1999], Professor of Radiation Oncology and Molecular Radiation Sciences [2003], Professor of Radiology [1999; 1993]

Gregory J. Riggins, M.D., Ph.D.
Irving J. Sherman Research Professor of Neurosurgery [2008; 2003], Professor of Oncology [2008; 2003]

Richard B. S. Roden, Ph.D.
Professor of Pathology [2009; 1998], Professor of Gynecology and Obstetrics [2009; 2002], Professor of Oncology [2009; 2004]

Nancy K. Roderer, M.L.S.
Professor of Health Sciences Informatics [2009; 2000], Associate Professor of Medicine [2008], Director of the Welch Medical Library [2000], Director of the Division of Health Sciences Informatics [2000]

Mark Charles Rogers, M.D.
Adjunct Professor of Anesthesiology and Critical Care Medicine [1996]

Anne M. Rompalo, M.D.
Professor of Medicine [2003; 1987], Associate Professor of Gynecology and Obstetrics [1995; 1993]

Brigitte Maria Ronnett, M.D.
Professor of Pathology [2007; 1995], Professor of Gynecology and Obstetrics [2007; 1997]

Gabriele Valeria Ronnett, M.D., Ph.D.
Professor of Neuroscience [2000; 1989], Professor of Biological Chemistry [2010], Professor of Neurology [2000; 1987]

Kenneth D. Rose, Ph.D.
Professor of Functional Anatomy and Evolution [1990; 1980]
Antony Rosen, M.B.Ch.B.
Mary Betty Stevens Professor of Medicine [2002; 1993], Professor of Pathology [2002; 1997]

Beryl J. Rosenstein, M.D.
Professor of Pediatrics [1989; 1966]

Gary L. Rosner, Sc.D.
Eli Kennerly Marshall Professor of Oncology [2010]

Christopher A. Ross, M.D., Ph.D.
Professor of Psychiatry [1996; 1987], Professor of Neurology [2003], Professor of Neuroscience [1997; 1989], Professor of Pharmacology and Molecular Sciences [2009]

Jeffrey D. Rothstein, M.D., Ph.D.
John W. Griffin Professor of the Brain Science Institute [2011]; Professor of Neurology [2000, 1988], Professor of Neuroscience [2000; 1997]

Richard R. Rubin, Ph.D.
Professor of Medicine [2007; 1994], Professor of Pediatrics [2007; 1991]

Charles Michael Rudin, M.D., Ph.D.
Professor of Oncology [2010; 2004]

Christopher B. Ruff, Ph.D.
Professor of Functional Anatomy and Evolution [1994; 1983], Professor of Orthopaedic Surgery [1994; 1983], Director of the Center for Functional Anatomy and Evolution [2001]

Murray B. Sachs, Ph.D.
University Distinguished Service Professor of Biomedical Engineering [1980; 1970], Professor of Neuroscience [1981], Professor of Otolaryngology-Head and Neck Surgery [1984], Director of the Department of Biomedical Engineering [2007; 1991]

Gene M. Scheerer, Ph.D.
Adjunct Professor of Molecular and Comparative Pathobiology [2011]

Oliver Douglas Schein, M.D., M.P.H.
Burton E. Grossman Professor of Ophthalmology [1998; 1990]

Chester W. Schmidt, Jr., M.D.
Professor of Psychiatry [1994; 1967]

Ronald L. Schnaar, Ph.D.
Professor of Pharmacology and Molecular Sciences [1990; 1979], Professor of Neuroscience [1990; 1983]

Jonathan Schneck, M.D., Ph.D.
Professor of Pathology [2001; 1995], Associate Professor of Medicine [1995; 1989], Professor of Oncology [2002]

Mark P. Schoenberg, M.D.
Bernard L. Schwartz Distinguished Professor of Urologic Oncology, Professor of Urology [2002, 1994], Professor of Oncology [1998; 1995]

Hendrik P.N. Scholl, M.D.
Visiting Professor of Ophthalmology [2010]

Lawrence P. Schramm, Ph.D.
Professor of Biomedical Engineering [1988; 1970], Professor of Neuroscience [1988; 1981]

Richard David Schulick, M.D.
John L. Cameron Professor of Alimentary Tract Diseases in the Department of Surgery [2009; 1999], Associate Professor of Biomedical Engineering [2007], Associate Professor of Gynecology and Obstetrics [2004], Professor of Oncology [2009; 1999]

Steven Paul Schulman, M.D.
Professor of Medicine [2004; 1985]

Alan Richard Schwartz, M.D.
Professor of Medicine [2001; 1987]

Richard L. Semba, M.D., M.P.H.
W. Richard Green Professor of Ophthalmology [2006; 1987]

Gregg L. Semenza, M.D., Ph.D.
Professor of Pediatrics in Genetic Medicine [1999; 1990], Professor of Biological Chemistry [2009], C. Michael Armstrong Professor of Medicine [2008; 1990], Professor of Oncology [2003], Professor of Radiation Oncology and Molecular Radiation Sciences [2003]

Ranjan Sen, Ph.D.
Adjunct Professor of Medicine [2003]

Janet R. Serwint, M.D.
Rear Admiral Ray R. and Laura H. Connor Professor of Pediatrics [2005; 1990]
Geraldine Seydoux, Ph.D.
Professor of Molecular Biology and Genetics
[2004; 1995], Investigator of the Howard Hughes Medical Institute

George Sgouros, Ph.D.
Professor of Radiology [2007; 2003], Professor of Oncology [2009], Professor of Radiation Oncology and Molecular Radiation Sciences [2008]

Reza Shadmehr, Ph.D.
Professor of Biomedical Engineering [2004; 1994], Professor of Neuroscience [2004; 1999]

Bruce K. Shapiro, M.D.
Professor of Pediatrics [2007; 1977]

Edward Paul Shapiro, M.D.
Professor of Medicine [1997; 1981]

Jay R. Shapiro, M.D.
Professor of Physical Medicine and Rehabilitation [2004]

Theresa A. Shapiro, M.D., Ph.D.
Wellcome Professor of Clinical Pharmacology in the Department of Medicine [2000; 1981], Professor of Pharmacology and Molecular Sciences [2000; 1991]

Saul J. Sharkis, Ph.D.
Professor of Oncology [1993; 1978]

Ie-Ming Shih, M.D., Ph.D.
Professor of Pathology [2008; 2000], Professor of Gynecology and Obstetrics [2008; 2002], Professor of Oncology [2008; 2003]

Hyun S. Shin, M.D.
Adjunct Professor of Molecular Biology and Genetics [2011; 1965]

David Robert Shortle, M.D., Ph.D.
Professor of Biological Chemistry [1993; 1984], Professor of Biophysics and Biophysical Chemistry [1993; 1991]

Artin A. Shoukas, Ph.D.
Professor of Biomedical Engineering [1990; 1973], Professor of Anesthesiology and Critical Care Medicine [2006], Joint Appointment in Physiology [1994]

David Sidransky, M.D.
Professor of Otolaryngology-Head and Neck Surgery [1998; 1992], Professor of Oncology [1998; 1992], Professor of Pathology [1998], Professor of Urology [1999]

Frederick E.Sieber, M.D.
Professor of Anesthesiology and Critical Care Medicine [2011; 1985]

Stanley S. Siegelman, M.D.
Professor of Radiology [1973]

Robert Francis Siliciano, M.D., Ph.D.
Professor of Medicine [1998; 1988], Joint Appointment in Molecular Biology and Genetics [1989], Professor of Pharmacology and Molecular Sciences [1998; 2011], Investigator of the Howard Hughes Medical Institute

Kenneth Silverman, Ph.D.
Professor of Psychiatry [2004; 1991]

Andrew Simpson, Ph.D.
Adjunct Professor of Neurological Surgery [2010]

Harvey S. Singer, M.D.
Haller Professor of Pediatric Neurologic Diseases in the Department of Neurology [1988; 1975], Professor of Pediatrics [1989; 1976]

Donald Small, M.D., Ph.D.
Kyle Haydock Professor of Oncology [2004; 1990], Professor of Pediatrics [2004; 1991]

Gwenn S. Smith, Ph.D.
Professor of Psychiatry [2008]

Kirby D. Smith, Ph.D.
Professor of Pediatrics in Genetic Medicine [1999; 1990]

Philip L. Smith, M.D.
Professor of Medicine [1993; 1977]

Thomas J. Smith, M.D.
Visiting Professor of Oncology [2011] (from 10/01/2011)

Solomon H. Snyder, M.D., D.Phil. (Hon.), D.Sc. (Hon.)
University Distinguished Service Professor of Neuroscience [1980], University Distinguished Service Professor of Pharmacology and Molecular Sciences [1970; 1966], University Distinguished Service Professor of Psychiatry [1970; 1968], Director of the Department of Neuroscience [2006; 1980]

Barbara T. Sollner-Webb, Ph.D.
Professor of Biological Chemistry [1988; 1980]

Mark J. Soloski, Ph.D.
Professor of Medicine [2002; 1983], Joint Appointment in Molecular Biology and Genetics [1988; 1983], Professor of Pathology [2004]

Alfred Sommer, M.D.
Professor of Ophthalmology [1985; 1976], Dean Emeritus of the Johns Hopkins Bloomberg School of Public Health

Hongjun Song, Ph.D.
Professor of Neurology [2010; 2002], Professor of Neuroscience [2010; 2002]

Jerry L. Spivak, M.D.
Professor of Medicine [1988; 1971]

Paul D. Sponseller, M.D.
Professor of Orthopaedic Surgery [2000; 1986], Professor of Urology [2006]

Allan C. Spradling, Ph.D.
Adjunct Professor of Molecular Biology and Genetics [1988]

Robert A. Squire, D.V.M., Ph.D.
Professor of Molecular and Comparative Pathobiology [1984; 1964]

Walter J. Stark, Jr., M.D.
Boone Pickens Professor of Ophthalmology [1982; 1973]

Charles Steenbergen, Jr., M.D., Ph.D.
Professor of Pathology [2006]

Earl P. Steinberg, M.D.
Adjunct Professor of Medicine [1997; 1982], Adjunct Associate Professor of Radiology [1997; 1988]

Kerry J. Stewart, Ed.D.
Professor of Medicine [2004; 1981]
Maxine L. Stitzer, Ph.D.  
Professor of Behavioral Biology in the Department of Psychiatry [1992; 1974]

James T. Stivers, Ph.D.  
Professor of Pharmacology and Molecular Sciences [2007; 2001], Professor of Oncology [2007; 2004]

Dan Stoianovici, Ph.D.  
Professor of Urology [2009; 1998], Professor of Neurological Surgery [2010]

Eric C. Strain, M.D.  
Professor of Psychiatry [2000; 1990]

Robert L. Strausberg, Ph.D.  
Adjunct Professor of Neurological Surgery [2010]

Matthias Stuber, Ph.D.  
Professor of Radiology [2010; 2002] (on leave of absence), Professor of Medicine [2010; 2003] (on leave of absence)

Jeremy Sugarman, M.D.  
Harvey M. Meyerhoff Professor of Bioethics and Medicine in the Department of Medicine [2004]

Saraswati Sukumar, Ph.D.  
Barbara B. Rubenstein Professor of Oncology [2002; 1994], Professor of Pathology [2002; 1996]

Lode J. Swinnen, M.D.  
Visiting Professor of Oncology [2002]

Jimmie T. Sylvestre, M.D.  
Professor of Medicine [1989; 1977], Joint Appointment in Anesthesiology and Critical Care Medicine [1992; 1977]

Zsolt Szabo, M.D., Ph.D.  
Professor of Radiology [2005; 1988]

Khalid Fuad Tabbara, M.D.  
Adjunct Professor of Ophthalmology [2004]

Paul Talalay, M.D., D.Sc. (Hon.)  
John Jacob Abel Distinguished Service Professor of Pharmacology and Experimental Therapeutics [1963], Director of the Department of Pharmacology and Experimental Therapeutics [1975; 1963]

Mark Adams Talamini, M.D.  
Adjunct Professor of Surgery [2005; 1987]

Rafael J. Tamargo, M.D.  
Walter E. Dandy Professor of Neurosurgery [2004; 1991], Professor of Otolaryngology–Head and Neck Surgery [2004; 2002]

Qi-qun Tang, M.D., Ph.D.  
Adjunct Professor of Biological Chemistry [2010]

Peter B. Terry, M.D.  
Professor of Medicine [1993; 1975], Associate Professor of Anesthesiology and Critical Care Medicine [1982]

Nitish V. Thakor, Ph.D.  
Professor of Biomedical Engineering [1994; 1983], Professor of Neurology [2008]

David Lee Thomas, M.D., M.P.H.  
Stanhope Bayne-Jones Professor of Medicine [2003; 2002]

George H. Thomas, Ph.D.  
Professor of Pediatrics in Genetic Medicine [1992; 1965], Joint Appointment in Medicine [1980; 1972], Professor of Pathology [1994]

Patricia A. Thomas, M.D.  
Professor of Medicine [2011; 1987], Associate Dean for Curriculum [2004]

Daniel P. Todes, Ph.D.  
Professor of History of Medicine [2002; 1984]

Gordon F. Tomaselli, M.D.  
Michel Mirowski, M.D. Professor of Cardiology in the Department of Medicine [2001; 1989]

Suzanne Louise Topalian, M.D.  
Professor of Surgery [2006], Professor of Oncology [2006]

Thomas J.K. Toung, M.D.  
Professor of Anesthesiology and Critical Care Medicine [2001; 1969], Joint Appointment in Neurological Surgery [1980; 1979]

Klaus Viktor Toyka, M.D.  
Adjunct Professor of Neurology [2011]

Thomas A. Trailt, B.M.-B.CH.  
Professor of Medicine [1998; 1980]

Glenn J. Treisman, M.D., Ph.D.  
Professor of Psychiatry [2008; 1991], Professor of Medicine [2008; 1993]

Jeffrey M. Trent, Ph.D.  
Adjunct Professor of Oncology [1994]

Bruce Jeffrey Trock, Ph.D., M.P.H.  
Professor of Urology [2011; 2001], Professor of Oncology [2011; 2001]

Juan C. Troncoso, M.D.  
Professor of Pathology [2007; 1983], Associate Professor of Neurology [1991; 1979]

Shan Pou Tsai, Ph.D.  
Adjunct Professor of Medicine [2001]

Mark O. M. Tso, M.B.B.S.  
Professor of Ophthalmology [1999], Professor of Pathology [1999]

Benjamin M.W. Tsui, Ph.D.  
Professor of Radiology [2003; 2002], Professor of Biomedical Engineering [2005]

Leslie Tung, Ph.D.  
Professor of Biomedical Engineering [2006; 1986]

George R. Uhl, M.D., Ph.D.  
Adjunct Professor of Neurology [2009; 1988], Adjunct Professor of Neuroscience [2009; 1988]

John A. Ulatowski, M.D., Ph.D.  
Mark C. Rogers Professor of Anesthesiology and Critical Care Medicine [2003; 1990], Professor of Neurological Surgery [2003; 1993], Professor of Neurology [2003; 1983], Director of the Department of Anesthesiology and Critical Care Medicine [2004]

Bradley J. Undem, Ph.D.  
Professor of Biomedical Engineering [2006; 1986]

Martin D. Valentine, M.D.  
Professor of Medicine [1986; 1970]
David L. Valle, M.D.
Henry J. Knott Director of the McKusick/Nathans Center for Medical Genetics [2007], Professor of Pediatrics in Genetic Medicine [1987; 1975], Joint Appointment in Medicine [1980; 1976], Joint Appointment in Molecular Biology and Genetics [1986], Professor of Ophthalmology [1992], Investigator of the Howard Hughes Medical Institute

Paulus Joannes van Diest, M.D., Ph.D.
Adjunct Professor of Oncology [2009]

Jennifer Eileen Van Eyk, Ph.D.
Professor of Medicine [2007; 2001], Professor of Biomedical Engineering [2007; 2006]

Peter C.M. Van Zijl, Ph.D.
Professor of Radiology [1997; 1991], Professor of Biophysics and Biophysical Chemistry [1997; 1993], Professor of Oncology [2005]

Craig Alan Vander Kolk, M.D.
Professor of Plastic and Reconstructive Surgery [2003; 1987], Professor of Pediatrics [2003; 1991]

Victor E. Velculescu, M.D., Ph.D.
Professor of Oncology [2011; 2002]

Hendrik M.W. Verheul, M.D., Ph.D.
Adjunct Professor of Oncology [2009]

Eileen P.G. Vining, M.D.
Lederer Professor of Pediatric Epilepsy in the Department of Neurology [2002; 1978], Professor of Pediatrics [2002; 1976]

Renu Virmani, M.B.B.S., M.D.
Adjunct Professor of Radiology [2011]

Raphael P. Viscidi, M.D.
Professor of Pediatrics [2005; 1987], Professor of Oncology [2009]

Benedetto Vitiello, M.D.
Adjunct Professor of Psychiatry [2007; 2005]

Georgia Boyce Vogelsang, M.D.
Professor of Oncology [1998; 1986]

Bert Vogelstein, M.D.
Clayton Professor of Oncology [1989; 1978], Joint Appointment in Molecular Biology and Genetics [1992], Professor of Pathology [1998], Investigator of the Howard Hughes Medical Institute

Eric Carl Vonderheid, M.D.
Adjunct Professor of Oncology [2002]

Rudiger VonDerhydt, Ph.D.
Professor of Neuroscience [1995; 1993]

Frank K. Wacker, M.D.
Visiting Professor of Radiology [1988] (on leave of absence to 08/03/2011)

Elizabeth Wagner, Ph.D.
Professor of Medicine [2001; 1986]

Richard L. Wahl, M.D.
Henry N. Wagner Jr., M.D. Professor of Nuclear Medicine in the Department of Radiology [2000], Professor of Oncology [2001]

John T. Walkup, M.D.
Adjunct Professor of Psychiatry [2009; 1988]

Edward E. Wallach, M.D.
J. Donald Woodruff Professor of Gynecology and Obstetrics [1984], Director of the Department of Gynecology and Obstetrics [1994; 1984]

Patrick C. Walsh, M.D.
University Distinguished Service Professor of Urology [1974], Director of the Department of Urology [2004; 1974]

Thomas John Walsh, M.D.
Adjunct Professor of Pathology [2004]

Jeremy D. Walston, M.D.
Raymond and Anna Lubin Professor of Medicine [2009; 1993]

Gary S. Wand, M.D.
Alfredo Riviere and Norma Rodriguez de Riviere Professor of Endocrinology in the Department of Medicine [1999; 1985], Professor of Psychiatry [1999; 1993]

Xiaojin Wang, Ph.D.
Professor of Biomedical Engineering [2005; 1995], Professor of Neuroscience [2005; 1995], Professor of Otolaryngology-Head and Neck Surgery [2005]

Steven Allan Wartman, M.D., Ph.D.
Adjunct Professor of Medicine [2006]

Levi Watkins, Jr., M.D.
Professor of Cardiac Surgery [1991; 1978], Associate Dean for Postdoctoral Programs [1991]

Paul Allan Watkins, M.D., Ph.D.
Professor of Neurology [2003; 1984], Joint Appointment in Biological Chemistry [1992], Professor of Oncology [2011]

Kristin Lynn Weber, M.D.
Virginia M. and William Percy Professor of Orthopaedic Surgery [2009; 2003], Professor of Oncology [2009; 2003]

Jon David Weingart, M.D.
Professor of Neurological Surgery [2009; 1995], Professor of Oncology [2009; 1996]

Myron L. Weisfeldt, M.D.
William Osler Professor of Medicine [2001], Director of the Department of Medicine [2001]

David B. Weishampel, Ph.D.
Professor of Functional Anatomy and Evolution [1996; 1985]

James L. Weiss, M.D.
Michael J. Cudahy Professor of Cardiology in the Department of Medicine [1990; 1975], Associate Dean for Admissions [1999]

Robert G. Weiss, M.D.
Clarence Doodeman Professor of Cardiology in the Department of Medicine [2001; 1989], Joint Appointment in Radiology [1991]

Sheila West, Ph.D., Pharm.D.
El-Maghraby Professor of Preventive Ophthalmology [1997; 1984]

William H. Westra, M.D.
Professor of Pathology [2005; 1994], Associate Professor of Dermatology [2003], Professor of Oncology [2005; 2003], Professor of Otolaryngology-Head and Neck Surgery [2005; 1995]
Moody D. Wharam, Jr., M.D.
Professor of Radiation Oncology and Molecular Radiation Sciences [1993; 2003], Professor of Neurological Surgery [1993; 1992], Professor of Oncology [1993; 1975], Professor of Pediatrics [1993; 1992], Professor of Radiology [1993; 1975]

Andrew Whelton, M.B.B.CH.
Adjunct Professor of Medicine [1998]

Barbara White, M.D.
Visiting Professor of Medicine [1999]

Charles M. Wiener, M.D.
Professor of Medicine [2005; 1991], Professor of Physiology [2005; 1998]

Fredrick M. Wigley, M.D.
Professor of Medicine [1996; 1979]

Charles Pat Wilkinson, M.D.
Professor of Ophthalmology [1996; 1993]

Katherine Lee Wilson, Ph.D.
Professor of Cell Biology [2004; 1988]

Modena E. Wilson, M.D.
Adjunct Professor of Pediatrics [1994; 1979]

Raimond L. Winslow, Ph.D.
Raj and Neera Singh Professor of Biomedical Engineering [2000; 1991], Joint Appointment in Health Sciences Informatics [2001], Professor of Medicine [2003]

Robert A. Wise, M.D.
Professor of Medicine [1998; 1980], Instructor in Radiology [1981]

Thomas N. Wise, M.D.
Professor of Psychiatry [1998; 1973]

Frank R. Witter, M.D.
Professor of Gynecology and Obstetrics [2006; 1980]

Cynthia Wolberger, Ph.D.
Professor of Biophysics and Biophysical Chemistry [2000; 1991], Investigator of the Howard Hughes Medical Institute

Frederic E. Wondisford, M.D.
Professor of Pediatrics [2005], Joint Appointment in Medicine [2006], Professor of Physiology [2006]

Dean F. Wong, M.D., Ph.D.
Professor of Radiology [1993; 1983], Professor of Neuroscience [2007], Joint Appointment in Psychiatry [1999]

John Wai-Chiu Wong, Ph.D.
Professor of Radiation Oncology and Molecular Radiation Sciences [2004], Professor of Oncology [2004]

Philip Cy Wong, Ph.D.
Professor of Pathology [2005; 1993], Professor of Neuroscience [2009; 2002]

Robert A. Wood, M.D.
Professor of Pediatrics [2004; 1988]

Thomas B. Woolf, Ph.D.
Professor of Physiology [2006; 1994], Assistant Professor of Biomedical Engineering [1995], Joint Appointment in Biophysics and Biophysical Chemistry [1994]

Paul F. Worley, M.D.
Professor of Neuroscience [2000; 1987], Professor of Neurology [2000; 1984]

Scott Mitchell Wright, M.D.
Professor of Medicine [2008; 1997]

Christopher L. Wu, M.D.
Professor of Anesthesiology and Critical Care Medicine [2009; 1999]

Tzuy-Chou Wu, M.D., Ph.D., M.P.H.
Professor of Pathology [2003; 1995], Professor of Gynecology and Obstetrics [2003; 1997], Professor of Oncology [2003; 1996]

Stephen C. Yang, M.D.
Arthur B. and Patricia B. Modell Professor of Thoracic Surgery [2008; 1994], Professor of Oncology [2008; 1996]

Wei Yang, Ph.D.
Adjunct Professor of Biophysics and Biophysical Chemistry [2004]

William A. Yasnoff, M.D., Ph.D.
Adjunct Professor of Health Sciences Informatics [2003]

Myron Yaster, M.D.
Richard J. Traytsman Professor of Anesthesiology and Critical Care Medicine [2000; 1982], Professor of Pediatrics [2000; 1982]

King-Wai Yau, Ph.D.
Professor of Neuroscience [1986], Professor of Ophthalmology [1994]

Robert H. Yolken, M.D.
Theodore and Vada Stanley Distinguished Professor of Neurovirology in the Department of Pediatrics [1987; 1979], Joint Appointment in Psychiatry [2004]

Eric D. Young, Ph.D.
Professor of Biomedical Engineering [1987; 1975], Professor of Neuroscience [1987; 1981], Professor of Otolaryngology-Head and Neck Surgery [1987; 1985]

David Mark Yousem, M.D.
Professor of Radiology [1998]

David Tuckchow Yue, M.D., Ph.D.
Professor of Biomedical Engineering [1999; 1988], Professor of Neuroscience [1999; 1997]

Andrea A. Zachary, Ph.D.
Professor of Medicine [2004; 1992]

Donald J. Zack, M.D., Ph.D.
Guerreri Family Professor of Ophthalmology [1997; 1988], Joint Appointment in Molecular Biology and Genetics [1991; 1988], Professor of Neuroscience [2001; 1991]

Howard A. Zacur, M.D., Ph.D.
Theodore and Ingrid Baramki Professor of Reproductive Endocrinology in the Department of Gynecology and Obstetrics [1995; 1980]

David S. Zee, M.D.
Professor of Neurology [1985; 1975], Professor of Neuroscience [1985; 1983], Professor of Ophthalmology [1986; 1975], Professor of Otolaryngology-Head and Neck Surgery [1987]
Martha Allen Zeiger, M.D.
Professor of Surgery [2009; 1993], Professor of Oncology [2009; 1996]

Pamela L. Zeitlin, M.D., Ph.D.
Professor of Pediatrics [2001; 1988], Joint Appointment in Physiology [1988]

Jonathan M. Zenilman, M.D.
Professor of Medicine [2001; 1989], Professor of Dermatology [2010], Professor of Gynecology and Obstetrics [2001; 1993]

Michael E. Zenilman, M.D.
Visiting Professor of Surgery [2011]

Elias A. Zerhouni, M.D.
Professor of Radiology [2009], Professor of Biomedical Engineering [2009], Director of the Department of Radiology and Radiological Science [2002; 1996]

Yixian Zheng, Ph.D.
Adjunct Professor of Molecular Biology and Genetics [2009]

Roy C. Ziegelstein, M.D.
Professor of Medicine [2006; 1993]

Harvey A. Ziessman, M.D.
Professor of Radiology [2005; 2003]

M. Christine Zink, D.V.M., Ph.D.
Professor of Molecular and Comparative Pathobiology [2000; 1988], Professor of Pathology [2000; 1988], Director of the Department of Molecular and Comparative Pathobiology [2008]

S. James Zinreich, M.D.
Professor of Radiology [2001; 1980], Professor of Otolaryngology-Head and Neck Surgery [2001; 1985]

Stephen Randolph Zukin, M.D.
Visiting Professor of Psychiatry [2000], Visiting Professor of Radiology [2001]

Jay L. Zweier, M.D.
Visiting Professor of Medicine [2002; 1987], Visiting Associate Professor of Radiology [1996]

PROFESSORS EMERITI

R. Robinson Baker, M.D.
Warfield M. Firor Professor Emeritus of Surgery [1997; 1965]

William R. Bell, M.D.
Edythe Harris Lucas and Clara Lucas Lynn Professor Emeritus of Hematology in the Department of Medicine [1980; 1970]

Wilma B. Bias, Ph.D.
Professor Emerita of Medicine [1996; 1964]

William R. Breakey, M.B.B.CH.
Professor Emeritus of Psychiatry [1993; 1976]

Gert H. Brieger, M.D., Ph.D., M.P.H.
Distinguished Service Professor Emeritus in the Department of History of Medicine, Science and Technology [2004; 1984], Director of the Department of the History of Science, Medicine, and Technology [2001; 1984]

Saul W. Brusilow, M.D.
Professor Emeritus of Pediatrics [1998; 1956]

Gregory B. Bulkley, M.D.
Professor Emeritus of Surgery [1988; 1977]

Edmund Y. S. Chao, Ph.D.
Professor Emeritus of Orthopaedic Surgery [1992]

Patricia Charache, M.D.
Professor Emerita of Pathology [1992; 1973], Professor Emerita of Medicine [1992; 1964]

Samuel Charache, M.D.
Professor Emeritus of Medicine [1995; 1966], Professor Emeritus of Pathology [1981]

Barbara J. DeLateur, M.D.
Lawrence Cardinal Shehan Professor Emerita of Physical Medicine and Rehabilitation [2006; 1993], Director of the Department of Physical Medicine and Rehabilitation [2004; 1993]

John F. Dicello, Ph.D.
Professor Emeritus of Radiation Oncology and Molecular Radiation Sciences [1995; 2003]

Howard M. Dintzis, Ph.D., D.Sc. (Hon.)
Professor Emeritus of Biophysics and Biophysical Chemistry [1995; 1961], Director of the Department of Biophysics [1990; 1961]

Thomas B. Ducker, M.D.
Professor Emeritus of Neurological Surgery [1993; 1984]

Joel Elkes, M.D.
University Distinguished Service Professor Emeritus of Psychiatry [1981; 1963], Director of the Department of Psychiatry and Behavioral Sciences [1974; 1963]

Paul T. Englund, Ph.D.
Professor Emeritus of Biological Chemistry [1980; 1968]

John M. Freeman, M.D.

Clara Fronticelli, Ph.D.
Professor Emerita of Anesthesiology and Critical Care Medicine [2001; 1999]

Leon Gordis, D.P.H., M.D.
Professor Emeritus of Pediatrics [1992; 1966], Associate Dean for Admissions and Academic Affairs [1999; 1993]

Vincent L. Gott, M.D.
Richard Bennett Darnall Professor Emeritus of Cardiac Surgery [2008; 1965]

J. Alex Haller, Jr., M.D.

Barbara S. Hawkins, Ph.D.
Professor Emerita of Ophthalmology [1995; 1982]

Thomas R. Hendrix, M.D.
Moses and Helen Golden Paulson Professor Emeritus of Gastroenterology in the Department of Medicine and University Distinguished Service Professor [1968; 1993]
Robert H. Heptinstall, M.D.
University Distinguished Service Professor Emeritus of Pathology [1967; 1992], Baxley Professor of Pathology and Director of the Department of Pathology [1988; 1969]

Rudolf Hoehn-Saric, M.D.
Professor Emeritus of Psychiatry [2000; 1999]

Neil A. Holtzman, M.D.
Professor Emeritus of Genetic Medicine in the Department of Pediatrics [1984; 1964]

John E. Hoopes, M.D.
Professor Emeritus of Plastic and Reconstructive Surgery [1990; 1970]

George R. Huggins, M.D.
Professor Emeritus of Gynecology and Obstetrics [2009; 1986]

Kimishige Ishizaka, M.D.
Thomas P. O'Neill Professor Emeritus of Immunology in the Department of Medicine [1989; 1970]

Teruko Ishizaka, M.D.
Professor Emerita of Medicine [1989; 1972]

Richard J. Johns, M.D.
University Distinguished Service Professor Emeritus of Biomedical Engineering [2006; 1971], Professor Emeritus of Medicine [2006; 1951], Massey Professor of Biomedical Engineering and Director of the Department of Biomedical Engineering [1991; 1971]

Howard W. Jones, Jr., M.D.
Professor Emeritus of Gynecology and Obstetrics [1976; 1942]

Jean S. Kan, M.D.
Helen B. Taussig Professor Emerita of Pediatrics [1993; 1977]

M. Daniel Lane, Ph.D.
Professor Emeritus of Biological Chemistry [1969], University Distinguished Service Professor of Biological Chemistry, DeLamar Professor and Director of the Department of Biological Chemistry [1997; 1978]

Raymond E. Lenhard, Jr., M.D.
Professor Emeritus of Oncology [1997; 1973], Professor Emeritus of Medicine [1997; 1966]

Lawrence M. Lichtenstein, M.D.
Professor Emeritus of Medicine [1975; 1966]

Paul S. Litman, M.D., Ph.D.

John W. Littlefield, M.D.
Professor Emeritus of Physiology [1992; 1985], Professor Emeritus of Pediatrics [1992; 1974], Director of the Department of Physiology [1992; 1985], Given Professor of Pediatrics and Director of the Department of Pediatrics [1985; 1974]

Donlin Martin Long, M.D., Ph.D.
University Distinguished Service Professor Emeritus of Neurological Surgery [1973], Director of the Department of Neurological Surgery [2000; 1973]

Risa Berman Mann, M.D.
Professor Emerita of Pathology [1995; 1977]

Simeon Margolis, M.D., Ph.D.
Professor Emeritus of Medicine [1977; 1965], Professor Emeritus of Biological Chemistry [1981; 1965]

Bernard R. Marsh, M.D.
Professor Emeritus of Otolaryngology-Head and Neck Surgery [1998; 1965]

Nina W. Matheson, M.L.
Professor Emerita of Medical Information in the Division of Health Sciences Informatics [1995; 1984]

Richard A. Meyer, M.S.
Professor Emeritus of Neurological Surgery [2009; 1980]

Albert S. Mildvan, M.D.
Professor Emeritus of Biological Chemistry [1981]

Mark E. Molliver, M.D.
Professor Emeritus of Neuroscience [2006; 1980], Professor Emeritus of Neurology [1984; 1971]

Vernon B. Mountcastle, M.D., D.Sc. (Hon.)
University Professor Emeritus of Neuroscience [1992; 1980], Director of the Department of Physiology [1980; 1964]

Ernst F.L. Niedermeyer, M.D.
Professor Emeritus of Neurological Surgery [1990; 1965], Professor Emeritus of Neurology [1990; 1973]

Albert H. Owens, Jr., M.D.
University Distinguished Service Professor Emeritus of Oncology [1999; 1973], University Distinguished Service Professor Emeritus of Medicine [1999; 1950], Eli Kennerly Marshall, Jr. Professor and Director of the Oncology Center [1992; 1973]

Solbert Permutt, M.D.
Professor Emeritus of Medicine [2006; 1971]

Irvin P. Pollack, M.D.
Professor Emeritus of Ophthalmology [1986; 1961]

Robert A. Prendergast, M.D.
Professor Emeritus of Ophthalmology [2000; 1965], Professor Emeritus of Pathology [2000; 1965]

Donald L. Price, M.D.
Professor Emeritus of Pathology [1978; 1971], Professor Emeritus of Neurology [1978; 1971], Professor Emeritus of Neuroscience [1983]

Cecil H. Robinson, Ph.D.
Professor Emeritus of Pharmacology and Molecular Sciences [1977; 1963]

David A. Robinson, Dr.Eng.
University Distinguished Service Professor Emeritus of Ophthalmology [1993; 1971], University Distinguished Service Professor Emeritus of Biomedical Engineering [1993; 1961], University Distinguished Service Professor Emeritus of Neuroscience [1993; 1983]

Richard S. Ross, M.D.
Professor Emeritus of Medicine [1997; 1948], Dean Emeritus of the School of Medicine [1975]
David K. Ryugo, Ph.D.
Professor Emeritus of Otolaryngology-Head and Neck Surgery [1992; 1987]

Gerhard Schmeisser, M.D.
Professor Emeritus of Orthopaedic Surgery [1991; 1954]

Marvin M. Schuster, M.D.
Janssen/strauss-Halbreich Professor Emeritus of Digestive and Motility Disorders in the Department of Medicine [1976; 1961], Joint Appointment in Psychiatry [1980; 1961]

Arthur M. Silverstein, Ph.D.
Odd Fellows Professor Emeritus of Ophthalmic Immunology in the Department of Ophthalmology [1989; 1959], Joint Appointment in History of Medicine [1990; 1986]

Phillip R. Slavney, M.D.
Eugene Meyer III Professor Emeritus of Psychiatry [2008; 1976]

Hamilton O. Smith, M.D.
American Cancer Society Distinguished Research Professor Emeritus of Molecular Biology and Genetics [1998; 1967]

T. Phillip Waalkes, M.D., Ph.D.
Professor Emeritus of Oncology [1988; 1975]

George Melville Williams, M.D.
Professor Emeritus of Surgery [1969], Dr. Bertram M. Bernheim Research Professor of Surgery

Jerry A. Winkelstein, M.D.
Professor Emeritus of Pediatrics [1983; 1973], Professor Emeritus of Medicine [1998], Professor Emeritus of Pathology [1998]

John H. Yardley, M.D.
University Distinguished Service Professor Emeritus of Pathology [1972; 1954], Baxley Professor of Pathology and Director of the Department of Pathology [1992; 1988]

Ran Zeimer, Ph.D.
Morton F. Goldberg Professor of Ophthalmology [1993]

Philip D. Zieve, M.D.
Professor Emeritus of Medicine [2008; 1963]

ASSOCIATE PROFESSORS

Fizan Abdullah, M.D., Ph.D.
Associate Professor of Pediatric Surgery [2009; 2005]

Theodore P. Abraham, M.B.B.S., M.D.
Associate Professor of Medicine [2004; 2003]

Robert J. Adams, D.V.M.
Associate Professor of Molecular and Comparative Pathobiology [1985; 1977]

Hyo S. Ahn, M.D.
Associate Professor of Radiology [1988; 1980]

Nita Ahuja, M.D.
Associate Professor of Surgery [2010; 2002], Associate Professor of Oncology [2010; 2005]

Michael C. Ain, M.D.
Associate Professor of Orthopaedic Surgery [2006; 1995], Associate Professor of Neurological Surgery [2006; 2000]

Esen Karamursel Akpek, M.D.
Associate Professor of Ophthalmology [2005; 1999], Associate Professor of Medicine [2010]

Rhoda M. Alani, M.D.
Adjunct Associate Professor of Oncology [2010; 1999]

Eric Matthew Aldrich, M.D., Ph.D.
Associate Professor of Neurology [2008; 1999], Joint Appointment in Physical Medicine and Rehabilitation [2000]

Mohamad Ezzeddine Allaf, M.D.
Associate Professor of Urology [2010; 2006], Associate Professor of Biomedical Engineering [2010; 2007], Associate Professor of Oncology [2011]

Richard P. Allen, Ph.D.
Associate Professor of Neurology [2010; 1980]

Robert Albert Anders, M.D., Ph.D.
Associate Professor of Pathology [2010; 2005], Assistant Professor of Oncology [2006]

Andrew Frank Angelino, M.D.
Associate Professor of Psychiatry [2009; 1999]

Lois J. Arend, M.D., Ph.D.
Visiting Associate Professor of Pathology [2010]

Aravind Arepally, M.D.
Associate Professor of Radiology [2008; 1997]

Dan Eytan Arking, Ph.D.
Associate Professor of Medicine in Genetic Medicine [2011; 2005]

Mary Y. Armanios, M.D.
Associate Professor of Oncology [2011; 2005] (from 10/01/2011), Assistant Professor of Oncology [2005] (to 09/30/2011)

Deborah K. Armstrong, M.D.
Associate Professor of Oncology [2004; 1993], Associate Professor of Gynecology and Obstetrics [2004; 1999]

Dmitri Artemov, Ph.D.
Associate Professor of Radiology [2004; 1997], Associate Professor of Oncology [2004]

Bimal H. Ashar, M.D.
Associate Professor of Medicine [2008; 1998]

Mohamed Gehad Atta, M.B.B.CH.
Associate Professor of Medicine [2008; 1997]

Susan Wright Aucott, M.D.
Associate Professor of Pediatrics [2011; 1996]

Paul Gisbert Auwaerter, M.D.
Associate Professor of Medicine [2003; 1996]

Thomas R. Aversano, M.D.
Associate Professor of Medicine [1993; 1985]

Dimitrios G. Avramopoulos, M.D., Ph.D.
Associate Professor of Psychiatry in Genetic Medicine [2007; 2002]
Nafi Aygun, M.D.
Associate Professor of Radiology [2011; 2002]

Elizabeth H. Aylward, Ph.D.
Associate Professor of Psychiatry [1993; 1990]

Alan Nathaniel Baer, M.D.
Associate Professor of Medicine [2007]

Serena Maria Bagnasco, M.D.
Associate Professor of Pathology [2004]

Douglas W. Ball, M.D.
Associate Professor of Medicine [2002; 1991],
Associate Professor of Oncology [2002; 1995]

Sheila A. Barber, Ph.D.
Adjunct Associate Professor of Molecular and
Comparative Pathobiology [2006; 1998]

Norman J. Barker, M.S.
Associate Professor of Pathology [2004; 1991],
Associate Professor of Art as Applied to Medicine
[2004; 1991]

Michael Anthony Barone, M.D.
Associate Professor of Pediatrics [2011; 1998],
Assistant Dean for Student Affairs [2004]

James C. Barrow, Ph.D.
Associate Professor of Pharmacology and
Molecular Sciences [2010]

Detlef Bartelt, M.D.
Associate Professor of Radiology [2007; 2005]

Klemens H. Barth, M.D.
Associate Professor of Radiology [1980; 1974]

Susan Joan Bartlett, Ph.D.
Adjunct Associate Professor of Medicine [2008;
1997]

Susan S. Bassett, Ph.D.
Associate Professor of Psychiatry [1999; 1990]

Amy J. Bastian, Ph.D.
Associate Professor of Neuroscience [2005;
2001], Associate Professor of Neurology [2005;
2001], Associate Professor of Physical Medicine
and Rehabilitation [2005; 2001]

Denise A. Batista, Ph.D.
Associate Professor of Pathology [2011; 1994]
(from 10/01/2011), Assistant Professor of
Pathology [2006; 2004] (to 09/30/2011)

Mary Catherine Beach, M.D., M.P.H.
Associate Professor of Medicine [2008; 2002]

Thomas J. Beck, Sc.D.
Associate Professor of Radiology [1997; 1981]

Patrice M. Becker, M.D.
Associate Professor of Medicine [2002; 1992]

Atul Bedi, M.B.B.S.
Associate Professor of Otolaryngology-Head
and Neck Surgery [2008], Associate Professor of
Oncology [2002; 1994]

Ashley Behrens, M.D.
Associate Professor of Ophthalmology [2009;
2003], Occupying the KKESH/WilmerChair of
International Ophthalmology

Harolyn M. E. Belcher, M.D.
Associate Professor of Pediatrics [2003; 1996]

Deborah Ann Belchis, M.D.
Visiting Associate Professor of Pathology [2011]
(from 09/06/2011)

Stephen M. Belkof, Ph.D.
Associate Professor of Orthopaedic Surgery
[2001]

Michele F. Bellantoni, M.D.
Associate Professor of Medicine [1999; 1989]

Allan Joel Belzberg, M.D.
Associate Professor of Neurological Surgery
[2000; 1990]

Frank Michael Bengel, M.D.
Adjunct Associate Professor of Radiology [2005],
Joint Appointment in Medicine [2007]

Sean Michael Berenholtz, M.D.
Associate Professor of Anesthesiology and Critical
Care Medicine [2009; 2000], Assistant Professor
of Surgery [2001]

Lauren Claire Berkow, M.D.
Associate Professor of Anesthesiology and Critical
Care Medicine [2010; 2000], Assistant Professor
of Otolaryngology-Head and Neck Surgery [2006]

Ivor D. Berkowitz, M.B.B.CH.
Associate Professor of Anesthesiology and Critical
Care Medicine [1993; 1984], Associate Professor
of Pediatrics [1994; 1987]

Fred S. Berlin, M.D., Ph.D.
Associate Professor of Psychiatry [1986; 1978]

David Monty Berman, M.D., Ph.D.
Associate Professor of Pathology [2008; 2001],
Associate Professor of Oncology [2008; 2004],
Assistant Professor of Urology [2003]

Edward J. Bernacki, M.D., M.P.H.
Associate Professor of Medicine [1991]

Belur S. Bhagavan, M.B.B.S.
Associate Professor of Pathology [1983; 1966]

Nasir Islam Bhatti, M.B.B.S.
Associate Professor of Otolaryngology-Head
and Neck Surgery [2008; 2000], Joint Appointment in
Anesthesiology and Critical Care Medicine [2002]

Sheng Bi, M.D.
Associate Professor of Psychiatry [2009; 2001]

O. Joseph Bienvenu, M.D.
Associate Professor of Psychiatry [2007; 1999]

Joseph S. Bierman, M.D.
Associate Professor of Psychiatry [1985; 1968]

Clifton O. Bingham, III, M.D.
Associate Professor of Medicine [2010; 2005]

James Hamilton Black, III, M.D.
Associate Professor of Surgery [2010; 2004],
Occupying the Bertram M. Bernheim Research
Professorship in Surgery

Seth Blackshaw, Ph.D.
Associate Professor of Neuroscience [2011; 2004],
Joint Appointment in Ophthalmology [2005]

Joel Nee-Lartey Blankson, M.D., Ph.D.
Associate Professor of Medicine [2010; 2002]

Mary Elizabeth Blue, Ph.D.
Associate Professor of Neurology [2000; 1989],
Associate Professor of Neuroscience [2001]
Corrine D. Boehm, M.S.
Associate Professor of Pediatrics in Genetic Medicine [1998; 1982]

Mark E. Bohlman, M.D.
Associate Professor of Radiology [1991; 1980]

Javier Bolanos-Meade, M.D.
Associate Professor of Oncology [2011; 2004] (from 10/01/2011), Assistant Professor of Oncology [2004] (to 09/30/2011)

Karen I. Bolla, Ph.D.
Associate Professor of Neurology [1995; 1985], Joint Appointment in Psychiatry [1987]

Jonathan Benjamin Borak, M.D.
Adjunct Associate Professor of Medicine [2003]

Ivan Marques Borrello, M.D.
Associate Professor of Oncology [2008; 2001], Assistant Professor of Oncology [2004] (to 09/30/2011)

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Jonathan Benjamin Borak, M.D.
Adjunct Associate Professor of Medicine [2003]

Ivan Marques Borrello, M.D.
Associate Professor of Oncology [2008; 2001], Assistant Professor of Oncology [2004] (to 09/30/2011)
Michael James Choi, M.D.
Associate Professor of Medicine [2002; 1994]

James R. Christensen, M.D.
Associate Professor of Physical Medicine and Rehabilitation [2002; 1992], Associate Professor of Pediatrics [2002; 1992]

Paul Jordan Christo, M.D.
Associate Professor of Anesthesiology and Critical Care Medicine [2011; 2001]

Christine H. Chung, M.D.
Associate Professor of Oncology [2010]

Jeanne Marie Clark, M.D., M.P.H.
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Michael Robert Clark, M.D., M.P.H.
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Associate Professor of Medicine [2004; 1997]

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Steven P. Cohen, M.D.
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Ronald D. Cohn, M.D.
Associate Professor of Pediatrics in Genetic Medicine [2011; 2006], Assistant Professor of Neurology [2006]

Nathaniel Charles Comfort, Ph.D.
Associate Professor of History of Medicine [2003; 2002]

Anne Marie Comi, M.D.
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Katherine Conant, M.D.
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David W. Cooke, M.D.
Associate Professor of Pediatrics [2001; 1993]

Mary Concetta Corretti, M.D.
Associate Professor of Medicine [2003]

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Associate Professor of Neurology [2006; 1994]

Michael T. Crow, Ph.D.
Associate Professor of Medicine [2002]

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Associate Professor of Pediatrics [2005; 1996]

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Associate Professor of Ophthalmology [2001; 1988]

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Cecilia Teresa Davoli, M.D., M.P.H.
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Associate Professor of Psychiatry [2008; 1999]

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Associate Professor of Oncology [2009; 2003]

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Associate Professor of Cell Biology [1985; 1973], Associate Professor of Biophysics and Biophysical Chemistry [1985; 1971]

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Associate Professor of Neurology [2010]

Charles George Drake, M.D., Ph.D.
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Wenzhen Duan, M.D., Ph.D.
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Craig R. Dufresne, M.D.
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Elia Junyat Duh, M.D.
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Associate Professor of Ophthalmology [1996; 1991], Occupying the Eugene de Juan Professorship in Ophthalmic Education in the Department of Ophthalmology

Charles George Eberhart, M.D., Ph.D.
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David H. Edwin, Ph.D.
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Associate Professor of Surgery [2010; 2002], Associate Professor of Anesthesiology and Critical Care Medicine [2010; 2006], Joint Appointment in Emergency Medicine [2011]

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Associate Professor of Surgery [2009], Occupying the Mark M. Ravitch Chair in Surgery

Josephine Mary Egan, M.B.B.CH.
Associate Professor of Medicine [1998; 1991]

Rebecca D. Elon, M.D.
Associate Professor of Medicine [1994; 1991]

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Associate Professor of Oncology [2009; 2001]

John Eng, M.D.
Associate Professor of Radiology [2005; 1997], Joint Appointment in Health Sciences Informatics [2001]

Eric Andrew Engels, M.D., M.P.H.
Associate Professor of Medicine [2008; 1998]

Diana M. Escolar, M.D.
Associate Professor of Ophthalmology [2010]

Max Elion, M.D.
Associate Professor of Psychiatry [2005]

James Courtney Fackler, M.D.
Associate Professor of Anesthesiology and Critical Care Medicine [1999; 1996]

Peter J. Fagan, Ph.D.
Associate Professor of Medical Psychology in the Department of Psychiatry [1991; 1983]

Nauder Faraday, M.D.
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Richard A. Farrell, Ph.D.
Associate Professor of Ophthalmology [1993]

James A. Fauerbach, Ph.D.
Associate Professor of Medical Psychology in the Department of Psychiatry [2002; 1992], Associate Professor of Physical Medicine and Rehabilitation [2002; 2004], Joint Appointment in Surgery [2007]

Laura Marie Fayad, M.D.
Associate Professor of Radiology [2009; 2002], Associate Professor of Oncology [2010], Assistant Professor of Orthopaedic Surgery [2006]

David J. Feller-Kopman, M.D.
Associate Professor of Medicine [2007]

Robert P. Ferguson, M.D.
Associate Professor of Medicine [2007]

Robert P. Ferguson, M.D.
Associate Professor of Medicine [1993]

Henry E. Fessler, M.D.
Associate Professor of Medicine [1998; 1988]

John Howard Fetting, III, M.D.
Associate Professor of Oncology [1988; 1979], Associate Professor of Medicine [1990; 1979], Assistant Professor of Psychiatry [1982; 1981]

Derek Michael Fine, M.D.
Associate Professor of Medicine [2008; 1999]

Michael I. Fingerhood, M.D.
Associate Professor of Medicine [2002; 1989]
Toren Finkel, M.D., Ph.D.
Visiting Associate Professor of Medicine [1998]
Joseph Finkelstein, M.D., Ph.D.
Associate Professor of Medicine [2010; 2008], Joint Appointment in Health Sciences Informatics [2008]

Jodi Anne Flaws, Ph.D.
Adjunct Associate Professor of Gynecology and Obstetrics [2002]
Jerome L. Fleg, M.D.
Adjunct Associate Professor of Medicine [2009]
Kevin Robert Fontaine, Ph.D.
Associate Professor of Medicine [2008; 2001]
Piotr J. Franaszczuk, Ph.D.
Associate Professor of Neurology [2004; 1999] (on leave of absence)
Howard Wayne Francis, M.D.
Associate Professor of Otolaryngology-Head and Neck Surgery [2002; 1996]
Clair Ann Francomano, M.D.
Associate Professor of Medicine [1992; 1984], Assistant Professor of Pediatrics [1985; 1984]
Steven Frank, M.D.
Associate Professor of Anesthesiology and Critical Care Medicine [2010]
Deborah Anne Frassica, M.D.
Associate Professor of Radiation Oncology and Molecular Radiation Sciences [2004; 2003], Associate Professor of Oncology [2004; 1995]

Carmelita G. Frondoza, Ph.D.
Associate Professor of Orthopaedic Surgery [1999; 1991]
Ephraim J. Fuchs, M.D.
Associate Professor of Oncology [2002; 1994]
Kathleen Gabrielson, D.V.M., Ph.D.
Associate Professor of Molecular and Comparative Pathobiology [2010; 2000], Associate Professor of Pathology [2010]
Nicholas Roger Gaiano, Ph.D.
Associate Professor of Neurology [2007; 2002], Associate Professor of Neuroscience [2007; 2002], Associate Professor of Oncology [2007; 2003]

Philippe Edmond Gailloud, M.D.
Associate Professor of Radiology [2005; 2001], Assistant Professor of Neurological Surgery [2003], Associate Professor of Neurology [2006]

Dheeraj Gandhi, M.B.B.S.
Associate Professor of Radiology [2010; 2008], Associate Professor of Neurological Surgery [2010; 2009], Associate Professor of Neurology [2010; 2009]
Alejandro Gandias, M.D.
Associate Professor of Surgery [2004]

Suzanne Gartner, Ph.D.
Adjunct Associate Professor of Neurology [2009; 1995]
Olga M.B. Gatewood, M.D.
Associate Professor of Radiology [1976], Associate Professor of Urology [1987]

Bob W. Gayler, M.D.
Associate Professor of Radiology [1973; 1967]
Susan Lyn Gearhart, M.D.
Associate Professor of Surgery [2011; 2002] (from 10/01/2011), Assistant Professor of Surgery [2002] (to 09/30/2011), Associate Professor of Oncology [2011; 2005] (from 10/01/2011), Assistant Professor of Oncology [2005] (to 09/30/2011)

Kelly Anne Gebo, M.D., M.P.H.
Associate Professor of Medicine [2007; 2001]

Peter L. Gehlbach, M.D., Ph.D.
Associate Professor of Ophthalmology [2007; 2000], Associate Professor of Biomedical Engineering [2007]

Allan Charles Gelber, M.D., Ph.D., M.P.H.
Associate Professor of Medicine [2003; 1994]

Rene R. Genadry, M.D.
Associate Professor of Gynecology and Obstetrics [1986; 1975]

Romergyko Guance Geocadin, M.D.
Associate Professor of Neurology [2007; 1999], Associate Professor of Anesthesiology and Critical Care Medicine [2007; 2006], Associate Professor of Neurological Surgery [2007; 2003]

Christos S. Georgiades, M.D., Ph.D.
Associate Professor of Radiology [2009; 2003]

Emily Germain-Lee, M.D.
Associate Professor of Pediatrics [2003; 1975]

Arlene C. Gerson, Ph.D.
Associate Professor of Pediatrics [2009; 1999]

Robert D. Gerwin, M.D.
Associate Professor of Neurology [2008; 1990]

Khalil Georges Ghanem, M.D., Ph.D.
Associate Professor of Medicine [2011; 2004]

Ebeid Reda Girgis, M.B.B.CH.
Associate Professor of Medicine [2007; 2000]

Joseph N. Gitlin, D.P.H.
Associate Professor of Radiology [1988; 1986]

Douglas Edward Gladstone, M.D.
Visiting Associate Professor of Oncology [2008]

F. Michael Gloth, III, M.D.
Associate Professor of Medicine [1998; 1990]

Elisabeth B. Glowatzki, Ph.D.
Associate Professor of Otolaryngology-Head and Neck Surgery [2008; 2000], Associate Professor of Neuroscience [2009; 2007]

Kristine Glunde, Ph.D.
Associate Professor of Radiology [2009; 2004], Associate Professor of Oncology [2009; 2005]

Christopher D. Gocke, M.D.
Associate Professor of Pathology [2005], Associate Professor of Oncology [2007]
David B.K. Golden, M.D.
Associate Professor of Medicine [1996; 1980]
Sherita Hill Golden, M.D.
Associate Professor of Medicine [2007; 2000]
Jonathan E. Golub, Ph.D., M.P.H.
Associate Professor of Medicine [2011; 2002]
Toby A. Gordon, Sc.D.
Associate Professor of Surgery [1995; 1988]
Rebecca Fran Gottesman, M.D., Ph.D.
Associate Professor of Neurology [2011; 2006]
Sheridan H. Gottlieb, M.D.
Associate Professor of Medicine [1986; 1974]
Allan Gottschalk, M.D., Ph.D.
Associate Professor of Anesthesiology and Critical Care Medicine [2001; 1999]
Christine G. Gourin, M.D.
Associate Professor of Otolaryngology-Head and Neck Surgery [2007]
Emily W. Gower, Ph.D.
Associate Professor of Ophthalmology [2009; 2002]
Dennis John Grab, Ph.D.
Associate Professor of Pathology [2009],
Associate Professor of Pediatrics [2002; 2001]
Jeremy David Gradon, M.B.B.S.
Associate Professor of Medicine [2000; 1994]
Marco A. Grados, M.D.
Associate Professor of Psychiatry [2010; 1996]
Ernest Marshall Graham, M.D.
Associate Professor of Gynecology and Obstetrics [2005; 1999]
Thomas J. Graham, M.D.
Associate Professor of Plastic and Reconstructive Surgery [2000]
Robert S. Greenberg, M.D.
Associate Professor of Anesthesiology and Critical Care Medicine [1999; 1991]
Peter Schuyler Greene, M.D.
Associate Professor of Cardiac Surgery [1999; 1994], Joint Appointment in Health Sciences Informatics [2001; 1996], Associate Dean for Emerging Technologies [2001]
Louise Barnett Grochow, M.D.
Associate Professor of Oncology [1990; 1980],
Associate Professor of Medicine [1991; 1981]
Richard J. Gross, M.D.
Associate Professor of Medicine [2002; 1977]
Angela Sarah Guarda, M.D.
Associate Professor of Psychiatry [2008; 1995]
Laura A. Guay, M.D.
Adjunct Associate Professor of Pathology [2010; 1996],
Adjunct Associate Professor of Pediatrics [2010; 1996]
Sandra E. Guggino, Ph.D.
Associate Professor of Medicine [1995; 1988],
Associate Professor of Physiology [2003]
Meral Gunay-Aygun, M.D.
Associate Professor of Pediatrics [2011; 2008]
Eugenie S. Heitmiller, M.D.
Associate Professor of Anesthesiology and Critical Care Medicine [1993; 1986], Associate Professor of Pediatrics [1994; 1987]

Richard Frank Heitmiller, M.D.
Associate Professor of Surgery [1993; 1987], Associate Professor of Oncology [1995]

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Joseph M. Herman, M.D.
Associate Professor of Radiation Oncology and Molecular Radiation Sciences [2011; 2005], Associate Professor of Oncology [2011; 2005], Associate Professor of Surgery [2011; 2007]

Christian J. Herold, M.D.
Associate Professor of Radiology [1999; 1993]

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Adjunct Associate Professor of Oncology [2009; 2001] (from 08/17/2011)

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Associate Professor of Pediatric Surgery [1977]

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Associate Professor of Emergency Medicine [2010; 1998]

Felicia Hill-Briggs, Ph.D.
Associate Professor of Medicine [2008; 2005], Associate Professor of Physical Medicine and Rehabilitation [2008; 1998]

Jan H. Hoh, Ph.D.
Associate Professor of Physiology [2000; 1994]

Michael J. Holliday, M.D.
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Alexander H. Hoon, Jr., M.D., M.P.H.
Associate Professor of Pediatrics [2002; 1990]

Julie Elizabeth Hoover-Fong, M.D.
Associate Professor of Pediatrics in Genetic Medicine [2011; 2002]

Andrew G. Horti, Ph.D.
Associate Professor of Radiology [2008; 2004]

Maureen Renee Horton, M.D.
Associate Professor of Medicine [2008; 1999]

Keith A. Horvath, M.D.
Adjunct Associate Professor of Cardiac Surgery [2005]

Mir Ahamed Hossain, Ph.D.
Associate Professor of Neurology [2007; 1997]

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Edbert Brian Hsu, M.D., M.P.H.
Associate Professor of Emergency Medicine [2008; 2000]

Tah-Hsiung Hsu, M.D.
Associate Professor of Medicine [1977; 1971]

Judy Huang, M.D.
Associate Professor of Neurological Surgery [2008; 2002]

Peng Huang, Ph.D.
Associate Professor of Oncology [2008]

Walter C. Hubbard, Ph.D.
Associate Professor of Medicine [1989], Associate Professor of Pharmacology and Molecular Sciences [2008]

Kathy Lynn Hudson, Ph.D.
Associate Professor of Pediatrics in Genetic Medicine [2002]

Carol Ann Huff, M.D.
Associate Professor of Oncology [2010; 2001], Assistant Professor of Medicine [2005]

Richard L. Humphrey, M.D.
Associate Professor of Pathology [1983], Associate Professor of Medicine [1979; 1967]

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Associate Professor of Pathology [2010; 2000], Associate Professor of Gynecology and Obstetrics [2010; 2009], Associate Professor of Oncology [2010; 2005]

David L. Huso, D.V.M., Ph.D.
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Mehboob Ali Hussain, M.D.
Associate Professor of Pediatrics [2009; 2005], Associate Professor of Biological Chemistry [2009], Associate Professor of Medicine [2009; 2006]

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Suzanne M. Jan de Beur, M.D.
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Associate Professor of Pediatrics [2009; 1991]
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Carl Alvin Johnson, M.D.
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Lynne C. Jones, Ph.D.
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Daniel Philip Judge, M.D.
Associate Professor of Medicine [2008; 2000]

Albert S. Jun, M.D., Ph.D.
Associate Professor of Ophthalmology [2009; 2002]

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Associate Professor of Ophthalmology [1998; 1991]

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Associate Professor of Oncology [2011; 2005], Assistant Professor of Medicine [2005]

Gregory James Kato, M.D.
Associate Professor of Pediatrics [2000; 1991]

Nevin Margolis Katz, M.D.
Visiting Associate Professor of Surgery [2010]

Richard M. Katz, M.D.
Associate Professor of Pediatrics [2006; 1994]

Satomi Kawamoto, M.D.
Associate Professor of Radiology [2009; 2001]

William G. Kearns, Ph.D.
Adjunct Associate Professor of Gynecology and Obstetrics [2010]

Khaled M. Kebaish, M.B.B.CH.
Associate Professor of Orthopaedic Surgery [2010; 1999], Associate Professor of Neurological Surgery [2010]

Michael H. Kelemen, M.D.
Associate Professor of Medicine [1991; 1975]

Akhil Jay Khanna, M.D.
Associate Professor of Orthopaedic Surgery [2009; 2004], Associate Professor of Biomedical Engineering [2009; 2007]

Nagi F. Khouri, M.D.
Associate Professor of Radiology [1990], Associate Professor of Oncology [2004]

Michael S. Kidorf, Ph.D.
Associate Professor of Psychiatry [2000; 1993]

Jean Kim, M.D., Ph.D.
Associate Professor of Otolaryngology-Head and Neck Surgery [2011; 1995] (from 10/01/2011), Assistant Professor of Otolaryngology-Head and Neck Surgery [1996; 1995] (to 09/30/2011), Assistant Professor of Medicine [1996; 1995]

Karen Eileen King, M.D.
Associate Professor of Pathology [2006; 1996], Associate Professor of Oncology [2006; 1999]

Van L. King, M.D.
Associate Professor of Psychiatry [2003; 1991]

Alfredo Kirkwood, Ph.D.
Associate Professor of Neuroscience [2004; 1997]

Thomas Dean Kirsch, M.D., M.P.H.
Associate Professor of Emergency Medicine [2008; 2002]

Stanley A. Klatsky, M.D.
Associate Professor of Plastic and Reconstructive Surgery [1996; 1968]

Alison Patricia Klein, Ph.D.
Associate Professor of Oncology [2009; 2004], Assistant Professor of Pathology [2004]

Bruce Lawrence Klein, M.D.
Visiting Associate Professor of Pediatrics [2011] (from 09/19/2011)

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Associate Professor of Radiation Oncology and Molecular Radiation Sciences [2004; 2003], Associate Professor of Neurological Surgery [2004; 2001], Associate Professor of Oncology [2004; 1993]

James J. Knierim, Ph.D.
Associate Professor of Neuroscience [2009]

David L. Knox, M.D.
Associate Professor of Ophthalmology [1967; 1962]

Eric H.W. Kossoff, M.D.
Associate Professor of Neurology [2010; 2002], Associate Professor of Pediatrics [2010; 2002]

Sabine Kost-Byerly, M.D.
Associate Professor of Anesthesiology and Critical Care Medicine [2010; 2000]

Olga N. Kovbasnjuk, Ph.D.
Associate Professor of Medicine [2011; 1999]

Jeanne Kowalski, Ph.D.
Adjunct Associate Professor of Oncology [2010; 2001]

Dara L. Kraitchman, D.V.M., Ph.D.
Associate Professor of Radiology [2004; 1996], Associate Professor of Molecular and Comparative Pathobiology [2009]

Edward S. Kraus, M.D.
Associate Professor of Medicine [1993; 2002]

Steven J. Kravet, M.D.
Associate Professor of Medicine [2009; 1995]
Irene C. Kuo, M.D.
Associate Professor of Ophthalmology [2008; 2000]

Scot C. Kuo, Ph.D.
Associate Professor of Biomedical Engineering [2001], Associate Professor of Cell Biology [2006]

Ellen E. Ladenheim, Ph.D.
Associate Professor of Psychiatry [1998; 1992]

Daniel Alexander Laheru, M.D.
Associate Professor of Oncology [2008; 2001], Occupying the Ian T. MacMillan Chair in Clinical Pancreatic Cancer Research

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Associate Professor of Pediatrics [1991; 1979]

Stanford I. Lamberg, M.D.
Associate Professor of Dermatology [1973]

Julie Robin Lange, M.D.
Associate Professor of Surgery [2009; 1994], Assistant Professor of Dermatology [2006], Associate Professor of Oncology [2009; 1996]

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Associate Professor of Orthopaedic Surgery [2009; 2001]

Albert Clark Lardo, Ph.D.
Associate Professor of Medicine [2008; 2002], Associate Professor of Biomedical Engineering [2008; 2002]

Henry Tien Lau, M.D.
Associate Professor of Pediatric Surgery [1998; 1996]

Carlton K. K. Lee, Pharm.D., M.P.H.
Associate Professor of Pediatrics [2010; 1992]

Charles Joung Woon Limb, M.D.
Associate Professor of Otolaryngology-Head and Neck Surgery [2009; 2003]

Doris D.M. Lin, M.D., Ph.D.
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Christoph Lengauer, Ph.D.
Adjunct Associate Professor of Oncology [2003; 1996]

Rachel Beth Levine, M.D., M.P.H.
Associate Professor of Medicine [2011; 2004]

Mark James Levis, M.D., Ph.D.
Associate Professor of Oncology [2008; 2002], Associate Professor of Medicine [2008; 2005]

Victor Levitsky, Ph.D.
Associate Professor of Oncology [2005] (to 08/31/2011)

Frederick Levy, J.D., M.D.
Associate Professor of Emergency Medicine [2009; 2005]

Zhiping Li, M.D.
Associate Professor of Medicine [2010; 2003]

Christoph Lengauer, Ph.D.
Adjunct Associate Professor of Oncology [2003; 1996]

Rachel Beth Levine, M.D., M.P.H.
Associate Professor of Medicine [2011; 2004]

Mark James Levis, M.D., Ph.D.
Associate Professor of Oncology [2008; 2002], Associate Professor of Medicine [2008; 2005]

Victor Levitsky, Ph.D.
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Zhiping Li, M.D.
Associate Professor of Medicine [2010; 2003]

Charles Joung Woon Limb, M.D.
Associate Professor of Otolaryngology-Head and Neck Surgery [2009; 2003]

Doris D.M. Lin, M.D., Ph.D.
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[2004; 2000]

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Adjunct Associate Professor of Psychiatry [1997; 1993]

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Edgar Raymond Miller, III, M.D., Ph.D.
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Stanley L. Minken, M.D.
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Associate Professor of Medicine [2010; 1976]

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Associate Professor of Medicine [1998]

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Stewart H. Mostofsky, M.D.
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Joint Appointment in Psychiatry [2005]

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Gerard E. Mullin, M.D.
Associate Professor of Medicine [2009; 2005]

Laura Mae Mumford, M.D.
Associate Professor of Medicine [1992; 1984]

Beatriz Munoz, M.S.
Associate Professor of Ophthalmology [2001; 1987]

Beth Brianna Murinson, M.D., Ph.D.
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Kathleen Marie Murphy, Ph.D.
Adjunct Associate Professor of Pathology [2010; 2001]

Allen C. Myers, Ph.D.
Associate Professor of Medicine [1998; 1991]

Paul Gregory Nagy, Ph.D.
Visiting Associate Professor of Radiology [2011]

Maurice Y. Nahabedian, M.D.
Associate Professor of Plastic and Reconstructive Surgery [2000; 1996]

Dale M. Needham, M.D., Ph.D.
Associate Professor of Medicine [2010; 2003],
Associate Professor of Physical Medicine and Rehabilitation [2010; 2008]

Georges Jabboure Netto, M.D.
Associate Professor of Pathology [2005],
Associate Professor of Oncology [2008],
Associate Professor of Urology [2007]

Alicia Neu, M.D.
Associate Professor of Pediatrics [2002; 1994]

David Neubauer, M.D.
Associate Professor of Psychiatry [2010; 1985]

Karim Jane Neufeld, M.D., M.P.H.
Associate Professor of Psychiatry [2011; 1994] (from 10/01/2011), Assistant Professor of Psychiatry [1996] (to 09/30/2011)

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Associate Professor of Neurology [2010; 2002],
Joint Appointment in Emergency Medicine [2006],
Joint Appointment in Health Sciences Informatics [2002],
Joint Appointment in Ophthalmology [2002], Associate Professor of Otolaryngology-Head and Neck Surgery [2010; 2002]

Quan Dong Nguyen, M.D.
Associate Professor of Ophthalmology [2008; 2001]

Ernst Niebur, Ph.D.
Associate Professor of Neuroscience [2001; 1995]

Parviz Nikoomanesh, M.D.
Associate Professor of Medicine [1994; 1973]

Dolores B. Njoku, M.D.
Associate Professor of Anesthesiology and Critical Care Medicine [2008; 1994], Assistant Professor of Pathology [2006], Assistant Professor of Pediatrics [2002]

Edward J. Norris, M.D.
Associate Professor of Anesthesiology and Critical Care Medicine [2001; 1991]

Frances J. Northington, M.D.
Associate Professor of Pediatrics [2000; 1992]

Eric Lee Nuernberger, M.D.
Associate Professor of Medicine [2010; 2000]

Paul Alan Nyquist, M.D., M.P.H.
Associate Professor of Neurology [2011; 2004],
Associate Professor of Anesthesiology and Critical Care Medicine [2011; 2004], Assistant Professor of Medicine [2011; 2010], Associate Professor of Neurological Surgery [2011; 2010]
Richard J. O’Brien, M.D., Ph.D.
Associate Professor of Neurology [2000; 1993],
Joint Appointment in Medicine [2006], Associate Professor of Neuroscience [2000; 1999]

Michael F. Ochs, Ph.D.
Associate Professor of Oncology [2006], Joint Appointment in Health Sciences Informatics [2009]

Nael Fakhry Osman, Ph.D.
Associate Professor of Radiology [2006; 2000], Joint Appointment in Medicine [2007]

Rick Ostrander, Ed.D.
Associate Professor of Psychiatry [2008; 2003]

Sara Isabel Pai, M.D., Ph.D.
Associate Professor of Otolaryngology-Head and Neck Surgery [2011; 2007], Associate Professor of Oncology [2011; 2009]

Lawrence C. Pakula, M.D.
Associate Professor of Pediatrics [1985; 1963]

Nickolas Papadopoulos, Ph.D.
Associate Professor of Oncology [2006; 2005]

Ira D. Papel, M.D.
Associate Professor of Otolaryngology-Head and Neck Surgery [1999; 1987]

Carlos A. Pardo-Villamizar, M.D.
Associate Professor of Neurology [2007; 1999], Assistant Professor of Pathology [1999]

Ruian Savita Parekh, M.D.
Associate Professor of Medicine [2007; 1999]

Ben Ho Park, M.D., Ph.D.
Associate Professor of Oncology [2008; 2002]

Gary Roy Pasternack, M.D., Ph.D.
Adjunct Associate Professor of Pathology [2005; 1984], Adjunct Associate Professor of Medicine [2005; 1988]

L. Reuven Pasternak, M.D.
Adjunct Associate Professor of Anesthesiology and Critical Care Medicine [1993; 1985]

Christian Paul Pavlovich, M.D.
Associate Professor of Urology [2005; 2001]

Timothy Michael Pawlik, M.D., M.P.H.
Associate Professor of Surgery [2008; 2005], Associate Professor of Oncology [2008; 2007]

Jennifer Lanier Payne, M.D.
Associate Professor of Psychiatry [2011; 2003]
(from 10/01/2011), Assistant Professor of Psychiatry [2003] (to 09/30/2011)

David B. Pearse, M.D.
Associate Professor of Medicine [1997; 1988]

Jay D. Pearson, Ph.D.
Adjunct Associate Professor of Urology [1996]

James J. Pekar, Ph.D.
Associate Professor of Radiology [2002; 1999]

Margaret B. Penno, Ph.D.
Associate Professor of Medicine [1994; 1986]

Deborah Persaud, M.D.
Associate Professor of Pediatrics [2005; 1997]

Steve Alan Petersen, M.D.
Associate Professor of Orthopaedic Surgery [2008; 2007]

John D. Petronis, M.D.
Associate Professor of Radiology [1999; 1985]

Brent G. Petty, M.D.
Associate Professor of Medicine [1989; 1979], Associate Professor of Pharmacology and Molecular Sciences [1999]

Jonathan A. Pevzner, Ph.D.
Associate Professor of Psychiatry [2011], Joint Appointment in Health Sciences Informatics [2001], Associate Professor of Neuroscience [2003; 1995]

Timothy H. Phelps, M.S.
Associate Professor of Art as Applied to Medicine [1991; 1986]

Frank S. Pidcock, M.D.
Associate Professor of Physical Medicine and Rehabilitation [2003; 1994], Associate Professor of Pediatrics [2003; 1996]

Roberto Pili, M.D.
Adjunct Associate Professor of Oncology [2008; 2000]

Jay J. Pillai, M.D.
Visiting Associate Professor of Radiology [2007]

Mikhail V. Pletnikov, M.D., Ph.D.
Associate Professor of Psychiatry [2008; 1999], Associate Professor of Molecular and Comparative Pathobiology [2009], Associate Professor of Neuroscience [2009]

Gary D. Plotnick, M.D.
Associate Professor of Medicine [1988; 1974]

Vsevolod Y. Polotsky, M.D., Ph.D.
Associate Professor of Medicine [2008; 2002]

Michael James Polysfakis, M.D.
Associate Professor of Neurology [2007; 2000]

Joel L. Pomerantz, Ph.D.
Associate Professor of Biological Chemistry [2011; 2004]

Wendy S. Post, M.D.
Associate Professor of Medicine [2004; 1997]

Jonathan D. Powell, M.D., Ph.D.
Associate Professor of Oncology [2008; 2001], Associate Professor of Pharmacology and Molecular Sciences [2008; 2001]

Sarah Louise Poynton, Ph.D.
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Kenzie L. Preston, Ph.D.
Visiting Associate Professor of Behavioral Biology in the Department of Psychiatry [2002; 1984]

Annelie B. Primm, M.D., M.P.H.
Associate Professor of Psychiatry [2000; 1985]

Jiang Qian, Ph.D.
Associate Professor of Ophthalmology [2010; 2002], Associate Professor of Oncology [2010; 2008]

Alfredo Quinones-Hinojosa, M.D.
Associate Professor of Neurological Surgery [2008; 2005], Associate Professor of Neuroscience [2010; 2007], Associate Professor of Oncology [2008; 2005]
Harry Quon, M.D.
Visiting Associate Professor of Radiation Oncology
and Molecular Radiation Sciences [2011], Visiting
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Associate Professor of Otolaryngology-Head and
Neck Surgery [2011]

Jeffrey J. Rade, M.D.
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Venu Raman, Ph.D.
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Associate Professor of Oncology [2008; 2001]

Vani Arakeri Rao, M.B.B.S., M.D.
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Associate Professor of Medicine [2011; 1999],
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Neck Surgery [2002; 1999], Assistant Professor of
Pathology [1996]

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Surgery [2009; 2003], Associate Professor of
Pediatrics [2009; 2005]

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Associate Professor of Psychiatry [2000; 1996],
Associate Professor of Urology [2000; 1999]

Jon R. Resar, M.D.
Associate Professor of Medicine [1998; 1992]

Linda M.S. Resar, M.D.
Associate Professor of Medicine [2001; 2005],
Associate Professor of Oncology [2001; 1997]

Irving Michael Reti, M.B.B.S.
Associate Professor of Psychiatry [2009; 2000],
Associate Professor of Neuroscience [2009; 2007]

Steven James Reynolds, M.D.C.M., M.P.H.
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[2009; 1998]

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Sarbjit Singh Saini, M.D.
Associate Professor of Medicine [2007; 1997]
Roberto Salvatori, M.D.
Associate Professor of Medicine [2005; 1998]
Jack F. Samuels, Ph.D.
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Scherer P. Sanders, Ph.D.
Associate Professor of Medicine [2000; 1988]
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Associate Professor of Art as Applied to Medicine [2007; 1990]
Adam Sapirstein, M.D.
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Associate Professor of Pediatrics [1993; 1980]
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Associate Professor of Medicine [2007; 1998]
Lillie Shockney, M.A.S.
University Distinguished Service Associate Professor of Breast Cancer in the Department of Surgery [2010; 2006], Associate Professor of Gynecology and Obstetrics [2010; 2007]
Khan M. Siddiqui, M.D.
Visiting Associate Professor of Radiology [2010]
Jeffrey H. Siewerdsen, Ph.D.
Associate Professor of Biomedical Engineering [2009], Associate Professor of Radiology [2011]
Edward M. Sils, M.D.
Associate Professor of Pediatrics [1978; 1969]
Kenneth H. C. Silver, M.D.
Associate Professor of Physical Medicine and Rehabilitation [2004; 1984]
Ronald Paul Silverman, M.D.  
Adjunct Associate Professor of Plastic and Reconstructive Surgery [2009; 2000]

Wayne Silverman, Ph.D.  
Visiting Associate Professor of Psychiatry [2006]

Eleanor Marie Simonsick, Ph.D.  
Associate Professor of Medicine [2001]

Sylvia G. Simpson, M.D.  
Associate Professor of Psychiatry [1993; 1986]

Stephen D. Sisson, M.D.  
Philip A. Tumulty Professor of Medicine [2005; 1995]

Keith J. Slifer, Ph.D.  
Associate Professor of Psychiatry [1999; 1987],  
Associate Professor of Pediatrics [1999; 1989]

Beth S. Slomine, Ph.D.  
Associate Professor of Medical Psychology in the Department of Psychiatry [2010],  
Associate Professor of Physical Medicine and Rehabilitation [2010]

Barbara Lynn Stauch Slusher, Ph.D.  
Associate Professor of Neurology [2009], Joint Appointment in Psychiatry [2010]

B. Douglas Smith, M.D.  
Associate Professor of Oncology [2006; 1998]

Michael T. Smith, Ph.D.  
Associate Professor of Psychiatry [2007; 2001]

Samuel Smith, M.D.  
Associate Professor of Gynecology and Obstetrics [1996; 1987]

Duane Thomas Smoot, M.D.  
Associate Professor of Oncology [2001]

Claire Snyder, Ph.D.  
Associate Professor of Medicine [2011; 2005],  
Associate Professor of Oncology [2011; 2005]

Shanthini Sockanathan, Ph.D.  
Associate Professor of Neuroscience [2007; 2002]

Lori Jean Sokoll, Ph.D.  
Associate Professor of Pathology [2005; 1997],  
Associate Professor of Oncology [2005; 2000],  
Associate Professor of Urology [2005; 2000]

Barry Scott Solomon, M.D., M.P.H.  
Associate Professor of Pediatrics [2010; 2002]

Sharon D. Solomon, M.D.  
Associate Professor of Ophthalmology [2009; 2000], Occupying the Katherine Graham Chair in Ophthalmology

Danny Yeong Song, M.D.  
Associate Professor of Radiation Oncology and Molecular Radiation Sciences [2010; 2004],  
Associate Professor of Oncology [2010; 2004],  
Associate Professor of Urology [2010; 2004]

Samuel Sostre, M.D.  
Associate Professor of Radiology [1992; 1988]

David A. Spector, M.D.  
Associate Professor of Medicine [1983; 1973]

Lynn Jackson Speedie, Ph.D.  
Associate Professor of Psychiatry [2004; 1995],  
Assistant Professor of Neurology [1995]

Forrest Spencer, Ph.D.  
Associate Professor of Medicine in Genetic Medicine [2002; 1992], Joint Appointment in Molecular Biology and Genetics [1992]

Philip Joel Spevak, M.D., M.P.H.  
Associate Professor of Pediatrics [1995], Joint Appointment in Medicine [2001]

Peter Michael Spooner, Ph.D.  
Associate Professor of Medicine [2004; 2003]

Peter S. Staats, M.D.  
Associate Professor of Anesthesiology and Critical Care Medicine [1998; 1993]

Vered Stearns, M.D.  
Associate Professor of Oncology, Occupying the Breast Cancer Research Chair in Oncology [2005; 2002]

Joseph P. Steiner, Ph.D.  
Associate Professor of Neurology [2009; 2005]

Cristiana Stellato, M.D., Ph.D.  
Adjunct Associate Professor of Medicine [2011; 1997]

Robert David Stevens, M.D.  
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Michael Blake Streiff, M.D.  
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Raymond Arthur Sturman, M.D.  
Associate Professor of Pediatrics [1996]

Sriram Subramaniam, Ph.D.  
Visiting Associate Professor of Biological Chemistry [1998; 1991]

Prem Sagar Subramaniam, M.D., Ph.D.  
Associate Professor of Ophthalmology [2007],  
Associate Professor of Neurological Surgery [2010], Associate Professor of Neurology [2010]

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Clifford Mitsuo Takemoto, M.D.
Associate Professor of Pediatrics [2010; 1999]

Nelson Tang, M.D.
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Associate Professor of Psychiatry [2008; 1995]

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Andrew Wolfe, Ph.D.
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Associate Professor of Oncology [2005; 1998]
Christopher L. Wolfgang, M.D., Ph.D.
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Associate Professor Emeritus of Cardiac Surgery [1995; 1969]

Carol L. Burek, Ph.D.
Associate Professor Emerita of Pathology [1998; 1994]

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James P. Connaughton, M.D.

Richard A. Currie, M.D.
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Burton C. D'Lugoff, M.D.
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Walter Ehrlich, M.D.
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Rainer M.E. Engel, M.D.
Associate Professor Emeritus of Urology [1973; 1970]

Charles H. Epps, Jr., M.D.
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Ronald H. Fishbein, M.D.
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James C. Fuchs, M.D.
Associate Professor Emeritus of Surgery [2002; 1985]

Ghislaine Godenne, M.D.
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Jacob C. Handelsman, M.D.
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Associate Professor Emeritus of Plastic and Reconstructive Surgery [1994; 1960]

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W. Jackson Iliff, M.D.
Associate Professor Emeritus of Ophthalmology [1984; 1976]

Michael J. C. Im, Ph.D.
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Darrell A. Jaques, M.D.
Associate Professor Emeritus of Surgery [1995; 1990], Associate Professor Emeritus of Plastic and Reconstructive Surgery [1995; 1988]

John T.H. Johnson, M.D.
Associate Professor Emeritus of Orthopaedic Surgery [1990; 1950]

Calvin E. Jones, M.D.
Associate Professor Emeritus of Surgery [2002; 1981]

James H. Kelly, M.D.
Associate Professor Emeritus of Otolaryngology-Head and Neck Surgery [1985]

Richard F. Kieffer, Jr., M.D.
Associate Professor Emeritus of Surgery [1979; 1948]

Maurice E. Langham, Ph.D.
Associate Professor Emeritus of Ophthalmology [1991; 1959]

Kenneth B. Lewis, M.D.
Associate Professor Emeritus of Medicine [2000; 1965]

Robert E. Mason, M.D.
Associate Professor Emeritus of Medicine [1990; 1945]

Allan R. McClary, M.D.
Associate Professor Emeritus of Psychiatry [1967; 1950], Instructor in Medicine [1952; 1950]

Edmond J. McDonnell, M.D.
Associate Professor Emeritus of Orthopaedic Surgery [1992; 1946]

Marvin M. Nachlas, M.D.
Associate Professor Emeritus of Surgery [1961; 1955]

Lee C. Park, M.D.
Associate Professor Emeritus of Psychiatry [1971; 1959]

Leonard R. Proctor, M.D.
Associate Professor Emeritus of Otolaryngology-Head and Neck Surgery [1976]

Jonas R. Rappeport, M.D.
Associate Professor Emeritus of Psychiatry [2000; 1964]

J. Courtland Robinson, M.D., M.P.H.
Associate Professor Emeritus of Gynecology and Obstetrics [2001]
Alejandro Rodriguez, M.D.
Associate Professor Emeritus of Pediatrics [1978; 1957]

Hiroshi Shimizu, M.D.
Associate Professor Emeritus (Audiology & Speech) of Otolaryngology-Head and Neck Surgery [1990; 1963] (to 09/15/2011)

Arnold T. Sigler, M.D.
Associate Professor Emeritus of Pediatrics [1973; 1965]

Charles E. Silverstein, M.D.
Associate Professor Emeritus of Orthopaedic Surgery [1999; 1967]

Gail Stetten, Ph.D.
Associate Professor Emerita of Gynecology and Obstetrics in Genetic Medicine [2009; 1979]

Judith L. Stiff, M.D.
Associate Professor Emerita of Anesthesiology and Critical Care Medicine [1986; 1978]

Ray E. Stutzman, M.D.
Associate Professor Emeritus of Urology [1984]

Mark L. Teitelbaum, M.D.
Associate Professor Emeritus of Psychiatry [1993; 1977] (to 07/14/2011)

Robert B. Welch, M.D.
Associate Professor Emeritus of Ophthalmology [1973; 1958]

Clifford R. Wheless, Jr., M.D.
Associate Professor Emeritus of Gynecology and Obstetrics [2009; 1970]

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Associate Professor Emeritus of Orthopaedic Surgery [1983; 1970], Associate Professor Emeritus of Plastic and Reconstructive Surgery [1983; 1976]

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Associate Professor Emeritus of Otolaryngology-Head and Neck Surgery [1999; 1954]

Jerriann M. Wilson, M.Ed.
Associate Professor Emerita of Pediatrics [1997; 1972]

Theodore H. Wilson, Jr., M.D.
Associate Professor Emeritus of Surgery [1988; 1972]

Stewart M. Wolff, M.D.
Associate Professor Emeritus of Ophthalmology [1975; 1957]

Jack M. Zimmerman, M.D.
Associate Professor Emeritus of Surgery [1999; 1965]

ASSISTANT PROFESSORS

Peter M. Abadir, M.D.
Assistant Professor of Medicine [2009]

Hanan Jaber Aboumatar, M.D., M.P.H.
Assistant Professor of Medicine [2008]

Jacob Abraham, M.D.
Adjunct Assistant Professor of Medicine [2009]

John M. Abraham, Ph.D.
Assistant Professor of Medicine [2006]

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Assistant Professor of Medicine [2003; 2002]

Sonya Marie Abraham, M.B.B.S., Ph.D.
Visiting Assistant Professor of Medicine [2011]

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Assistant Professor of Pediatrics [2004]

Lisa Shoshana Abrams, M.D.
Assistant Professor of Ophthalmology [1996; 1995]

Christopher J. Abularrage, M.D.
Assistant Professor of Surgery [2010]

Jennifer Anne Accardo, M.D.
Assistant Professor of Neurology [2010], Assistant Professor of Pediatrics [2010]

Richard Alan Adler, M.D.
Assistant Professor of Ophthalmology [2005; 2004]

Jurga Adomaityte, M.D.
Assistant Professor of Medicine [2011] (from 11/01/2011)

Nishant Agrawal, M.D.
Assistant Professor of Otolaryngology-Head and Neck Surgery [2009], Assistant Professor of Oncology [2009]

Allison Lorna Agwu, M.D.
Assistant Professor of Pediatrics [2007], Joint Appointment in Medicine [2007]

Edward Sanghoon Ahn, M.D.
Assistant Professor of Neurological Surgery [2007], Joint Appointment in Plastic and Reconstructive Surgery [2010]

Abimbola J. Aina, M.D.
Assistant Professor of Gynecology and Obstetrics [2004; 2001]

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Nada Alachkar, M.D.
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Assistant Professor of Pediatric Surgery [2003]

Charles Robert Albrecht, III, M.D.
Assistant Professor of Medicine [2005]

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Assistant Professor of Psychiatry [1975; 1974]

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Janyne Althaus, M.D.
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Kristiina Ruutiainen Altman, M.D., Ph.D.
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Michael Alan Ankrom, M.D.
Assistant Professor of Medicine [1998; 1997]
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Assistant Professor of Anesthesiology and Critical Care Medicine [2006]

Lynn G. Bowman, M.A.
Assistant Professor of Psychiatry [1999; 1995]

Carolyn Beth Boylan, M.D., Ph.D.
Assistant Professor of Pediatrics [2006]

David A. Bradt, M.D., M.P.H.
Assistant Professor of Emergency Medicine [2009; 1995]

Kathleen D. Brady, Ph.D.
Assistant Professor of Physical Medicine and Rehabilitation [2009]

Mary Beth Brady, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [1998; 1997]

Tammy M. Brady, M.D.
Assistant Professor of Pediatrics [2008]

Lorraine V.J. Brando, Ph.D.
Assistant Professor of Pediatrics [2009; 1992]

J. Dennis Branger, M.D.
Assistant Professor of Otolaryngology-Head and Neck Surgery [1979; 1978]

James Robert Brasic, M.D., M.P.H.
Assistant Professor of Radiology [2009; 2007]

Peter Edward Braverman, M.D.
Assistant Professor of Medicine [2002]

E. David Bravos, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2009; 2008]

Christopher Damian Breder, M.D., Ph.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2008]

Rachel F. Brem, M.D.
Assistant Professor of Radiology [1991; 1989]

Margaret M. Brennan, M.D.
Assistant Professor of Medicine [2008]

Matthew J. Brennan, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [1973; 2004]

Martin B. Brodsky, Ph.D.
Assistant Professor of Physical Medicine and Rehabilitation [2008]

Jason C. Brookman, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2011] (from 08/29/2011)

Dennis A. Brooks, M.D.
Assistant Professor of Pediatrics [2000; 1988]

Amanda M. Brown, Ph.D.
Assistant Professor of Neurology [2010; 2004]

Anna Todaro Brown, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2010], Assistant Professor of Pediatrics [2010]
Charles Hugh Brown, IV, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2011]

Patrick Andrew Brown, M.D.
Assistant Professor of Oncology [2005; 2004],
Assistant Professor of Pediatrics [2005; 2004]

Solange P. Brown, M.D., Ph.D.
Assistant Professor of Neuroscience [2010]

Robert J. Brumback, M.D.
Assistant Professor of Orthopaedic Surgery [1991; 1987]

Patrick Andrew Brown, M.D.
Assistant Professor of Oncology [2005; 2004],
Assistant Professor of Pediatrics [2005; 2004]

Solange P. Brown, M.D., Ph.D.
Assistant Professor of Neuroscience [2010]

Robert J. Brumback, M.D.
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Assistant Professor of Pediatrics [2005; 2004]

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Assistant Professor of Pediatrics [2005; 2004]

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Assistant Professor of Pediatrics [2005; 2004]

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Assistant Professor of Pediatrics [2005; 2004]

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Assistant Professor of Pediatrics [2005; 2004]

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Assistant Professor of Pediatrics [2005; 2004]

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Assistant Professor of Neuroscience [2010]

Robert J. Brumback, M.D.
Assistant Professor of Orthopaedic Surgery [1991; 1987]

Patrick Andrew Brown, M.D.
Assistant Professor of Oncology [2005; 2004],
Assistant Professor of Pediatrics [2005; 2004]

Solange P. Brown, M.D., Ph.D.
Assistant Professor of Neuroscience [2010]

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Assistant Professor of Orthopaedic Surgery [1991; 1987]

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Assistant Professor of Oncology [2005; 2004],
Assistant Professor of Pediatrics [2005; 2004]

Solange P. Brown, M.D., Ph.D.
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Assistant Professor of Orthopaedic Surgery [1991; 1987]

Patrick Andrew Brown, M.D.
Assistant Professor of Oncology [2005; 2004],
Assistant Professor of Pediatrics [2005; 2004]

Solange P. Brown, M.D., Ph.D.
Assistant Professor of Neuroscience [2010]

Robert J. Brumback, M.D.
Assistant Professor of Orthopaedic Surgery [1991; 1987]

Patrick Andrew Brown, M.D.
Assistant Professor of Oncology [2005; 2004],
Assistant Professor of Pediatrics [2005; 2004]
Geetanjali Chander, M.D., M.P.H.
Assistant Professor of Medicine [2004]

Shalini Chandra, M.D.
Assistant Professor of Medicine [2011; 2007]

Larry William Chang, M.D., M.P.H.
Assistant Professor of Medicine [2010; 2009]

Lawrence D. Chang, M.D.
Assistant Professor of Plastic and Reconstructive Surgery [1996]

Stephen J. Chanock, M.D.
Assistant Professor of Oncology [1998], Lecturer in Pediatrics [1998]

Amina Ashraf Chaudhry, M.D., M.P.H.
Assistant Professor of Medicine [2008; 2007]

Zoobia W. Chaudhry, M.B.B.S.
Assistant Professor of Medicine [2010]

Paulo H.M. Chaves, M.D., Ph.D.
Assistant Professor of Medicine [2001]

Raul Chavez Valdez, M.D.
Visiting Assistant Professor of Pediatrics [2009]

William N. Checkley, M.D., Ph.D.
Assistant Professor of Medicine [2010; 2009]

Aaron Edward Chen, M.D.
Assistant Professor of Pediatrics [2006] (on leave of absence to 07/31/2011)

Chi Chiung Grace Chen, M.D.
Assistant Professor of Gynecology and Obstetrics [2008]

Edward S. Chen, M.D.
Assistant Professor of Medicine [2006; 2003]

Elizabeth H. Chen, Ph.D.
Assistant Professor of Molecular Biology and Genetics [2004]

Alan Cheng, M.D.
Assistant Professor of Medicine [2006]

Roy W. Chesnut, Jr., M.D.
Assistant Professor of Medicine [1965; 1954]

Sally Bridgman Cheston, M.D.
Assistant Professor of Radiation Oncology and Molecular Radiation Sciences [2010]

Kristin Cheung, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2006; 1997]

Avneesh Chhabra, M.D.
Assistant Professor of Radiology [2009], Assistant Professor of Orthopaedic Surgery [2009]

Albert Chi, M.D.
Assistant Professor of Surgery [2010]

Chee Wei Chia, M.D.
Adjunct Assistant Professor of Medicine [2004]

Anna Chien, M.D.
Assistant Professor of Dermatology [2009]

Wade W. Chien, M.D.
Assistant Professor of Otolaryngology-Head and Neck Surgery [2011]

Jeffrey M. Chinsky, M.D., Ph.D.
Assistant Professor of Pediatrics [1995]

Margaret S. Chisolm, M.D.
Assistant Professor of Psychiatry [2006; 1992]

Steve Yoon-Ho Cho, M.D.
Assistant Professor of Radiology [2007], Assistant Professor of Oncology [2009]

Oksoon Hong Choi, Ph.D.
Assistant Professor of Medicine [2003]

Samuel S. Chong, Ph.D.
Assistant Professor of Pediatrics [1997], Joint Appointment in Gynecology and Obstetrics [1997]

Akhil Chopra, M.B.B.S.
Assistant Professor of Oncology [2010; 2009]

Betty Chou, M.D.
Assistant Professor of Gynecology and Obstetrics [2006; 2003]

Robert Tao-Ping Chow, M.D.
Assistant Professor of Medicine [1992]

Colleen Christmas, M.D.
Assistant Professor of Medicine [2000; 1999]

Lisa Christopher-Stine, M.D., M.P.H.
Assistant Professor of Medicine [2005; 2003], Assistant Professor of Neurology [2008]

Michael R. Christy, M.D.
Assistant Professor of Plastic and Reconstructive Surgery [2004]

Kathryn M. Chu, M.D.
Assistant Professor of Surgery [2007]

Kyo U. Chu, M.D.
Assistant Professor of Surgery [2004]

Daniela Cihakova, M.D., Ph.D.
Assistant Professor of Pathology [2008; 2006]

Oscar Horacio Cingolani, M.D.
Assistant Professor of Medicine [2009]

John O’Brien Clarke, III, M.D.
Assistant Professor of Medicine [2007]

Lora L. Clawson, M.S.N.
Assistant Professor of Neurology [2006; 1998]

Steven Michael Claypool, Ph.D.
Assistant Professor of Physiology [2008]

Emmanuelle Marie Clerisme-Beaty, M.D.
Assistant Professor of Medicine [2010; 2009]

Sarah Lou Clever, M.D.
Assistant Professor of Medicine [2003], Assistant Dean for Student Affairs [2009]

Jeffrey Clough, M.D.
Assistant Professor of Medicine [2011]

Ann-Marie Codori, Ph.D.
Assistant Professor of Medical Psychology in the Department of Psychiatry [1994; 1991]

Nancy Codori, M.D., M.P.H.
Assistant Professor of Medicine [2010; 2006]

Alan H. Cohen, M.D.
Adjunct Assistant Professor of Pediatrics [2002]

David B. Cohen, M.D., M.P.H.
Assistant Professor of Orthopaedic Surgery [1998; 1995]

Gary Irvin Cohen, M.D.
Assistant Professor of Oncology [2001; 1983]
Ronald Jay Cohen, M.D.
Assistant Professor of Neurological Surgery [1985; 1980]

Karan A. Cole, Sc.D.
Assistant Professor of Medicine [1994; 1987] (to 01/01/2012)

Jenell Coleman, M.D., M.P.H.
Assistant Professor of Gynecology and Obstetrics [2010], Assistant Professor of Medicine [2010]

Stan L. Coleman, M.D.
Assistant Professor of Ophthalmology [1983; 1967]

Joseph Michael Collaco, M.D.
Assistant Professor of Pediatrics [2008]

Mary Louise Z. Collins, M.D.
Assistant Professor of Ophthalmology [2000; 1994]

Alan Coltri, M.S.
Assistant Professor of Health Sciences Informatics [2001]

Roisin M. Connolly, M.B.B.S.
Assistant Professor of Oncology [2011]

John D. Conroy, Jr., D.O.
Assistant Professor of Oncology [1998]

Stephen A. Contag, M.D.
Assistant Professor of Gynecology and Obstetrics [2010]

Alexander Lewis Coon, M.D.
Assistant Professor of Neurological Surgery [2010], Assistant Professor of Neurology [2010], Assistant Professor of Radiology [2010]

Damon Cooney, M.D., Ph.D.
Assistant Professor of Plastic and Reconstructive Surgery [2010]

Leslie Cope, Ph.D.
Assistant Professor of Oncology [2006; 2004]

Bruce Eugene Copeland, M.D.
Assistant Professor of Radiology [2004]

Robert A. Cordes, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [1974; 1972]

Terri L. Cornelison, M.D.
Assistant Professor of Gynecology and Obstetrics [1998]

Toby Charles Cornish, M.D., Ph.D.
Assistant Professor of Pathology [2011; 2010]

Thomas Adams Corson, M.D., M.P.H.
Assistant Professor of Medicine [2000; 1993], Assistant Professor of Pediatrics [1987]

David Peter Cosgrove, M.B.B.CH.
Assistant Professor of Oncology [2009]

Janelle Wilder Coughlin, Ph.D.
Assistant Professor of Psychiatry [2008; 2004]

David Cowie, M.D.
Assistant Professor of Psychiatry [1979]

Christiane Sylvia Cox, Ph.D.
Assistant Professor of Neurology [1996]

Todd Scott Cox, M.D.
Assistant Professor of Psychiatry [1999]

Victor Crentsil, M.D.
Assistant Professor of Medicine [2008; 2004]

Deidra Candice Crews, M.D.
Assistant Professor of Medicine [2010; 2009]

Jude P. Crinco, M.D.
Assistant Professor of Gynecology and Obstetrics [2000]

Elizabeth Adele Cristofalo, M.D.
Assistant Professor of Pediatrics [2006; 2003]

Michael T. Crocetti, M.D.
Assistant Professor of Pediatrics [1998]

Jennifer Lynn Crockett, Ph.D.
Assistant Professor of Psychiatry [2007]

David M. Cromwell, M.D.
Assistant Professor of Medicine [1997; 1995]

Jane Eleanor Crosson, M.D.
Assistant Professor of Pediatrics [1999]

Marcia Roxana Cruz-Correa, M.D.
Visiting Assistant Professor of Medicine [2002; 2001]

Robin Mary Cuddy, M.D., M.P.H.
Assistant Professor of Emergency Medicine [2000]

Alan P. B. Dackiw, M.D., Ph.D.
Assistant Professor of Surgery [2003], Assistant Professor of Oncology [2004]

Aditya R. Datta, M.D.
Adjunct Assistant Professor of Radiology [2009]

Nabil N. Dagher, M.D.
Assistant Professor of Surgery [2010; 2008]

Gerald J. Dal Pan, M.D.
Adjunct Assistant Professor of Neurology [2010; 1993]

Darshan Dalal, M.B.B.S., M.P.H.
Adjunct Assistant Professor of Medicine [2010; 2007]

Nicholas Michael Dalesio, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2011] (from 07/15/2011)

Franco Rafael D’Alessio, M.D.
Assistant Professor of Medicine [2011; 2008]

David F. Dalury, M.D.
Assistant Professor of Orthopaedic Surgery [1996; 1992]

Nkossi C. Dambita, M.D., M.P.H.
Adjunct Assistant Professor of Health Sciences Informatics [2009; 2007]

Rachel Lynn Damico, M.D., Ph.D.
Assistant Professor of Medicine [2009; 2007]

Stuart R. Dankner, M.D.
Assistant Professor of Ophthalmology [1990]

Salvatore A. D’Anna, M.S.
Assistant Professor of Ophthalmology [1997; 1980]

Sonye Karen Danoff, M.D., Ph.D.
Assistant Professor of Medicine [2005; 2000]

Yassine Jamil Daoud, M.D.
Assistant Professor of Ophthalmology [2010; 2009]
Anil Darbari, M.B.B.S., M.D.
Assistant Professor of Pediatrics [2001]

Jonathan David Darer, M.D., M.P.H.
Assistant Professor of Medicine [2002]

Elizabeth Lee Daugherty, M.D., M.P.H.
Assistant Professor of Medicine [2010; 2008]

Reginald James Davis, M.D.
Assistant Professor of Neurological Surgery [1989; 1987]

Ramon Alberto de Jesus, M.D.
Assistant Professor of Plastic and Reconstructive Surgery [2006; 2003]

Kathryn B. de Medeiros, Ph.D.
Assistant Professor of Psychiatry [2009; 2006]

Michael R. Deans, Ph.D.
Assistant Professor of Otolaryngology-Head and Neck Surgery [2008], Assistant Professor of Neuroscience [2011]

Ana M. DeJesus-Acosta, M.D.
Assistant Professor of Oncology [2011; 2010]

Karl Eric DeJonge, M.D.
Assistant Professor of Medicine [1999; 1996]

Valerie Burke DeLeon, J.D., Ph.D.
Assistant Professor of Functional Anatomy and Evolution [2006; 2005]

Elizabeth Wood Denne, M.S.
Assistant Professor of Gynecology and Obstetrics [2008; 2003]

Abigail Elizabeth Dennis, M.D.
Assistant Professor of Gynecology and Obstetrics [2011] (from 09/01/2011)

Rachel Lauren Derr, M.D.
Assistant Professor of Medicine [2011]

Milind Y. Desai, M.B.B.S.
Visiting Assistant Professor of Radiology [2004]

Niraj M. Desai, M.D.
Assistant Professor of Surgery [2009]

Sanjay Virendra Desai, M.D.
Assistant Professor of Medicine [2007; 2004]

Sharad M. Desai, M.B.B.S.
Assistant Professor of Anesthesiology and Critical Care Medicine [1998]

Cheryl DeScipio, Ph.D.
Assistant Professor of Pathology [2009], Assistant Professor of Gynecology and Obstetrics [2009]

Luis A. Diaz, Jr., M.D.
Assistant Professor of Oncology [2005; 2004]

Teresa Del P. Diaz-Montes, M.D., M.P.H.
Assistant Professor of Gynecology and Obstetrics [2006]

Faith B. Dickerson, Ph.D., M.P.H.
Assistant Professor of Psychiatry [2004]

Timm-Michael Lutz Dickfeld, M.D., Ph.D.
Adjunct Assistant Professor of Medicine [2004]

Karl W. Diehn, M.D.
Assistant Professor of Otolaryngology-Head and Neck Surgery [1982; 1981]

Douglas J. Digirolamo, Ph.D.
Assistant Professor of Orthopaedic Surgery [2010]

Francesco DiMeco, M.D.
Adjunct Assistant Professor of Neurological Surgery [2005; 2002]

Albena Todorova Dinkova-Kostova, Ph.D.
Assistant Professor of Pharmacology and Molecular Sciences [2006; 2000], Assistant Professor of Medicine [2006]

Elizabeth Renee Disney, Ph.D.
Assistant Professor of Psychiatry [2011] (from 07/05/2011)

Sara A. DiVall, M.D.
Assistant Professor of Pediatrics [2008; 2006]

Sameer Dixit, M.D.
Assistant Professor of Orthopaedic Surgery [2009], Assistant Professor of Medicine [2009]

Danielle Joosette Doberman, M.D., M.P.H.
Assistant Professor of Medicine [2009]

Rachel Anne Barnes Dodge, M.D., M.P.H.
Assistant Professor of Pediatrics [2009]

Jennifer Lockwood Dodson, M.D.
Assistant Professor of Urology [2008; 2005]

Angelika Doetzthofer, Ph.D.
Assistant Professor of Neuroscience [2008]

Kimberly Floy Doheny, Ph.D.
Assistant Professor of Pediatrics [1997]

Meg Caroline Doherty, M.D., Ph.D., M.P.H.
Assistant Professor of Medicine [2005]

Jun Dong, M.D., Ph.D.
Adjunct Assistant Professor of Medicine [2007; 2006]

Pamela K. Donohue, Sc.D.
Assistant Professor of Pediatrics [1996; 1989]

Kelly Elise Dooley, M.D., M.P.H.
Assistant Professor of Medicine [2010], Assistant Professor of Pharmacology and Molecular Sciences [2010]

Amir H. Dorafshar, M.B.B.CH.
Assistant Professor of Plastic and Reconstructive Surgery [2010]

Timothy F. Doran, M.D.
Assistant Professor of Pediatrics [1989; 1985]

Samantha dos Reis, Ph.D.
Adjunct Assistant Professor of Psychiatry [2010; 2001]

Maire E. Doyle, Ph.D.
Assistant Professor of Medicine [2010; 2007]

Suzanne Doyon, M.D.C.M.
Adjunct Assistant Professor of Emergency Medicine [2011]

Xavier Dray, Medical Doctoral Degree
Adjunct Assistant Professor of Medicine [2009; 2006]

Michael Bradley Drummond, M.D.
Assistant Professor of Medicine [2011; 2010]

Malcolm S. Druskin, M.D.
Assistant Professor of Medicine [1974]
Yong Du, Ph.D.
Assistant Professor of Radiology [2011; 2005] (from 08/01/2011), Instructor in Radiology [2010; 2005] (to 07/31/2011)
Marc G. Dubin, M.D.
Assistant Professor of Otolaryngology-Head and Neck Surgery [2005]
Robert Arthur Dudas, M.D.
Assistant Professor of Pediatrics [2006]
Sharon Dudley-Brown, Ph.D.
Assistant Professor of Medicine [2007]
Amy Susan Duffield, M.D., Ph.D.
Assistant Professor of Pathology [2011; 2010]
Kimberly Lynn Duncan, Ph.D.
Visiting Assistant Professor of Surgery [1997]
Karen Dunlap, O.D.
Assistant Professor of Ophthalmology [2011; 2008]
Gigi Jasmine Ebenezer, M.B.B.S., M.D.
Assistant Professor of Neurology [2010; 2004]
Frank R. Ebert, M.D.
Assistant Professor of Orthopaedic Surgery [2003]
Richard A.E. Edden, Ph.D.
Assistant Professor of Radiology [2009]
Barish H. Edil, M.D.
Assistant Professor of Surgery [2007; 2006], Assistant Professor of Oncology [2008]
Donald William Edlow, M.D.
Assistant Professor of Pathology [1976]
Robert Randolph Edwards, Ph.D.
Adjunct Assistant Professor of Psychiatry [2008; 2004]
Jill Edwardson, M.D., M.P.H.
Assistant Professor of Gynecology and Obstetrics [2011] (from 08/08/2011)
Lawrence Deems Egbert, M.D., M.P.H.
Visiting Assistant Professor of Anesthesiology and Critical Care Medicine [2001]
W. Andrew Eglseder, Jr., M.D.
Assistant Professor of Plastic and Reconstructive Surgery [1994]
Robert M. Ehsanipoor, M.D.
Assistant Professor of Gynecology and Obstetrics [2010]
Shaker Maurice Eid, M.D.
Assistant Professor of Medicine [2010; 2008]
David Jon Eisner, M.D.
Assistant Professor of Radiology [1992; 1990]
Harrold T. Elberfeld, M.D.
Assistant Professor of Gynecology and Obstetrics [1975]
Zayd Adnan Eldadah, M.D., Ph.D.
Adjunct Assistant Professor of Medicine [2004]
Lois J. Eldred, Dr.P.H.
Assistant Professor of Medicine [2007]
John Joseph Elias, Ph.D.
Assistant Professor of Orthopaedic Surgery [2005]
Richard Marcus Ellerkmann, M.D.
Assistant Professor of Gynecology and Obstetrics [2005; 1999]
Richard Andrew Elliott, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2004]
Michael J. Elman, M.D.
Assistant Professor of Ophthalmology [1954; 1985]
Amgad Ezzat ElSherif, M.B.B.CH.
Adjunct Assistant Professor of Surgery [2009]
Christopher John Endres, Ph.D.
Assistant Professor of Radiology [2003; 1999]
Lilly D. Engheer, Dr.P.H., M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2009]
Gulsun Erdag, M.D.
Assistant Professor of Dermatology [2011] (from 09/14/2011)
Michael Anthony Erdek, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2000]
Nkiruka Ugochi Erekosima, M.D.
Assistant Professor of Medicine [2010]
Monique Ernst, M.D., Ph.D.
Visiting Assistant Professor of Psychiatry [1996]
Jesus Esquivel, M.D.
Assistant Professor of Gynecology and Obstetrics [2006]
Louis Kofi Essandoh, M.D.
Assistant Professor of Medicine [1997; 1992]
Michelle Mae Estrella, M.D.
Assistant Professor of Medicine [2007; 2006]
Noriko Esumi, M.D., Ph.D.
Assistant Professor of Ophthalomology [2003; 1997]
Anita Smith Everett, M.D.
Assistant Professor of Psychiatry [2004]
Paul M. Evitts, Ph.D.
Assistant Professor of Otolaryngology-Head and Neck Surgery [2009]
Andrew J. Ewald, Ph.D.
Assistant Professor of Cell Biology [2008], Assistant Professor of Oncology [2009]
Joshua Benjamin Ewen, M.D.
Assistant Professor of Neurology [2010; 2007]
Camellus Okwochi Ezeuguwu, M.D., Ph.D.
Assistant Professor of Medicine [2000]
Amanda Nickles Fader, M.D.
Assistant Professor of Gynecology and Obstetrics [2009]
Jeffrey John Fadrowski, M.D.
Assistant Professor of Pediatrics [2005]
Jennifer Elizabeth Fairman, M.A.
Assistant Professor of Art as Applied to Medicine [2007; 2006]
Carole Fakhry, M.D., M.P.H.
Assistant Professor of Otolaryngology-Head and Neck Surgery [2011; 2010]
Mohamed Hassan Farah, Ph.D.
Assistant Professor of Neurology [2010; 2006]

Andrea V. Faria, M.D., Ph.D.
Assistant Professor of Radiology [2011; 2009]

Seyed Ali Fatemi, M.D.
Assistant Professor of Neurology [2008], Assistant Professor of Pediatrics [2008]

Henry George Fein, M.D.
Assistant Professor of Medicine [2006]

Andrew G. Feinberg, M.D.
Assistant Professor of Psychiatry [1995; 1985]

Richard L. Feinberg, M.D.
Assistant Professor of Surgery [2008]

Leonard S. Feldman, M.D.
Assistant Professor of Medicine [2006; 2004], Assistant Professor of Pediatrics [2007]

Allison Fernandez, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2011]

Jeanne Steman Findlay, M.N.
Assistant Professor of Dermatology [2008; 2006] (to 07/31/2011)

Ira T. Fine, M.D.
Assistant Professor of Medicine [1994; 1982]

Janice Finkelstein, M.D.
Assistant Professor of Pediatrics [1992; 1990]

Mary Jo Fishburn, M.D.
Assistant Professor of Physical Medicine and Rehabilitation [1994; 1989]

Marc Fishman, M.D.
Assistant Professor of Psychiatry [1995; 1993]

Melinda D. Fitting, Ph.D.
Assistant Professor of Medical Psychology in the Department of Psychiatry [1985; 1984]

Richard Michael Fleming, M.D.
Assistant Professor of Radiology [2010]

Liliana D. Florea, Ph.D.
Assistant Professor of Medicine in Genetic Medicine [2011] (from 07/11/2011)

Eric C. Ford, Ph.D.
Assistant Professor of Radiation Oncology and Molecular Radiation Sciences [2005], Assistant Professor of Oncology [2005]

Perry Jay Foreman, M.D., Ph.D.
Assistant Professor of Neurology [2006]

Yolanda M. Fortenberry, Ph.D.
Assistant Professor of Pediatrics [2006], Assistant Professor of Biological Chemistry [2007]

Patricia D. Fosarelli, M.D.
Assistant Professor of Pediatrics [1983]

David Foster, Ph.D.
Assistant Professor of Neuroscience [2008]

Majid Fotuhi, M.D., Ph.D.
Assistant Professor of Neurology [2003]

Michael R. Fox, M.D.
Assistant Professor of Psychiatry [1980; 1979]

Michelle Candice Fox, M.D., M.P.H.
Assistant Professor of Gynecology and Obstetrics [2009]

Sonia Franco, M.D., Ph.D.
Assistant Professor of Radiation Oncology and Molecular Radiation Sciences [2008], Assistant Professor of Oncology [2008]

Dana H. Frank, M.D.
Assistant Professor of Medicine [1987; 1981]

Elizabeth Anne Freck, M.D.
Assistant Professor of Otolaryngology-Head and Neck Surgery [2010; 2009]

Nathaniel Michael Fried, Ph.D.
Adjunct Assistant Professor of Urology [2006; 2000]

Baruch Friedman, M.D.
Assistant Professor of Medicine [2001; 1990]

Emily J. Frosch, M.D.
Assistant Professor of Psychiatry [1995; 1993]

Dominique Frueh, Ph.D.
Assistant Professor of Biophysics and Biophysical Chemistry [2010]

Ralph Joachim Fuchs, M.D., Ph.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2004]

Sandra Beatriz Gabelli, Ph.D.
Assistant Professor of Medicine [2010], Assistant Professor of Art as Applied to Medicine [2010], Assistant Professor of Biophysics and Biophysical Chemistry [2010; 2002], Assistant Professor of Oncology [2010; 2009]

Jyothi Gadde, M.B.B.S.
Assistant Professor of Medicine [1994; 1985]

Irene Gage, M.D.
Assistant Professor of Radiation Oncology and Molecular Radiation Sciences [2011], Assistant Professor of Oncology [2011]

Giorgio Giovanni Galetto, M.D.
Assistant Professor of Emergency Medicine [1996]

Gary Louis Gallia, M.D., Ph.D.
Assistant Professor of Neurological Surgery [2008], Assistant Professor of Oncology [2009]

Gerard Gallucci, M.D.
Assistant Professor of Psychiatry [1994; 1988]
Charlene Edie Gamaldo, M.D.
Assistant Professor of Neurology [2006], Assistant Professor of Medicine [2008; 2006]
Christopher Jordan Gamper, M.D., Ph.D.
Assistant Professor of Oncology [2011; 2008]
Peisong Gao, M.D., Ph.D.
Assistant Professor of Medicine [2008; 2005]
Juan Ramon Garcia, M.A.
Assistant Professor of Art as Applied to Medicine [2001; 1997]
Pedro Garcia, M.D., Ph.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [1986; 1968]
Darryl J. Garfinkel, M.D.
Assistant Professor of Radiology [1977]
Ira Martin Garonzik, M.D.
Assistant Professor of Neurological Surgery [2004; 2003]
John Gartner, Ph.D.
Assistant Professor of Psychiatry [1994; 1993]
Devin Sumner Gary, Ph.D.
Assistant Professor of Neurology [2009; 2005]
Luis Andres Garza, M.D., Ph.D.
Assistant Professor of Dermatology [2009]
Duvuru Geetha, M.B.B.S., M.D.
Assistant Professor of Medicine [2001; 1998]
Clarence W. Gehris, Jr., M.D.
Assistant Professor of Otolaryngology-Head and Neck Surgery [1976; 1975]
Fouad E. Gellad, Ph.D.
Assistant Professor of Radiology [1998]
Thomas Genuit, M.D.
Assistant Professor of Surgery [2004]
Jessica Anne George, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2010]
Richard T. George, M.D.
Assistant Professor of Medicine [2007]
Dan Georgescu, M.D., Ph.D.
Assistant Professor of Ophthalmology [2010] (to 07/01/2011)
Jonathan Michael Gerber, M.D.
Assistant Professor of Medicine [2011; 2008]
Kevin B. Gerold, D.O., J.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2002], Joint Appointment in Emergency Medicine [2007]
Bidyut Ghosh, Ph.D.
Assistant Professor of Surgery [2005; 2001]
Nilanjan Ghosh, M.B.B.S., Ph.D.
Assistant Professor of Oncology [2011; 2010]
Brian K. Gibbs, Ph.D.
Assistant Professor of Medicine [2009], Associate Dean for Diversity and Cultural Competence [2009]
Glen Randall Gibson, M.D.
Assistant Professor of Surgery [2008]
Andrew C. Goldstone, M.D.
Assistant Professor of Otolaryngology-Head and Neck Surgery [1996]

Erin D. Goley, Ph.D.
Assistant Professor of Biological Chemistry [2011]
(from 08/01/2011)

Harold Mark Goll, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [1986; 1985]

Mary P. L. Gomella, M.D.
Assistant Professor of Pediatrics [2001; 1987]

Gary Xin Gong, M.D., Ph.D.
Assistant Professor of Radiology [2005; 2004]

Marlis Gonzalez-Fernandez, M.D.
Assistant Professor of Physical Medicine and Rehabilitation [2008; 2004]

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Chad R. Gordon, D.O.
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Neda F. Gould, Ph.D.
Assistant Professor of Psychiatry [2010]

Madhav Goyal, M.D., M.P.H.
Assistant Professor of Medicine [2010; 2009]

Aysegul Gozu, M.D., M.P.H.
Assistant Professor of Medicine [2007]

Nancy Grace, Ph.D.
Assistant Professor of Psychiatry [1994; 1993]

Thomas Grader-Beck, M.D., Ph.D.
Assistant Professor of Medicine [2007; 2006]

David R.M. Graham, Ph.D.
Assistant Professor of Molecular and Comparative Pathobiology [2007], Assistant Professor of Medicine [2007; 2005]

Boris L. Gramatikov, Ph.D.
Assistant Professor of Ophthalmology [2003; 2000]

Morgan Erika Grams, M.D.
Assistant Professor of Medicine [2011]

Michael P. Grant, M.D., Ph.D.
Assistant Professor of Ophthalmology [2002]

Edward S. Gratz, M.D.
Assistant Professor of Neurology [1997]

Warren L. Grayson, Ph.D.
Assistant Professor of Biomedical Engineering [2009]

Isabel Christine Green, M.D.
Assistant Professor of Gynecology and Obstetrics [2008]

Jordan J. Green, Ph.D.
Assistant Professor of Biomedical Engineering [2008], Assistant Professor of Ophthalmology [2011]

Raquel Charles Greer, M.D.
Assistant Professor of Medicine [2010; 2009]

Robert I. Griffiths, Sc.D.
Assistant Professor of Medicine [1993]

Stephen Elliot Grill, M.D., Ph.D.
Assistant Professor of Neurology [2002; 1996]

Cordelia T. Grimm, M.D.
Assistant Professor of Medicine [2006]

Lori L. Grover, O.D.
Assistant Professor of Ophthalmology [2007; 2005]

Francis C. Grumbine, M.D.
Assistant Professor of Gynecology and Obstetrics [1980; 1978]

Yun Guan, M.D., Ph.D.
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Alexander M. Guba, M.D.
Assistant Professor of Plastic and Reconstructive Surgery [1982]

Anthony Lawrence Guererro, Jr., M.D., Ph.D.
Assistant Professor of Pediatrics [2009]

Pamela Ann Guererro, M.D., Ph.D.
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Sachin K. Gujar, M.B.B.S.
Assistant Professor of Radiology [2008]

Charles S. Gulotta, Ph.D.
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Ayse P. Gurses, Ph.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2006], Joint Appointment in Health Sciences Informatics [2010]

Christina Y. Ha, M.D.
Assistant Professor of Medicine [2010]

Jennifer Pardo Habashi, M.D.
Assistant Professor of Pediatrics [2006]

Mehran Habibi, M.D.
Assistant Professor of Surgery [2007]

David Northrop Hager, M.D., M.P.H.
Assistant Professor of Medicine [2009; 2007]

Ann Carol Halbower, M.D.
Adjunct Assistant Professor of Pediatrics [2001]

Abdel-Rahim A. Hamad, D.V.M., Ph.D.
Assistant Professor of Pathology [2003; 2000], Assistant Professor of Medicine [2005]

James Peter Adam Hamilton, M.D.
Assistant Professor of Medicine [2007]

Hans Joerg Hammers, M.D., Ph.D.
Assistant Professor of Oncology [2009]

Dima Hammoud, M.D.
Assistant Professor of Radiology [2003]

Kamal A. Hamod, M.D.
Assistant Professor of Gynecology and Obstetrics [1980; 1978]

Fayez Mahmoud Hamzeh, M.B.B.S., Ph.D.
Adjunct Assistant Professor of Medicine [2004; 1994]
Matthias Holdhoff, M.D., Ph.D.  
Assistant Professor of Oncology [2010]

Charles B. Holmes, M.D., M.P.H.  
Adjunct Assistant Professor of Medicine [2011]

Kathryn Wood Holmes, M.D., M.P.H.  
Assistant Professor of Pediatrics [2006]

Susan Elizabeth Holmes, Ph.D.  
Assistant Professor of Psychiatry [2000; 1999]

Peter Anthony Holt, M.D.  
Assistant Professor of Medicine [1989; 1983]

Charles Chong-Hwa Hong, M.D., Ph.D.  
Assistant Professor of Psychiatry [1998]

Kelvin K. Hong, M.B.B.S., M.D.  
Assistant Professor of Radiology [2004]

Mohammad Obaidul Hoque, D.D.S., Ph.D.  
Assistant Professor of Otolaryngology-Head and Neck Surgery [2007; 2006], Assistant Professor of Oncology [2008], Assistant Professor of Urology [2008]

Alena Horska, Ph.D.  
Assistant Professor of Radiology [2000; 1997]

Franck Housseau, Ph.D.  
Assistant Professor of Oncology [2010; 2002]

Barbara Jo Howard, M.D.  
Assistant Professor of Pediatrics [1996]

William T. Howard, M.D.  
Assistant Professor of Psychiatry [1999]

Erica E. Howe, M.D.  
Assistant Professor of Medicine [2010; 2008]

Randolph Michael Howes, M.D., Ph.D.  
Adjunct Assistant Professor of Plastic and Reconstructive Surgery [2004]

Wen-Son Hsieh, M.D.  
Assistant Professor of Oncology [2001]

Yu-Hsiang Hsieh, Ph.D.  
Assistant Professor of Emergency Medicine [1998]

Jeffrey Hsien-Min Hsu, M.D.  
Assistant Professor of Psychiatry [2002; 1999]

Stephanie C. Hsu, M.D., Ph.D.  
Adjunct Assistant Professor of Pediatrics [2004]

Dehua Hu, Ph.D.  
Visiting Assistant Professor of Health Sciences Informatics [2011]

Tamaro Hudson, Ph.D., M.P.H.  
Adjunct Assistant Professor of Oncology [2009]

Matthew Timothy Hueman, M.D.  
Assistant Professor of Surgery [2009; 2007]

Nancy Ann Hueppchen, M.D.  
Assistant Professor of Gynecology and Obstetrics [1998; 1996], Assistant Dean for Curriculum [2011]

John Michael Huete, Ph.D.  
Assistant Professor of Psychiatry [2010; 2006]

Mark Thomas Hughes, M.D.  
Assistant Professor of Medicine [1997]

Mary Margaret Huizinga, M.D., M.P.H.  
Assistant Professor of Medicine [2008]

Ianessa Alicia Humbert, Ph.D.  
Assistant Professor of Physical Medicine and Rehabilitation [2008]

Laura Kathleen Hummers, M.D.  
Assistant Professor of Medicine [2005; 2003]

Marc Wilson Hungerford, M.D.  
Assistant Professor of Orthopaedic Surgery [1998]

Elizabeth Anne Hunt, M.D., M.P.H.  
Assistant Professor of Anesthesiology and Critical Care Medicine [2003], Joint Appointment in Health Sciences Informatics [2010], Assistant Professor of Pediatrics [2006]

Wayne P. Hunt, Ed.D.  
Assistant Professor of Psychiatry [1999; 1992]

Andres Hurtado, M.D.  
Assistant Professor of Neurology [2010; 2008]

David F. Hutcheon, M.D.  
Assistant Professor of Medicine [1979; 1977]

Heidi E. Hutton, Ph.D.  
Assistant Professor of Psychiatry [1998; 1993]

Chao-Wei Hwang, M.D.  
Assistant Professor of Medicine [2011], Assistant Professor of Biomedical Engineering [2011]

Paul Mingyou Hwang, M.D., Ph.D.  
Assistant Professor of Medicine [2001]

Okechukwu Anthony Ibeanu, M.B.B.S., M.P.H.  
Assistant Professor of Gynecology and Obstetrics [2011] (from 08/01/2011)

Iredell Waddell Iglehart, III, M.D.  
Assistant Professor of Medicine [1997; 1988]

Miho Iijima, Ph.D.  
Assistant Professor of Cell Biology [2006; 2004]

Peter Bela Illei, M.D.  
Assistant Professor of Pathology [2005]

Thomas V. Inglesby, M.D.  
Assistant Professor of Medicine [1999]

Nicholas T. Ingolia, Ph.D.  
Adjunct Assistant Professor of Molecular Biology and Genetics [2010]

Peter C. Innis, M.D.  
Assistant Professor of Orthopaedic Surgery [1994; 1990]

Takanari Inoue, Ph.D.  
Assistant Professor of Cell Biology [2008], Assistant Professor of Biological Chemistry [2010], Assistant Professor of Pharmacology and Molecular Sciences [2010]

Kristina Irsch, Ph.D.  
Assistant Professor of Ophthalmology [2010]

Gillian Raemi Isaac, M.D., Ph.D.  
Assistant Professor of Otolaryngology-Head and Neck Surgery [2007; 2005]
Stacey Lynn Ishman, M.D.
Assistant Professor of Otolaryngology-Head and Neck Surgery [2006; 2005], Assistant Professor of Medicine [2010], Assistant Professor of Pediatrics [2008]

Robert Ikvov, Ph.D.
Assistant Professor of Radiation Oncology and Molecular Radiation Sciences [2011; 2008]

Izlem Izbudak, M.D.
Assistant Professor of Radiology [2008; 2006]

Bernard Georges Jaar, M.D.
Assistant Professor of Medicine [2003; 2002]

Mahmood Jaberi, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2003]

Rasha Snaq Jabri, M.D.
Adjunct Assistant Professor of Anesthesiology and Critical Care Medicine [2011]

Heather A. Jacene, M.D.
Assistant Professor of Radiology [2006; 2005]

Annette Marie Jackson, Ph.D.
Assistant Professor of Medicine [2006]

Eric Vincent Jackson, Jr., M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2001]

Michael A. Jacobs, M.D.
Assistant Professor of Orthopaedic Surgery [1993]

Sanjay Raj Jain, M.B.B.S., Ph.D.
Adjunct Assistant Professor of Oncology [2009]

Julian Jakobovits, M.B.B.S.
Assistant Professor of Medicine [1996; 1986]

Mariflor S. Jamora, M.D.
Assistant Professor of Psychiatry [2010; 2000]

Roxanne M. Jamshidi, M.D.
Assistant Professor of Gynecology and Obstetrics [2004; 2002]

Yoon-Young Jang, M.D., Ph.D.
Assistant Professor of Oncology [2008; 2005]

Niraj D. Jani, M.D.
Assistant Professor of Medicine [2008]

John Sheppard Jeffreys, Ed.D.
Assistant Professor of Psychiatry [2000; 1988]

Danijela Jelovac, M.D.
Assistant Professor of Oncology [2011] (from 08/01/2011)

Jennifer Lee Jenkins, M.D.
Assistant Professor of Emergency Medicine [2007; 2006]

Heather Kristen Jennett, Ph.D.
Assistant Professor of Psychiatry [2010; 2008]

Jacky M. Jennings, Ph.D., M.P.H.
Assistant Professor of Pediatrics [2007; 2006]

Riyaz H. Jinnah, M.B.B.CH.
Assistant Professor of Orthopaedic Surgery [1986]

Hyttton Victor Joffe, M.D.
Assistant Professor of Medicine [2008; 2006]
FACULTY

Barbara J. Kaminski, Ph.D.
Assistant Professor of Behavioral Biology in the Department of Psychiatry [1993; 1992]

Atsushi Kamiya, M.D., Ph.D.
Assistant Professor of Psychiatry [2008; 2007]

Melinda E. Kantsiper, M.D.
Assistant Professor of Medicine [2009; 2004]

Luke I. Kao, M.D.
Assistant Professor of Neurology [1976; 1975]

Brian A. Kaplan, M.D.
Adjunct Assistant Professor of Otolaryngology-Head and Neck Surgery [2011]

Adam Ian Kaplin, M.D.
Assistant Professor of Psychiatry [2001; 2000], Assistant Professor of Neurology [2006]

Bill G. Kapogiannis, M.D.
Assistant Professor of Pediatrics [2009]

Petros Constantine Karakousis, M.D.
Assistant Professor of Medicine [2005]

Baktiar O. Karim, D.V.M., Ph.D.
Assistant Professor of Molecular and Comparative Pathobiology [2007; 2006]

Wikrom W. Karnsakul, M.D.
Assistant Professor of Pediatrics [2008]

Matthew Lewis Kashima, M.D.
Assistant Professor of Otolaryngology-Head and Neck Surgery [2001]

Elizabeth A. Kastelic, M.D.
Assistant Professor of Psychiatry [2004; 2001]

Wendy G. Kates, Ph.D.
Assistant Professor of Psychiatry [1993; 1990]

Sudhir Kathuria, M.D.
Assistant Professor of Radiology [2009; 2008], Assistant Professor of Neurological Surgery [2009]

Yoshinori Kato, Ph.D.
Assistant Professor of Radiology [2008; 2006], Assistant Professor of Oncology [2009]

Laura S.R. Katta, M.B.B.S.
Assistant Professor of Gynecology and Obstetrics [2010]

Eugene Katz, M.D.
Assistant Professor of Gynecology and Obstetrics [2006]

Rebecca A. Kazin, M.D.
Assistant Professor of Dermatology [2005]

Sosena Kebede, M.D., M.P.H.
Assistant Professor of Medicine [2011]

Jeffrey Renn Keefer, M.D., Ph.D.
Assistant Professor of Pediatrics [2005; 2003]

Corinne Allison Keet, M.D.
Assistant Professor of Pediatrics [2010]

Courtney Pierce Keeton, Ph.D.
Assistant Professor of Psychiatry [2010; 2008]

Jean M. Keller, B.S.
Assistant Professor of Gynecology and Obstetrics [2008; 1993]

Ronan Joseph Kelly, M.B.B.CH.
Assistant Professor of Oncology [2011] (from 08/29/2011)

Newton E. Kendig, M.D.
Assistant Professor of Medicine [1999; 1991]

Hayden Odell Kepley, Ph.D.
Assistant Professor of Psychiatry [2006]

Candace L. Kerr, Ph.D.
Adjunct Assistant Professor of Gynecology and Obstetrics [2011; 2003]

Jeanne Couturier Keruly, M.S.
Assistant Professor of Medicine [2005; 1998]

Sanjay Chandru Keswani, M.B.B.S.
Adjunct Assistant Professor of Neurology [2003]

Marwan Riad Khalifeh, M.D.
Assistant Professor of Plastic and Reconstructive Surgery [2008; 2006]

Saeed R. Khan, Ph.D.
Adjunct Assistant Professor of Oncology [2008; 1999]

Mouen A. Khashab, M.D.
Assistant Professor of Medicine [2011]

Ron Khazan, M.D.
Assistant Professor of Radiology [1991; 1989] (on leave of absence)

Michelle Kho, Ph.D.
Assistant Professor of Physical Medicine and Rehabilitation [2010]

Victor A. Khouzami, M.D.
Assistant Professor of Gynecology and Obstetrics [1986; 1979]

Ramesh K. Khurana, M.B.B.S.
Assistant Professor of Neurology [1995]

Earl D.R. Kidwell, Jr., M.D.
Assistant Professor of Ophthalmology [1980; 1978]

Young Choo Kim, M.D.
Assistant Professor of Radiology [1979; 1971]

Young Jun Kim, M.D.
Assistant Professor of Otolaryngology-Head and Neck Surgery [2005], Assistant Professor of Oncology [2009]

Richard M. Kimball, Jr., Ph.D., M.P.H.
Assistant Professor of Neurology [2010]

Mark King, M.D.
Assistant Professor of Emergency Medicine [2000]

Tracy Meicha King, M.D., M.P.H.
Assistant Professor of Pediatrics [2005; 2004]

Arnold S. Kirshenbaum, M.D.
Assistant Professor of Pediatrics [1990]

Flora N. Kisuule, M.D.
Assistant Professor of Medicine [2007; 2004]

Dmitry Eugene Kiyatkin, M.D.
Assistant Professor of Medicine [2011; 2007]

Mitchell Klapper, M.D.
Assistant Professor of Dermatology [1992]

Jonathan Tzvi Klein, M.D.
Assistant Professor of Medicine [1994]
Lawrence Elliot Klein, M.D.
Assistant Professor of Medicine [1981; 1980]
Amy M. Knight, M.D.
Assistant Professor of Medicine [2003; 2000]
Han Seok Ko, Ph.D.
Assistant Professor of Neurology [2010; 2008]
Thomas Wayne Koenig, M.D.
Assistant Professor of Psychiatry [1981; 1980],
Associate Dean for Student Affairs [2004]
Aravindan Kollandaivelu, M.D.
Assistant Professor of Medicine [2010]
Richard J. Kolker, M.D.
Assistant Professor of Ophthalmology [1986; 2004]
Marian Kollarik, M.D., Ph.D.
Assistant Professor of Medicine [2007; 2004] (on leave of absence to 11/30/2011)
Lisa A. Kolp, M.D.
Assistant Professor of Gynecology and Obstetrics [2001; 1999]
Scott Lee Kominsky, Ph.D.
Assistant Professor of Orthopaedic Surgery [2003], Assistant Professor of Oncology [2003]
Theda C. Kontis, M.D.
Assistant Professor of Otolaryngology-Head and Neck Surgery [1999; 1992]
Frederick K. Korley, M.D.
Assistant Professor of Emergency Medicine [2007], Occupying the Robert E. Meyerhoff Chair
Kathleen Bechtold Korte, Ph.D.
Assistant Professor of Physical Medicine and Rehabilitation [2003]
Ayman Abdel-Latif Koteish, M.D.
Assistant Professor of Medicine [2004; 2003]
Michael Kottgen, M.D., Ph.D.
Adjunct Assistant Professor of Medicine [2009]
Brian Gustav Kral, M.D., M.P.H.
Assistant Professor of Medicine [2009]
Katherine Goodrich Kratz, M.D.
Assistant Professor of Gynecology and Obstetrics [2010]
Melissa A. Kresco, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2011] (from 07/18/2011)
Robert Kimball Kritzler, M.D.
Assistant Professor of Pediatrics [2007]
Esther I. Krug, M.D.
Assistant Professor of Medicine [2005]
Geoffrey Y. Ku, M.D.
Assistant Professor of Oncology [2010]
Sapna Ravi Kudchadkar, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2011]
Prakash Kulkarni, Ph.D.
Assistant Professor of Urology [2007], Assistant Professor of Oncology [2009]
Kanupriya A. Kumar, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2009]
Patricia Ferrans Kurtz, Ph.D.
Assistant Professor of Psychiatry [1996; 1993]
Hiroto Kuwabara, M.D., Ph.D.
Assistant Professor of Radiology [2005; 2003]
Chulan Kwon, Ph.D.
Assistant Professor of Medicine [2010]
Michael J. Labellarte, M.D.
Assistant Professor of Psychiatry [1997; 1996]
Scott Elliot LaBorwit, M.D.
Assistant Professor of Ophthalmology [1999; 1998]
Aaron Nicholas LacKamp, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2011; 2009] (from 08/16/2011)
Delese E. LaCour, M.D.
Assistant Professor of Gynecology and Obstetrics [2011; 2008], Instructor in Pediatrics [2011]
John Gregory Ladas, M.D., Ph.D.
Assistant Professor of Ophthalmology [2001; 2000]
Hong Lai, Ph.D., M.P.H.
Assistant Professor of Radiology [2008], Assistant Professor of Ophthalmology [2001]
Janet Christine Lam, M.D.
Assistant Professor of Neurology [2011]
Gyanu Lamichhane, Ph.D.
Assistant Professor of Medicine [2006]
Richard Allen Lanham, Jr., Ph.D.
Assistant Professor of Psychiatry [2011]
Thomas F. Lansdale, III, M.D.
Assistant Professor of Medicine [1997; 1994]
Michael Edward Lantz, M.D.
Assistant Professor of Gynecology and Obstetrics [1995]
Justine Julia Larson, M.D., Ph.D.
Assistant Professor of Psychiatry [2007]
Asad Latif, M.B.B.S.
Assistant Professor of Anesthesiology and Critical Care Medicine [2008]
Albert Y. Lau, Ph.D.
Assistant Professor of Biophysics and Biophysical Chemistry [2010]
Maren R. Laughlin, Ph.D.
Adjunct Assistant Professor of Radiology [2008]
Josh David Lauring, M.D., Ph.D.
Assistant Professor of Oncology [2008]
Bennett Lavenstein, M.D.
Assistant Professor of Neurology [1997] (to 09/30/2011)
Paul Aubrey Law, M.D., M.P.H.
Assistant Professor of Pediatrics [2006]
Cathleen Escallon Lawson, M.S.
Assistant Professor of Gynecology and Obstetrics [2006; 1994]
Shari Martin Lawson, M.D.
Assistant Professor of Gynecology and Obstetrics [2008]
Mark G. Lazarev, M.D.
Assistant Professor of Medicine [2009]
Dung Thi Le, M.D.
Assistant Professor of Oncology [2009; 2007]

William Leahy, M.D.
Assistant Professor of Neurology [1978]

Noah Lechtzin, M.D.
Assistant Professor of Medicine [2001], Assistant Professor of Neurology [2003]

Benjamin H. Lee, M.D., M.P.H.
Assistant Professor of Anesthesiology and Critical Care Medicine [2002]

Gabsang Lee, Ph.D.
Assistant Professor of Neurology [2011] (from 09/01/2011)

Jai Sung Lee, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2004]

Judy Mon-Hwa Lee, M.D., M.P.H.
Assistant Professor of Gynecology and Obstetrics [2003; 2000]

Linda A. Lee, M.D.
Assistant Professor of Medicine [1995; 1994]

Melissa Ann Lee, M.D.
Assistant Professor of Psychiatry [2005; 2000]

Jennifer Kim Lee-Summers, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2010]

Michelle Kim Leff, M.D.
Adjunct Assistant Professor of Psychiatry [2005; 1996]

Susan W. Lehrmann, M.D.
Assistant Professor of Psychiatry [1992; 1989]

Gregory K. Lehne, Ph.D.
Assistant Professor of Medical Psychology in the Department of Psychiatry [1983]

Richard Leigh, M.D.
Assistant Professor of Neurology [2010]

Mesfin Aklilu Lemma, M.D.
Assistant Professor of Orthopaedic Surgery [2003; 2002]

Jeannie-Marie Sheppard Leoutsakos, Ph.D.
Assistant Professor of Psychiatry [2010; 2009]

Mary L. O'Connor Leppert, M.B.B.CH.
Assistant Professor of Pediatrics [2000; 1995]

Mark Lewis Lessne, M.S.
Assistant Professor of Radiology [2011]

Eric Benjamin Levey, M.D.
Assistant Professor of Pediatrics [2003; 1999]

Philip A. Levin, M.D.
Assistant Professor of Medicine [2010]

Scott Ryan Levin, M.D.
Assistant Professor of Emergency Medicine [2008]

Stuart M. Levine, M.D.
Assistant Professor of Medicine [2004; 2003]

Dale R. Levitz, M.S.
Adjunct Assistant Professor of Art as Applied to Medicine [1999; 1976]

Howard Philip Levy, M.D., Ph.D.
Assistant Professor of Medicine [2000]
Michael Scott Linkinhoker, M.A.
Adjunct Assistant Professor of Art as Applied to Medicine [2010]

John Timothy Little, M.D.
Adjunct Assistant Professor of Psychiatry [2006; 1999]

Gordon S. Livingston, M.D.
Assistant Professor of Psychiatry [1976; 1974]

Thomas E. Lloyd, M.D., Ph.D.
Assistant Professor of Neurology [2008], Assistant Professor of Neuroscience [2010]

Heather Virginia Lochner, M.D.
Assistant Professor of Orthopaedic Surgery [2009]

Charles F.S. Locke, M.D.
Assistant Professor of Medicine [2000; 1998]

Martin Anthony Lodge, Ph.D.
Assistant Professor of Radiology [2006]

Joseph S. Lombardo, M.S.
Assistant Professor of Health Sciences Informatics [2009]

Andrew London, M.D.
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J. Craig Longenecker, M.D., M.P.H.
Assistant Professor of Medicine [1999; 1998]

Gilberto de Lima Lopes, Jr., M.D.
Assistant Professor of Oncology [2007]

Maria Del Carmen Lopez-Arvizu, M.D.
Assistant Professor of Psychiatry [2010; 2006]

Tamara Levin Lotan, M.D.
Assistant Professor of Pathology [2008]

Grant H. Louie, M.D.
Assistant Professor of Medicine [2010]

Marc Lowen, M.D.
Assistant Professor of Gynecology and Obstetrics [1993; 1983]

Nancy Ryan Lowitt, M.D.
Assistant Professor of Medicine [1997; 1994]

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Ronald William Luethke, M.D.
Assistant Professor of Plastic and Reconstructive Surgery [1992; 1990]

Andreas R.J. Luft, M.D.
Adjunct Assistant Professor of Neurology [2004]

Ying Wei Lum, M.D.
Assistant Professor of Surgery [2011]

Jun Luo, Ph.D.
Assistant Professor of Urology [2002], Assistant Professor of Oncology [2007]

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Assistant Professor of Psychiatry [2004]

Crystal L. Mackall, M.D.
Assistant Professor of Oncology [1998], Assistant Professor of Pediatrics [1998]

Igal Madar, Ph.D.
Assistant Professor of Radiology [2010]

David H. Madoff, M.D., Ph.D.
Assistant Professor of Medicine [1997]

Gustavo H.B. Maegawa, M.D.
Assistant Professor of Genetic Medicine in the Department of Pediatrics [2009]

Ronald H. Magarick, Ph.D.
Assistant Professor of Gynecology and Obstetrics [1986; 1979]

Jeffrey Lance Magaziner, M.D.
Assistant Professor of Medicine [2001; 1997]

Priscilla Magno, M.D.
Adjunct Assistant Professor of Medicine [2007; 2006]

Gina Marie Magyar-Russell, Ph.D.
Adjunct Assistant Professor of Psychiatry [2009; 2007]

Anshu Mahajan, M.D.
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Mohammad Maisami, M.D.
Assistant Professor of Psychiatry [1978], Assistant Professor of Pediatrics [1978]

Zahra Maleki, M.D.
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Assistant Professor of Neurology [2007], Assistant Professor of Medicine [2009]

Michele Ann Manahan, M.D.
Assistant Professor of Plastic and Reconstructive Surgery [2007]

Kaushik Mandal, M.B.B.S.
Assistant Professor of Cardiac Surgery [2011]

Steven F. Mandell, M.S.
Assistant Professor of Health Sciences Informatics [2001]

Rebecca Lynn Manno, M.D.
Assistant Professor of Medicine [2011]

Lisa L. Maragakis, M.D.
Assistant Professor of Medicine [2004]

Christopher M. Marano, M.D.
Assistant Professor of Psychiatry [2008]

Arik V. Marcell, M.D., M.P.H.
Assistant Professor of Pediatrics [2006]

Luigi Marchionni, M.D., Ph.D.
Assistant Professor of Oncology [2010; 2007]

Mohamed K. Mardini, M.D.
Assistant Professor of Pediatrics [1986]

Seth S. Margolis, Ph.D.
Assistant Professor of Biological Chemistry [2011] (from 09/01/2011)
Zoltan Mari, M.D.
Assistant Professor of Neurology [2006]

Spyridon S. Marinopoulos, M.D.
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Assistant Professor of Neuroscience [2001], Joint Appointment in Ophthalomology [2005]

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Shanthi Marur, M.B.B.S.
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Assistant Professor of Medicine [2009; 2008]

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Assistant Professor of Pediatrics [2006]

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Assistant Professor of Medicine [2004]

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Assistant Professor of Medicine [2010]

Andrew R. Mayrer, M.D.
Assistant Professor of Medicine [1984]

Reza Mazhari, Ph.D.
Adjunct Assistant Professor of Medicine [2003; 2002]

Teri Metcalf McCambridge, M.D.
Assistant Professor of Pediatrics [2003; 2000]

Robert Emmett McCarthy, III, M.D.
Assistant Professor of Medicine [1998]

Jeanne M. McCauley, M.D., M.P.H.
Assistant Professor of Medicine [1997]

Michael E. McCollum, M.D.
Assistant Professor of Gynecology and Obstetrics [1997]

Meredith Christine McCormack, M.D.
Assistant Professor of Medicine [2009; 2008]

Susan Sifford McDermott, M.D.
Adjunct Assistant Professor of Neurology [2010; 2002]

Michael A. McDevitt, M.D., Ph.D.
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Assistant Professor of Plastic and Reconstructive Surgery [1971]

Brian Michael McGinley, M.D.
Assistant Professor of Pediatrics [2006]

Marsden H. McGuire, M.D.
Assistant Professor of Psychiatry [1997; 1993]

Maura Joyce McGuire, M.D.
Assistant Professor of Medicine [1994; 1989], Assistant Dean of the Part-Time Faculty [2010]

Joseph D. McInerney, M.S.
Visiting Assistant Professor of Pediatrics [2000]

Anne B. McKusick, M.D.
Assistant Professor of Medicine [1969; 1952]

Rhondalyn C. McLean, M.D.
Assistant Professor of Medicine [2008]

Gabrielle Lynn McLemore, Ph.D.
Adjunct Assistant Professor of Pediatrics [2004; 2002]

Michael T. McMahon, Ph.D.
Assistant Professor of Radiology [2006; 2003]
Todd R. McNutt, Ph.D.
Assistant Professor of Radiation Oncology and Molecular Radiation Sciences [2005], Assistant Professor of Oncology [2005]

Nathaniel McQuay, Jr., M.D.
Assistant Professor of Surgery [2010]

Danni Li Meany, Ph.D.
Assistant Professor of Pathology [2011; 2010]

Alan Keith Meeker, Ph.D.
Assistant Professor of Pathology [2005], Assistant Professor of Oncology [2009], Assistant Professor of Urology [2005]

Mollie K. Meffert, M.D., Ph.D.
Assistant Professor of Biological Chemistry [2004], Assistant Professor of Neuroscience [2004]

Sherif M. Meleka, M.B.B.CH.
Assistant Professor of Neurological Surgery [1995; 1993]

Michael Melia, M.D.
Assistant Professor of Medicine [2010; 2008]

Elizabeth Pynadath Menachery, M.D.
Assistant Professor of Medicine [2006; 2001]

Pedro Alejandro Mendez-Tellez, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2000], Assistant Professor of Surgery [2001]

Jose G. Merino-Juarez, M.D.
Adjunct Assistant Professor of Neurology [2010]

Christian Avery Merlo, M.D., M.P.H.
Assistant Professor of Medicine [2006; 2004]

James Harris Mersey, M.D.
Assistant Professor of Medicine [1994; 1977]

John O. Meyerhoff, M.D.
Assistant Professor of Medicine [1996]

Jon Hamilton Meyerle, M.D.
Assistant Professor of Dermatology [2006; 2005] (on leave of absence to 03/10/2012)

Caren L. Freel Meyers, Ph.D.
Assistant Professor of Pharmacology and Molecular Sciences [2005], Assistant Professor of Oncology [2009]

Theresa M. Michele, M.D.
Assistant Professor of Medicine [2004]

Erin Donnelly Michos, M.D.
Assistant Professor of Medicine [2008; 2007]

Henry Joseph Michtalik, M.D., M.P.H.
Assistant Professor of Medicine [2011]

Hubert S. Mickel, M.D.
Assistant Professor of Emergency Medicine [1995]

Michelle Marie Mielke, Ph.D.
Adjunct Assistant Professor of Psychiatry [2011; 2006]

Amerigo Aniello Migliaccio, Ph.D.
Adjunct Assistant Professor of Otolaryngology-Head and Neck Surgery [2008; 2004]

Lorraine A. Milio, M.D.
Assistant Professor of Gynecology and Obstetrics [1996]

Christina Rose Miller, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2010]

Julie Marie Miller, M.D.
Assistant Professor of Medicine [1999]

Leslie Rachel Miller, M.D.
Assistant Professor of Psychiatry [2008]

Robert S. Miller, M.D.
Assistant Professor of Oncology [2010]

Ryan Scott Miller, M.D.
Assistant Professor of Pediatrics [2011; 2006]

Susan R. Miller, Sc.D.
Assistant Professor of Gynecology and Obstetrics [2009]

Katherine Miller-Bass, M.D.
Assistant Professor of Gynecology and Obstetrics [1991]

Michael G. Millin, M.D., M.P.H.
Assistant Professor of Emergency Medicine [2006; 2004]

Aaron Michael Milstone, M.D.
Assistant Professor of Pediatrics [2007]

John S. Minkowski, M.D.
Assistant Professor of Ophthalmology [1985; 1984]

Raksha Mirchandani, D.D.S.
Assistant Professor of Oral Surgery [2011]

Nanhi R. Mitter, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2009]

Scott H. Mittman, M.D., Ph.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [1996; 1994]

Abhay Rajeshwar Moghekar, M.B.B.S.
Assistant Professor of Neurology [2008; 2006]

Mona Adel Mohamed, M.B.B.Ch., Ph.D.
Assistant Professor of Radiology [2010; 2007]

Mark Nicolai Mollenhauer, M.D.
Assistant Professor of Psychiatry [1996; 1994]

Kyaw Soe Mon, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2011]

Brian E. Mondell, M.D.
Assistant Professor of Neurology [1985]

Anna T. Monias, M.D.
Assistant Professor of Medicine [2007]

Michael B. Monias, M.D.
Assistant Professor of Gynecology and Obstetrics [1975]

Constance L. Monitto, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [1996; 1993]
David J. Monroe, M.D.
Assistant Professor of Pediatrics [2000]

Richard J. Montali, D.V.M.
Assistant Professor of Molecular and Comparative Pathobiology [1971; 1970]

Chulso Moon, M.D., M.P.H.
Adjunct Assistant Professor of Otolaryngology-Head and Neck Surgery [2008; 2001]

Margaret Rusha Moon, M.D., M.P.H.
Assistant Professor of Pediatrics [2004]

Graham Mooney, Ph.D.
Assistant Professor of History of Medicine [2006; 2003]

Athir Hamid Morad, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2009; 2008], Assistant Professor of Neurology [2009]

Basil Sylvester Morgan, M.D.
Assistant Professor of Ophthalmology [1985; 1982]

Yuriko Mori, M.D., Ph.D.
Assistant Professor of Medicine [2006]

Patrice Jean-Luc Morin, Ph.D.
Adjunct Assistant Professor of Pathology [2006; 1998]

Brett Michael Morrison, M.D., Ph.D.
Assistant Professor of Neurology [2007; 2006]

Kendall Ford Moseley, M.D.
Assistant Professor of Medicine [2011]

Ali Moshirfar, M.D.
Assistant Professor of Orthopaedic Surgery [2004]

Nathan Moskowitz, M.D., Ph.D.
Assistant Professor of Neurological Surgery [1992; 1990]

Ellen M. Mowry, M.D.
Assistant Professor of Neurology [2011] (from 07/15/2011)

James Otis Mudd, M.D.
Adjunct Assistant Professor of Medicine [2010; 2008]

J. Cameron Muir, M.D.
Assistant Professor of Oncology [2009]

Cynthia Shelton Munro, Ph.D.
Assistant Professor of Medical Psychology in the Department of Psychiatry [2002; 2000]

Siham Muntasser, M.D.
Assistant Professor of Psychiatry [2011] (from 08/15/2011)

Emi Zuiki Murano, M.D., Ph.D.
Assistant Professor of Otolaryngology-Head and Neck Surgery [2009]

Jamie Deneen Murphy, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2008; 2007], Assistant Professor of Gynecology and Obstetrics [2011]

Michael S. Murphy, M.D.
Assistant Professor of Orthopaedic Surgery [2003; 1995]

Biljana Musicki, Ph.D.
Assistant Professor of Urology [2010; 2001]

Donna I. Myers, M.D.
Assistant Professor of Medicine [1980; 1977]

Elliott Howard Myrowitz, O.D., M.P.H.
Assistant Professor of Ophthalmology [2002; 1998]

Neal Jamison Naff, M.D.
Assistant Professor of Neurological Surgery [1998; 1997]

Neeraj Sunderrajan Naval, M.B.B.S.
Assistant Professor of Neurology [2010; 2006], Assistant Professor of Anesthesiology and Critical Care Medicine [2010; 2006]

Tariq Ali Nayfeh, M.D., Ph.D.
Assistant Professor of Orthopaedic Surgery [2006]

Saman Nazarian, M.D.
Assistant Professor of Medicine [2007]

Chiadi Ericson Ndumele, M.D.
Assistant Professor of Medicine [2011]

Donna Maria Neale, M.D.
Assistant Professor of Gynecology and Obstetrics [2005]

Kristen Leigh Nelson, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2007], Assistant Professor of Pediatrics [2007]

Dionissios Neofytos, M.D., M.P.H.
Assistant Professor of Medicine [2009]

Enid Rose Neptune, M.D.
Assistant Professor of Medicine [2003; 2000]

Dale M. Netski, Ph.D.
Adjunct Assistant Professor of Medicine [2007; 2001]

Philip R. Neubauer, M.D.
Assistant Professor of Orthopaedic Surgery [2009; 2008]

Mary M. Newman, M.D.
Assistant Professor of Medicine [1992; 1984]

Julie R. Newman-Toker, M.D.
Assistant Professor of Psychiatry [2004]

Scott Douglas Newsome, D.O.
Assistant Professor of Neurology [2010]

Thuy Lam Ngo, D.O.
Assistant Professor of Pediatrics [2011] (from 08/15/2011)

Geoffrey Christopher Nguyen, M.D., Ph.D.
Adjunct Assistant Professor of Medicine [2007]

Hien Tan Nguyen, M.D.
Assistant Professor of Surgery [2009; 2008]

Thien Tuong Nguyen, M.D., Ph.D.
Assistant Professor of Pediatrics [2003; 2000]

Thienn Tuong Nguyen, M.D., Ph.D.
Assistant Professor of Neurology [2005]

Anna Nidecker, M.D.
Assistant Professor of Radiology [2010]

William A. Niemann, M.D.
Assistant Professor of Pediatrics [1967; 1958]

Satnam Singh Nijjar, M.D.
Assistant Professor of Neurology [2010]
Sridhar Nimmagadda, Ph.D.
Assistant Professor of Radiology [2009; 2008],
Joint Appointment in Medicine [2009], Assistant Professor of Oncology [2009]

Jack Edward Nissim, M.D.
Assistant Professor of Medicine [1997; 1978]

William Ellis Northington, M.D.
Assistant Professor of Emergency Medicine [2009; 2008]

Hany R. Nosir, M.B.B.CH.
Adjunct Assistant Professor of Physical Medicine and Rehabilitation [2007]

Emmanuel Nchinda Nsah, M.D.
Assistant Professor of Medicine [1998]

Frederick C. Nuafora, Jr., D.O., Ph.D.
Assistant Professor of Psychiatry [2008]

Gary W. Nyman, M.D.
Assistant Professor of Psychiatry [1974]

Anne Marie O’Broin Lennon, M.B.B.Ch., Ph.D.
Assistant Professor of Medicine [2010]

Daniel H. O’Connor, Ph.D.
Assistant Professor of Neurosciences [2012] (from 05/01/2012)

Julia Teresa O’Connor, Ph.D.
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Mathias Oelke, Ph.D.
Assistant Professor of Pathology [2004; 2003]

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Thomas J. Oglesby, M.D.
Assistant Professor of Psychiatry [1992]

Naomi P. O’Grady, M.D.
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Esther Seunghee Oh, M.D.
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Shinji Ohara, M.D., Ph.D.
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Kenichi Oishi, M.D.
Assistant Professor of Radiology [2009; 2008]

Sande O. Okelo, M.D.
Assistant Professor of Pediatrics [2003]

Patrick I. Okolo, III, M.B.B.S., M.P.H.
Assistant Professor of Medicine [2001]

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Tola B. Omotosho, M.D.
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Patrick Onyango, Ph.D.
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Chiadi Uchendu Onyike, M.B.B.S., M.D.
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Greg M. Osgood, M.D.
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Lyle W. Ostrow, M.D., Ph.D.
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Thomas P. O’Toole, M.D.
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Josephine Olutola Owoeye, O.D., M.P.H.
Assistant Professor of Ophthalmology [2011; 2004]

Elba M. Pacheco, M.D.
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Theodosia Renata Paclawskyj, Ph.D.
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Assistant Professor of Physical Medicine and Rehabilitation [1999]

Fan Pan, M.D., Ph.D.
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Hardin Attwood Pantle, M.D.
Assistant Professor of Emergency Medicine [2010; 2004], Assistant Professor of Pediatrics [2010; 2004]

Maryland Pao, M.D.
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Assistant Professor of Pathology [2002; 2001]  
Michael John Parsons, Ph.D.  
Assistant Professor of Surgery [2004]  
Leonard M. Parver, M.D.  
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Assistant Professor of Dermatology [2008; 2007]  
Shivani Mayank Patel, M.B.B.S.  
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Blake Martin Paterson, M.D.  
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Arvind P. Pathak, Ph.D.  
Assistant Professor of Radiology [2005; 2004], Assistant Professor of Oncology [2005]  
Susheel Pandit Patil, M.D., M.P.H.  
Assistant Professor of Medicine [2008; 2004]  
Scott Mitchell Paul, M.D.  
Adjunct Assistant Professor of Biomedical Engineering [2009]  
Aldo T. Paz-Guevara, M.D.  
Assistant Professor of Medicine [1996; 1975]  
Ido Paz-Priel, M.D.  
Assistant Professor of Oncology [2008; 2005]  
Craig Douglas Peacock, Ph.D.  
Assistant Professor of Oncology [2008; 2006]  
Kimberly Sue Pearis, M.D.  
Assistant Professor of Medicine [1997; 1996], Assistant Professor of Oncology [2011; 2011] (from 08/01/2011)  
Monica Smith Pearl, M.D.  
Assistant Professor of Radiology [2011; 2010]  
Richard N. Peeler, M.D.  
Assistant Professor of Medicine [1977; 1955]  
Jessica M. Peirce, Ph.D.  
Assistant Professor of Psychiatry [2004; 2000]  
Galit Pelled, Ph.D.  
Assistant Professor of Radiology [2009]  
Cathy A. Pelletier, Ph.D.  
Assistant Professor of Physical Medicine and Rehabilitation [2008]  
Joseph Vincent Pergolizzi, Jr., M.D.  
Adjunct Assistant Professor of Medicine [2000]  
Carisa Katherine Perry-Parrish, Ph.D.  
Assistant Professor of Psychiatry [2011; 2010]  
Mihaela Pertea, Ph.D.  
Assistant Professor of Medicine in Genetic Medicine [2011] (from 07/11/2011)  
Barbara Lee Peterlin, D.O.  
Assistant Professor of Neurology [2010]  
Daniel Peterson, M.D., Ph.D.  
Assistant Professor of Pathology [2011]  
John Petrone, D.D.S.  
Assistant Professor of Oral Surgery [2010]  
Myria Petrou, M.B.B.CH.  
Assistant Professor of Radiology [2008]  
Michelle Antonietta Petrovic, M.D.  
Assistant Professor of Anesthesiology and Critical Care Medicine [2007]  
Mark F. Peyrot, Ph.D.  
Assistant Professor of Medicine [1997; 1988]  
Julius Cuong Pham, M.D.  
Assistant Professor of Emergency Medicine [2005], Assistant Professor of Anesthesiology and Critical Care Medicine [2004]  
Karran Alexandra Phillips, M.D.  
Assistant Professor of Medicine [2010; 2007]  
Daniel L. Picard, M.D.  
Assistant Professor of Surgery [1994]  
Carmen Paz Pichard-Encina, M.D.  
Assistant Professor of Orthopaedic Surgery [2011; 2010] (from 09/01/2011)  
Joseph P. Pillion, Ph.D.  
Assistant Professor of Physical Medicine and Rehabilitation [2001]  
Sally Mae Pinkstaff, M.D., Ph.D.  
Assistant Professor of Medicine [2005; 2004]  
Mehdi Pirooznia, M.D., Ph.D.  
Assistant Professor of Psychiatry [2011; 2010]  
Mark F. Pittenger, Ph.D.  
Adjunct Assistant Professor of Medicine [2007; 2005]  
Christopher Vine Plowe, M.D., M.P.H.  
Assistant Professor of Medicine [1995]  
Jennifer L. Pluznick, Ph.D.  
Assistant Professor of Physiology [2010]  
Michelle Antoinette Poirier, M.D., Ph.D.  
Assistant Professor of Psychiatry [2004; 2001]  
Gregory S. Pokrywka, M.D.  
Assistant Professor of Medicine [2005]  
Albert John Polito, M.D.  
Assistant Professor of Medicine [1997]  
Sarah Polk, M.D.  
Assistant Professor of Pediatrics [2007]  
Craig Pollack, M.D.  
Assistant Professor of Medicine [2010], Assistant Professor of Oncology [2010]  
Gregory Michael Pontone, M.D.  
Assistant Professor of Psychiatry [2008]  
James K. Porterfield, M.D.  
Assistant Professor of Medicine [1987; 1984]
Stephanie L. Reel, M.B.A.  
Assistant Professor of Health Sciences Informatics [2003]

Linda Ann Regan, M.D.  
Assistant Professor of Emergency Medicine [2007]

Douglas David Reh, M.D.  
Assistant Professor of Otolaryngology-Head and Neck Surgery [2007]

Daniel Salo Reich, M.D., Ph.D.  
Adjunct Assistant Professor of Neurology [2009],  
Adjunct Assistant Professor of Radiology [2009]

Ruben Reider, M.D.  
Assistant Professor of Medicine [2000]

Thomas Reifsnyder, M.D.  
Assistant Professor of Surgery [2006]

Maura Reinblatt, M.D.  
Assistant Professor of Plastic and Reconstructive Surgery [2008]

Shauna Pencer Reinblatt, M.D.  
Assistant Professor of Psychiatry [2006]

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Assistant Professor of Pathology [2007]

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Visiting Assistant Professor of Biological Chemistry [1986; 1979]

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Assistant Professor of Neurology [2000; 1998]

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Adjunct Assistant Professor of Biomedical Engineering [2001]

Elisabeth G. Richard, M.D.  
Assistant Professor of Dermatology [2009]

Rafael Mayo Richards, M.D.  
Assistant Professor of Anesthesiology and Critical Care Medicine [2009]

Daniel T. Richardson, D.M.D.  
Assistant Professor of Oral Surgery [2010]

Gina S. Richman, Ph.D.  
Assistant Professor of Psychiatry [1990; 1987]

Jeremy D. Richmon, M.D.  
Assistant Professor of Otolaryngology-Head and Neck Surgery [2008]

Ronald C. Richter, M.D.  
Assistant Professor of Ophthalmology [1986; 1982]

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Assistant Professor of Orthopaedic Surgery [2010]

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Assistant Professor of Pathology [2007]

Reed David Riley, M.D.  
Assistant Professor of Medicine [1999; 1996]

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Adjunct Assistant Professor of Pathology [2010; 2000]

Vivian Rismondo-Stankovich, M.D.  
Assistant Professor of Ophthalmology [2000]

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Assistant Professor of Neurology [2003]

Juan Jose Rivera, M.D.  
Assistant Professor of Medicine [2009]

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Assistant Professor of Ophthalmology [2011]

Paul Robert Rivkin, M.D.  
Assistant Professor of Psychiatry [1998]

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Assistant Professor of Radiology [1999]

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Assistant Professor of Pathology [2010]

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Adjunct Assistant Professor of Psychiatry [2010]

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Assistant Professor of Pediatrics [2011; 2008]

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Assistant Professor of Anesthesiology and Critical Care Medicine [2010; 2008]

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Adjunct Assistant Professor of Surgery [2009; 2000]

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Assistant Professor of Anesthesiology and Critical Care Medicine [2011]

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Assistant Professor of Medicine [2000]

Richard R. Rosenthal, M.D.  
Assistant Professor of Medicine [1975; 1973]

Mark I. Rossberg, M.D.  
Assistant Professor of Anesthesiology and Critical Care Medicine [1997; 1996]

Judith P. Rossiter, M.D.  
Assistant Professor of Gynecology and Obstetrics [1994]

Leo Charles Rotello, M.D.  
Assistant Professor of Medicine [2011]

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Assistant Professor of Medical Psychology in the Department of Psychiatry [1980]

Rosanne Rouf, M.D.  
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Assistant Professor of Medicine [2007]

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Assistant Professor of Oncology [2003; 2001]

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Assistant Professor of Psychiatry [2009; 2006]

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Assistant Professor of Dermatology [2005]

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Assistant Professor of Surgery [2011; 2010]

John D. Rybock, M.D.  
Assistant Professor of Neurological Surgery [1979; 1977],  
Assistant Dean and Compliance Officer for Graduate Medical Education [2004]

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Assistant Professor of Medicine [1996; 1992]

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Assistant Professor of Pediatrics [2009; 2007]

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Assistant Professor of Surgery [2011]

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Cristina L. Sadowsky, M.D.  
Assistant Professor of Physical Medicine and Rehabilitation [2005]

Haris Iqbal Sair, M.D.  
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Betty Jo Salmeron, M.D.  
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Assistant Professor of Anesthesiology and Critical Care Medicine [2004]

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Assistant Professor of Psychiatry [2008; 2007]

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Assistant Professor of Anesthesiology and Critical Care Medicine [2005]

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Assistant Professor of Medicine [1999; 1998]

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Assistant Professor of Medicine [2008]

William Jacob Savage, M.D.  
Assistant Professor of Pathology [2009]

Joseph Mark Savitt, M.D., Ph.D.  
Assistant Professor of Neurology [2003]

Alena V. Savonenko, M.D., Ph.D.  
Assistant Professor of Pathology [2006; 2001],  
Assistant Professor of Neurology [2008]

John A. Schaefer, M.S.  
Assistant Professor of Medicine [1994]

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Assistant Professor of Medicine [1989]

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Stephen Schatz, M.D.  
Assistant Professor of Urology [2009]

Janet Nagel Scheel, M.D.  
Assistant Professor of Pediatrics [1999]

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Assistant Professor of Anesthesiology and Critical Care Medicine [2009; 2008],  
Assistant Professor of Neurology [2009]

Nicoline Schiess, M.D.  
Assistant Professor of Neurology [2010; 2008]

Michael W. Schlund, Ph.D.  
Assistant Professor of Psychiatry [2001]

Hartmut Schneider, M.D., Ph.D.  
Assistant Professor of Medicine [2005; 2001]

Karen Anne Schneider, M.D.  
Assistant Professor of Pediatrics [2006; 2002]

Christine R. Schneyer, M.D.  
Assistant Professor of Medicine [1990; 1988]

Miguel Antonio Schoen, Ph.D.  
Assistant Professor of Art as Applied to Medicine [2000; 1998]

Richard T. Scholz, M.D.  
Assistant Professor of Ophthalmology [1987; 1984]

Lew C. Schon, M.D.  
Assistant Professor of Orthopaedic Surgery [2003],  
Assistant Professor of Biomedical Engineering [2010; 2009]

Steven A. Schonfeld, M.D.  
Assistant Professor of Medicine [1982]
Robert K. Schreter, M.D.
Assistant Professor of Psychiatry [1981; 1978]

Pamela Rose Schroeder, M.D., Ph.D.
Assistant Professor of Medicine [2009; 2006]

Andrew Howard Schulick, M.D.
Assistant Professor of Surgery [2011]

Thomas G. Schulze, M.D.
Adjunct Assistant Professor of Psychiatry [2009]

Gail F. Schwartz, M.D.
Assistant Professor of Ophthalmology [2000; 1996]

Jamie McElrath Schwartz, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2005] (to 10/31/2011)

Joseph M. Schwartz, M.D.
Assistant Professor of Psychiatry [1997; 1995]

Michael K. Schwartz, D.D.S.
Assistant Professor of Oral Surgery [1985]

Steven J. Schwartz, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2008; 2007], Assistant Professor of Surgery [2009]

Deborah A. Schwengel, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [1994; 1992]

Daniel M. Sciubba, M.D.
Assistant Professor of Neurological Surgery [2009], Assistant Professor of Oncology [2009], Assistant Professor of Orthopaedic Surgery [2009]

Diana Gerardi Scorpio, D.V.M.
Assistant Professor of Molecular and Comparative Pathobiology [2005; 2003] (to 07/05/2011)

Adrienne Williams Scott, M.D.
Assistant Professor of Ophthalmology [2008]

Thomas W. Sedlak, Jr., M.D., Ph.D.
Assistant Professor of Psychiatry [2006]

Keith A. Segalman, M.D.
Assistant Professor of Orthopaedic Surgery [1994]

Priya Sekar, M.D., M.P.H.
Assistant Professor of Pediatrics [2010]

Florin Marian Selaru, M.D.
Assistant Professor of Medicine [2009]

Stuart E. Selonick, M.D.
Assistant Professor of Medicine [1981; 1980], Assistant Professor of Oncology [1983]

Jyoiti Misra Sen, Ph.D.
Adjunct Assistant Professor of Medicine [2006]

Philip Seo, M.D.
Assistant Professor of Medicine [2005; 2000]

Jehuda Peter Sepkuty, M.D.
Adjunct Assistant Professor of Neurology [2007; 1998]

Victor L. Serebruany, M.D., Ph.D.
Adjunct Assistant Professor of Neurology [2006]

Jean-Michel Serfaty, M.D.
Visiting Assistant Professor of Radiology [2002]

Hiromi Sesaki, Ph.D.
Assistant Professor of Cell Biology [2006; 2002]

Emily Graves Severance, Ph.D.
Assistant Professor of Pediatrics [2011; 2008]

Jonathan Elliot Sevransky, M.D.
Assistant Professor of Medicine [2002; 1999] (to 09/15/2011)

Catherine Angela Sewell, M.D.
Assistant Professor of Gynecology and Obstetrics [2007]

Janel D. Sexton, Ph.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2006]

Karen Sandell Sfanos, Ph.D.
Assistant Professor of Pathology [2011]

Tariq Shafi, M.B.B.S.
Assistant Professor of Medicine [2009; 2008]

Ami Aalok Shah, M.D.
Assistant Professor of Medicine [2009]

Ashish S. Shah, M.D.
Assistant Professor of Cardiac Surgery [2005]

Lisa M. Shah, M.D.
Assistant Professor of Medicine [2010]

Maunank Rajendra Kumar Shah, M.D.
Assistant Professor of Medicine [2011; 2010]

Satish Shanbhag, M.B.B.S., M.P.H.
Assistant Professor of Medicine [2010], Assistant Professor of Oncology [2010]

Punita T. Sharma, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2005; 2002]

Susan J. Shaw, M.D., Ph.D.
Adjunct Assistant Professor of Neurology [2009]

Joanne E. Shay, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2004]

Rosanne Bravin Sheinberg, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2011]

Wen Shen, M.D., M.P.H.
Assistant Professor of Gynecology and Obstetrics [2005; 2002]

James Christopher Shepherd, M.D., Ph.D.
Adjunct Assistant Professor of Medicine [2005]

Michael E. Sherlock, M.D.
Assistant Professor of Pediatrics [1983; 1976]

Steven H. Sherman, M.D.
Assistant Professor of Dermatology [1986; 1984]

John Timothy Sherwood, M.D.
Assistant Professor of Surgery [2005]

Mary Sheu, M.D.
Assistant Professor of Dermatology [2009; 2007]

Nicole Ann Shilkofski, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2007], Assistant Professor of Pediatrics [2007]

Eun Ji Shin, M.D.
Assistant Professor of Medicine [2009; 2008]

Robert B. Shochet, M.D.
Assistant Professor of Medicine [1994]
Shmuel Shoham, M.D.
Assistant Professor of Medicine [2011]
Darla Roye Shores, M.D.
Assistant Professor of Pediatrics [2011] (from 07/11/2011)
Jaimie T. Shores, M.D.
Assistant Professor of Plastic and Reconstructive Surgery [2011]
Charles I. Shubin, M.D.
Assistant Professor of Pediatrics [1971; 1969]
Yin Yao Shugart, Ph.D.
Assistant Professor of Pediatrics [1999]
Marshall G. Hussain Shuler, Ph.D.
Assistant Professor of Neuroscience [2008]
George Kelly Siberry, M.D.
Assistant Professor of Pediatrics [2003]
Aniket Ram Sidhaye, M.D.
Assistant Professor of Pediatrics [2011; 2006], Instructor in Medicine [2007]
Venkataramana K. Sidhaye, M.D.
Assistant Professor of Medicine [2009; 2006]
Ann N. Sieber, M.S.
Assistant Professor of Orthopaedic Surgery [2000; 1998]
Everett R. Siegel, M.D.
Assistant Professor of Psychiatry [1994; 1986]
Sigurdur Oli Sigurdsson, Ph.D.
Adjunct Assistant Professor of Psychiatry [2007]
Shameema Sikder, M.D.
Assistant Professor of Ophthalmology [2011]
Ulgan I. Sila, M.D.
Assistant Professor of Pediatrics [1970; 1966]
Glenn M. Silber, M.D.
Assistant Professor of Pediatrics [1987]
Harry Abraham Silber, M.D., Ph.D.
Assistant Professor of Medicine [2000]
Janet M. Siliciano, Ph.D.
Assistant Professor of Medicine [2005; 1998]
Lisa Ann Simonon, M.D.
Assistant Professor of Medicine [1996; 1993]
Crystal Felicia Simpson, M.D.
Assistant Professor of Medicine [2003]
Alon Sinai, Ph.D.
Adjunct Assistant Professor of Neurology [2008]
Andrew Lawrence Singer, M.D., Ph.D.
Assistant Professor of Surgery [2008; 2006]
Devinder Singh, M.D.
Assistant Professor of Plastic and Reconstructive Surgery [2010; 2009]
H. Rosy Singh, M.D.
Assistant Professor of Radiology [1992]
Marvin Mohan Singh, M.D.
Assistant Professor of Medicine [2011]
Steven Francis Solga, M.D.  
Visiting Assistant Professor of Medicine [2007; 2004]  

Steven J. Sollott, M.D.  
Assistant Professor of Medicine [1992]  

Clifford T. Solomon, M.D.  
Assistant Professor of Neurological Surgery [1999; 1992]  

David Solomon, M.D., Ph.D.  
Assistant Professor of Neurology [2004], Assistant Professor of Otolaryngology-Head and Neck Surgery [2004]  

Sunil Suhas Solomon, M.B.B.S., Ph.D., M.P.H.  
Assistant Professor of Medicine [2011]  

Jonathan C. Song, M.D.  
Assistant Professor of Radiology [2008]  

Stephen Martin Sozio, M.D.  
Assistant Professor of Medicine [2010; 2009]  

Lisa Ann Spacek, M.D., Ph.D.  
Adjunct Assistant Professor of Medicine [2009; 2004]  

Matt W. Specht, Ph.D.  
Assistant Professor of Psychiatry [2011; 2008]  

Christopher John Sperati, M.D.  
Assistant Professor of Medicine [2007]  

Melissa Riedy Spevak, M.D.  
Assistant Professor of Radiology [1995]  

Ethan J. Spiegler, M.D.  
Assistant Professor of Radiology [1993; 1990], Instructor in Medicine [1991]  

David Douglass Spragg, M.D.  
Assistant Professor of Medicine [2006]  

Divya Srikumaran, M.D.  
Assistant Professor of Ophthalmology [2011] (from 08/29/2011)  

Umasuthan Srikumaran, M.D.  
Assistant Professor of Orthopaedic Surgery [2011] (from 09/01/2011)  

Janet F. Staab, Ph.D.  
Assistant Professor of Medicine [2008]  

Heather Maureen Starmer, M.A.  
Assistant Professor (Audiology & Speech) of Otolaryngology-Head and Neck Surgery [2009; 2006]  

Joseph William Stauffer, D.O.  
Assistant Professor of Anesthesiology and Critical Care Medicine [2005]  

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Visiting Assistant Professor of Health Sciences Informatics [2001]  

Duncan Scott Stearns, M.D.  
Adjunct Assistant Professor of Pathology [2008]  

Cynthia D. Steele, M.P.H.  
Assistant Professor of Psychiatry [2005; 1989]  

Kimberly Eden Steele, M.D.  
Assistant Professor of Surgery [2007; 2005]  

Stephan Lewis Steffensen, M.D.  
Assistant Professor of Neurology [2010]  

David H. Stein, M.D., M.P.H.  
Assistant Professor of Dermatology [1995; 1992]  

Ellen M. Stein, M.D.  
Assistant Professor of Medicine [2010]  

Martin Irwin Steinberg, M.D.  
Assistant Professor of Psychiatry [1997; 1996]  

Steven Jeffrey Steinberg, Ph.D.  
Assistant Professor of Neurology [2003; 2000]  

Claudia A. Steiner, M.D., M.P.H.  
Assistant Professor of Medicine [1994]  

Mary Ann Chutuape Stephens, Ph.D.  
Assistant Professor of Psychiatry [2010]  

Laura Marie Sterni, M.D.  
Assistant Professor of Pediatrics [1996]  

Kent A. Stevens, M.D.  
Assistant Professor of Surgery [2008]  

Jennifer E. Stevenson, Ph.D., M.P.H.  
Assistant Professor of Physical Medicine and Rehabilitation [2010]  

Charles Matthew Stewart, M.D., Ph.D.  
Assistant Professor of Otolaryngology-Head and Neck Surgery [2010]  

Fray Dylan Stewart, M.D.  
Assistant Professor of Pediatric Surgery [2010]  

Rosalyn W. Stewart, M.D.  
Assistant Professor of Medicine [2004]  

William M. Stiers, Ph.D.  
Assistant Professor of Physical Medicine and Rehabilitation [2005]  

Monique F. Stins, Ph.D.  
Assistant Professor of Neurology [2008; 2007]  

Andrew I. Stolbach, M.D.  
Assistant Professor of Emergency Medicine [2007]  

Kenneth Bruce Stoller, M.D.  
Assistant Professor of Psychiatry [2000; 1998]  

Nancy Virginia Strahan, M.D.  
Assistant Professor of Medicine [1999; 1985]  

Eric David Strauch, M.D.  
Assistant Professor of Pediatric Surgery [1999; 1985]  

John Joseph Strouse, M.D.  
Assistant Professor of Pediatrics [2006; 2004], Assistant Professor of Medicine [2008]  

Geetha Subramaniam, M.B.B.S.  
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Assistant Professor of Medicine [2001]  

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Shawn Michelle Sumida, M.D.
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Marc Steven Sussman, M.D.
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Assistant Professor of Dermatology [2009; 1989]

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Heather Jill Symons, M.D.
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Linda Marie Szymanski, M.D., Ph.D.
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Armanda D. Tatsas, M.D.
Assistant Professor of Pathology [2011]

Janis Marie Taube, M.D.
Assistant Professor of Dermatology [2009], Assistant Professor of Pathology [2009]

Sean Dixon Taverna, Ph.D.
Assistant Professor of Pharmacology and Molecular Sciences [2008], Joint Appointment in Medicine [2009], Assistant Professor of Oncology [2009]

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Assistant Professor of Medicine [2011]

Aylin Tekes, M.D.
Assistant Professor of Radiology [2008]

Christiane Tellefsen, M.D.
Assistant Professor of Psychiatry [1993]

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Assistant Professor of Medicine [2010; 2005]

Christiane Theda, M.D.
Visiting Assistant Professor of Pediatrics [2009; 1996]

Asha Thomas, M.D.
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Claudia Lynn Thomas, M.D.
Assistant Professor of Orthopaedic Surgery [1992]

Darcy A. Thompson, M.D.
Assistant Professor of Pediatrics [2006]

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Assistant Professor of Anesthesiology and Critical Care Medicine [2004]

John Tilynn Thompson, M.D.
Assistant Professor of Ophthalmology [2001]

William Reid Thompson, III, M.D.
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Katherine Anne Thornton, M.D.
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Rachel Johnson Thornton, M.D., Ph.D.
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Stuart A. Tiegel, M.S.W.
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John E. Tis, M.D.
Assistant Professor of Orthopaedic Surgery [2008]

Aaron Andrew Ross Tobian, M.D., Ph.D.
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Adrian J. Goldszmidt, M.D.
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Gabrielle Andrae Jacquet, M.D.
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Nate Johnson, M.D.
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Frederick J. Karkowski, M.D.
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Daniel L. Kim, M.D.
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Sun Ju Kim, M.D.
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Thomas J. Kim, M.D., M.P.H.
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Angela Kim–Lee, M.D.
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Antonie Debra Kline, M.D.
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Buddy Gene Kozen, Jr., M.D.
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Chris Kraft, Ph.D.
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Michelle M. Kubancik, O.D.
Instructor in Ophthalmology [2010]
Pallavi P. Kumar, M.D.
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Oliver B. Laeyendecker, M.B.A., M.S.
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Umashankar Lakshmanadoss, M.D.
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Kathy L. Lampl, M.D.
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Jeffrey S. Landsman, M.D.
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Joanne P. Lanzo, M.D.
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Erika Rose Larson, M.D., M.P.H.
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John G. Lavin, M.D.
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Quy Hoa Le Thi, M.D.
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Bruce S. Lebowitz, D.P.M.
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Thomas H. Ley, Ph.D.
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Huamin Li, M.D., Ph.D.
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Yunqing Li, Ph.D.
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Adam Craig Reese, M.D.  
Instructor in Urology [2011]

Jennifer H. Reesman, Ph.D.  
Instructor in Psychiatry [2010]
<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Year(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lisa C. Reichenbach, Ph.D.</td>
<td>Instructor in Psychiatry</td>
<td>1995</td>
</tr>
<tr>
<td>Jerome P. Reichmister, M.D.</td>
<td>Instructor in Orthopaedic Surgery</td>
<td>1978</td>
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<tr>
<td>Barry J. Reiner, M.D.</td>
<td>Instructor in Pediatrics</td>
<td>1992</td>
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<td>Kim Anna Reiss Binder, M.D.</td>
<td>Instructor in Medicine</td>
<td>2011</td>
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<td>Rodica Retzar, M.D.</td>
<td>Instructor in Emergency Medicine</td>
<td>2007</td>
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<td>Charles B. Reuland, Sc.D.</td>
<td>Instructor in Medicine</td>
<td>2006</td>
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<td>Stasia Stott Reynolds, M.D.</td>
<td>Instructor in Medicine</td>
<td>2002</td>
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<td>Courtney Paige Rhoades, D.O.</td>
<td>Instructor in Gynecology and Obstetrics</td>
<td>2003</td>
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<td>Jeffrey M. Richardson, M.D.</td>
<td>Instructor in Medicine</td>
<td>1988</td>
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<td>Michael Lawrence Rinke, M.D.</td>
<td>Instructor in Pediatrics</td>
<td>2010</td>
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<td>Carol Ehlinger Ritter, M.D.</td>
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<td>Beatrice M. Robbins, M.S.N.</td>
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<td>Caroline G.P. Roberts, M.D.</td>
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<td>David G. Roberts, III, M.D.</td>
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<td>Howard N. Robinson, M.D.</td>
<td>Instructor in Dermatology</td>
<td>1985</td>
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<td>Jennifer Acton Robinson, M.D., M.P.H.</td>
<td>Instructor in Gynecology and Obstetrics</td>
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<td>Robert K. Roby, M.D.</td>
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<td>Ricardo L. Rodriguez, M.D.</td>
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<td>Francisco Rojas, M.D.</td>
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<td>Patricia Sarah Roy, M.D.</td>
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<td>Allan I. Rubin, M.D.</td>
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<td>Eric Daniel Rubin, M.D.</td>
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<td>Kathryn Ruble, Ph.D.</td>
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<td>Michael T. Rudikoff, M.D.</td>
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<td>Mustapha Saheed, M.D.</td>
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<td>Mahsa Salehi, O.D.</td>
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<td>Rose Marie Samaniego, M.D.</td>
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<td>Eric Alan Samstad, M.D.</td>
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<td>Teeta Sarphare, Ph.D.</td>
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<td>Mark David Scarupa, M.D.</td>
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<td>Esteban Schabelman, M.D.</td>
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<td>Eric Stephen Schafer, M.D.</td>
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<td>Arthur Schroeder, M.D.</td>
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<td>1984</td>
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<td>Scott C. Schultz, M.D.</td>
<td>Instructor in Physical Medicine and Rehabilitation</td>
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<td>Paul Eric Segal, D.O.</td>
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<td>Margaret Seide, M.D.</td>
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<td>Stephen Robert Selinger, M.D.</td>
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<td>Carlton C. Sexton, M.D.</td>
<td>Instructor in Radiology</td>
<td>1983</td>
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<td>Deepak A. Shah, M.D.</td>
<td>Instructor in Medicine</td>
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<td>Meir Shamay, Ph.D.</td>
<td>Instructor in Oncology</td>
<td>2007</td>
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<td>Andrew White Shannon, M.D., M.P.H.</td>
<td>Instructor in Radiology</td>
<td>2011</td>
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<tr>
<td>Michael B. Shapiro, M.D.</td>
<td>Instructor in Orthopaedic Surgery</td>
<td>2002; 2001</td>
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<tr>
<td>Richard Morris Shapiro, M.D.</td>
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<td>2002</td>
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<tr>
<td>Kavita Sharma, M.D.</td>
<td>Instructor in Medicine</td>
<td>2011</td>
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<tr>
<td>Robert A. Shaw, M.D.</td>
<td>Instructor in Medicine</td>
<td>2011</td>
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</tbody>
</table>
Elias K. Shaya, M.D.
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Visiting Scientist in Medicine [2011]

Elizabeth Tran, Ph.D.
Visiting Scientist in Neuroscience [2008]

Noriko Tsuchiya, Ph.D.
Visiting Scientist in Molecular and Comparative Pathobiology [2010]

Jian Cheng Tu, M.D., Ph.D.
Visiting Scientist in Neuroscience [2010]

Yusuke Ushida, M.S.
Visiting Scientist in Pharmacology and Molecular Sciences [2011]

David Marcel Vasquez, M.D., Ph.D.
Visiting Scientist in Otolaryngology-Head and Neck Surgery [2011]

Jesus Santiago Vidaurre Leal, M.D.
Visiting Scientist in Ophthalmology [2011]

Ming Jie Wang, Ph.D.
Visiting Scientist in Cell Biology [2011]

Minghua Wang, Ph.D.
Visiting Scientist in Pharmacology and Molecular Sciences [2010]

Shuo Wang, M.D.

Songmei Wang, Ph.D.
Visiting Scientist in Oncology [2011]

Chunyi Wen, M.B.B.S., Ph.D.
Visiting Scientist in Orthopaedic Surgery [2011]

Xuewei Xia, M.D., Ph.D.
Visiting Scientist in Neurological Surgery [2011]

Dongmei Yao, Ph.D.
Visiting Scientist in Medicine [2011]

Zhongyan Zhang, M.D., Ph.D.
Visiting Scientist in Cell Biology [2011] (from 09/01/2011)

Yueying Zheng, M. Med
Visiting Scientist in Anesthesiology and Critical Care Medicine [2011]

Qun Zhou, M.D., Ph.D.
Visiting Scientist in Oncology [2008; 2006]

Yanfei Zhou, Ph.D.
Visiting Scientist in Otolaryngology-Head and Neck Surgery [2007]

Yun Zhou, M.D.
Visiting Scientist in Neurology [2010]
INTERDIVISIONAL JOINT APPOINTMENTS

Patricia Ann Abbott, Ph.D.
Joint Appointment in Health Sciences Informatics [2001]

David Brian Abrams, Ph.D.
Joint Appointment in Oncology [2010]

Peter Courtland Agre, M.D.
Joint Appointment in Biological Chemistry [2008; 1993]

Miriam H. Alexander, M.D., M.P.H.
Joint Appointment in Medicine [2006]

Jerilyn K. Allen, Sc.D.
Joint Appointment in Medicine [1988]

Robert Harry Allen, Ph.D.
Joint Appointment in Gynecology and Obstetrics [2009]

Cheryl Ann Marie Anderson, Ph.D., M.P.H.
Joint Appointment in Medicine [2010]

Gerard F. Anderson, Ph.D.
Joint Appointment in Medicine [1994]

Mehran Armand, Ph.D.
Joint Appointment in Orthopaedic Surgery [2007]

Brad C. Astor, M.D., Ph.D.
Joint Appointment in Medicine [2005]

Joel S. Bader, Ph.D.
Joint Appointment in Biomedical Engineering [2008]

Susan P. Baker, M.P.H.
Joint Appointment in Emergency Medicine [1989], Joint Appointment in Pediatrics [1983]

Gregory F. Ball, Ph.D.
Joint Appointment in Neuroscience [2000]

Marion J. Ball, Ed.D.
Joint Appointment in Health Sciences Informatics [2003]

Karen Bandeen-Roche, Ph.D.
Joint Appointment in Medicine [2004]

Patrick E. Barta, M.D., Ph.D.
Joint Appointment in Psychiatry [2003; 1989]

Terri H. Beaty, Ph.D.
Joint Appointment in Oncology [1995]

Anne E. Belcher, Ph.D.
Joint Appointment in Oncology [2011]

David M. Bishai, M.D., Ph.D., M.P.H.
Joint Appointment in Pediatrics [1998]

Shyam Sundar Biswal, Ph.D.
Joint Appointment in Medicine [2004], Joint Appointment in Oncology [2001]

Robert E. Black, M.D.
Joint Appointment in Medicine [1985]

Robert W.M. Blum, M.D., Ph.D., M.P.H.
Joint Appointment in Pediatrics [2004]

Lee R. Bone, M.P.H.
Joint Appointment in Medicine [1990]

Charles E. Boult, M.D., M.P.H.
Joint Appointment in Medicine [2001]

John C.S. Breitner, M.D., M.P.H.
Joint Appointment in Psychiatry [1998]

Patrick N. Breyssse, Ph.D.
Joint Appointment in Medicine [2008]

Terry R. Brown, Ph.D.
Joint Appointment in Pediatrics [1991; 1978]

Donald Scott Burke, M.D.
Joint Appointment in Medicine [2000]

Thomas A. Burke, Ph.D., M.P.H.
Joint Appointment in Oncology [1995]

Philippe Martin Burlina, Ph.D.
Joint Appointment in Ophthalmology [2011] (from 08/01/2011)

Gilbert M. Burnham, M.D., Ph.D.
Joint Appointment in Medicine [1992]

Benjamin Caballero, M.D., Ph.D.
Joint Appointment in Pediatrics [1990]

Renan Castillo, Ph.D.
Joint Appointment in Physical Medicine and Rehabilitation [2010]

Carlos Castillo-Salgado, D.P.H., M.D., M.P.H.
Joint Appointment in Health Sciences Informatics [2010]

David DuPuy Celentano, Sc.D.
Joint Appointment in Medicine [2002]

Jeanne Charleston
Joint Appointment in Medicine [2005]

Lawrence J. Cheskin, M.D.
Joint Appointment in Medicine [2001; 1986]

Josef Coresh, M.D., Ph.D.
Joint Appointment in Medicine [1994]

Pierre A. Coulombe, Ph.D.
Joint Appointment in Biological Chemistry [2008; 1992], Joint Appointment in Dermatology [2008; 1992]

Susan M. Courtney, Ph.D.
Joint Appointment in Neuroscience [2001]

Rosa M. Crum, M.D.
Joint Appointment in Neuroscience [2001]

Mary F. Cwik, Ph.D.
Joint Appointment in Psychiatry [1991]

Arthur M. Dannenberg, Jr., M.D., Ph.D.
Joint Appointment in Pathology [1978; 1964]

Luigi Maria De Luca, M.D.
Joint Appointment in Pharmacology and Molecular Sciences [2010]

Cheryl R. Dennison, Ph.D.
Joint Appointment in Health Sciences Informatics [2007]

Marie Diener-West, Ph.D.
Joint Appointment in Ophthalmology [1990; 1986]

Janet A. DiPietro, Ph.D.
Joint Appointment in Gynecology and Obstetrics [1993]
Andrew S. Douglas, Ph.D.
Joint Appointment in Biomedical Engineering [1989]

Gypsyamber D’Souza, Ph.D.
Joint Appointment in Oncology [2010]

Anna Palmer Durbin, M.D.
Joint Appointment in Medicine [1999]

Sydney Eileen Dy, M.D.
Joint Appointment in Medicine [2002; 2001], Joint Appointment in Oncology [2002]

William W. Eaton, Ph.D.
Joint Appointment in Psychiatry [1995]

Michael Aaron Edidin, Ph.D.
Joint Appointment in Medicine [1994], Joint Appointment in Pathology [1999]

Howard Elliott Egeth, Ph.D.
Joint Appointment in Neuroscience [2002]

Margaret E. Ensminger, Ph.D.
Joint Appointment in Psychiatry [1983]

Ruth R. Faden, Ph.D.
Joint Appointment in Medicine [1992], Occupying the Philip Franklin Wagley Chair in Biomedical Ethics

DeLisa Fairweather, Ph.D.
Joint Appointment in Pathology [2005; 2003]

Margaret Daniele Fallin, Ph.D.
Joint Appointment in Medicine [2003]

Gabor Fichtinger, Ph.D.
Joint Appointment in Radiology [2001]

Nancy E. Fink, M.P.H.
Joint Appointment in Medicine [1998]

Robert S. Fitzgerald, Ph.D.
Joint Appointment in Medicine [1990], Joint Appointment in Physiology [1978; 1977]

Jean G. Ford, M.D.
Joint Appointment in Medicine [2003], Joint Appointment in Oncology [2002]

Eric Scott Fortune, Ph.D.
Joint Appointment in Neuroscience [2001]

Constantine E. Frangakis, Ph.D.
Joint Appointment in Radiology [2011]

Ernesto Freire, Ph.D.
Joint Appointment in Biophysics and Biophysical Chemistry [2004]

Kevin D. Frick, Ph.D.
Joint Appointment in Oncology [2010], Joint Appointment in Ophthalmology [2001]

Michela Gallagher, Ph.D.
Joint Appointment in Neuroscience [1998]

Tiffany L. Gary, Ph.D., M.P.H.
Joint Appointment in Medicine [2005]

Fannie Gaston-Johansson, Dr.Med.Sc.
Joint Appointment in Oncology [1996]

Pearl S. German, Sc.D.
Joint Appointment in Medicine [1985; 1993]

Michael Christopher Gibbons, M.D., M.P.H.
Joint Appointment in Health Sciences Informatics [2010], Joint Appointment in Medicine [2003]

Steven L. Gibson, M.D.
Assistant Professor of Anesthesiology and Critical Care Medicine [2011]

Robert H. Gilman, M.D.
Joint Appointment in Medicine [1985; 1975]

Laura N. Gitlin, Ph.D.
Joint Appointment in Psychiatry [2011]

Lynn R. Goldman, M.D., M.P.H.
Joint Appointment in Emergency Medicine [2005]

Douglas Alan Granger, Ph.D.
Joint Appointment in Pediatrics [2011]

Patti E. Gravitt, Ph.D.
Joint Appointment in Oncology [2008]

Jeffrey J. Gray, Ph.D.
Joint Appointment in Oncology [2005]

M. Diane E. Griffin, M.D., Ph.D.

John D. Groopman, Ph.D.
Joint Appointment in Oncology [1994]

Deborah Gross, D.N.Sc.
Joint Appointment in Psychiatry [2008]

Eliseo Guallar, M.D., M.P.H.
Joint Appointment in Medicine [2005]

Bernard Guyer, M.D.
Joint Appointment in Pediatrics [1990]

Neal A. Halsey, M.D.
Joint Appointment in Pediatrics [1985]

J. Marie Hardwick, Ph.D.
Joint Appointment in Neurology [1995; 1988], Joint Appointment in Oncology [1999], Joint Appointment in Pharmacology and Molecular Sciences [1988; 1986]

Samer S. Hattar, Ph.D.
Joint Appointment in Neuroscience [1965]

Joseph G. Hennessey, B.S.
Joint Appointment in Psychiatry [2006; 1979]

Martha N. Hill, Ph.D.
Joint Appointment in Medicine [1990]

Peter C. Holland, Ph.D.
Joint Appointment in Neuroscience [2001]

David Robert Holtgrave, Ph.D.
Joint Appointment in Medicine [2006], Joint Appointment in Oncology [2006]

Kalina Hristova, Ph.D.
Joint Appointment in Biomedical Engineering [2002]

Karen Huss, D.N.Sc., Ph.D.
Joint Appointment in Medicine [1995]

Pablo A. Iglesias, Ph.D.
Joint Appointment in Biomedical Engineering [2003]

Rafael A. Irizarry, Ph.D.
Joint Appointment in Medicine [2009]

Jeffrey V. Johnson, Ph.D.
Joint Appointment in Medicine [1989]

Hee-Soon Juon, Ph.D.
Joint Appointment in Oncology [2005]
Norma Kanarek, Ph.D., M.P.H.
Joint Appointment in Oncology [2001]

Wen Hong Linda Kao, Ph.D.
Joint Appointment in Medicine [2006]

Robert H. Kargon, Ph.D.
Joint Appointment in History of Medicine [1984]

Ruth A. Karron, M.D.
Joint Appointment in Pediatrics [1989]

Joanne Katz, Sc.D.
Joint Appointment in Ophthalmology [1994; 1982]

Marguerite Kearney, D.N.Sc.
Joint Appointment in Anesthesiology and Critical Care Medicine [2003; 1988]

Ann Carroll Klassen, Ph.D.
Joint Appointment in Medicine [2010]

Margarette Kerkstra, Ph.D.
Joint Appointment in Pharmacology and Molecular Sciences [1985]

Sharon Elizabeth Kingsland, Ph.D.
Joint Appointment in History of Medicine [1991]

Gregory D. Kirk, M.D., Ph.D., M.P.H.
Joint Appointment in Medicine [2005], Joint Appointment in Oncology [2010]

Oliver Lee McCabe, III, Ph.D.
Joint Appointment in Psychiatry [2007; 1995]

Michael Edward McCluskey, Ph.D.
Joint Appointment in Neuroscience [2001]

Lucy A. Meoni, Sc.M.
Joint Appointment in Medicine [2006; 1990]

Wayne A. Mitzen, Ph.D.
Joint Appointment in Anesthesiology and Critical Care Medicine [1990], Joint Appointment in Biomedical Engineering [1992; 1982], Joint Appointment in Medicine [1990]

Ramin Mojtabai, M.D., Ph.D., M.P.H.
Joint Appointment in Psychiatry [2008]

Lawrence S. Mayer, Ph.D.
Joint Appointment in Psychiatry [2002]

Oliver Lee McCabe, III, Ph.D.
Joint Appointment in Psychiatry [2007; 1995]

Brenda C. Rapp, Ph.D.
Joint Appointment in Neuroscience [2001]
Raymond Reid, M.D.
Joint Appointment in Medicine [1985; 1984]

Anne W. Riley, Ph.D.
Joint Appointment in Psychiatry [1991; 1987]

Rajiv N. Rimal, Ph.D.
Joint Appointment in Oncology [2005]

George D. Rose, Ph.D.
Joint Appointment in Biophysics and Biophysical Chemistry [2002; 1994]

Noel R. Rose, M.D., Ph.D.
Joint Appointment in Medicine [1982], Professor of Pathology [1994]

Leon A. Rosenberg, Ph.D.
Joint Appointment in Pediatrics [1988; 1964]

Debra L. Roter, D.P.H.
Joint Appointment in Medicine [1986], Joint Appointment in Oncology [1986; 2005]

Andrea J. Ruff, M.D.
Joint Appointment in Pediatrics [1987]

Cynda Hylton Rushton, D.N.Sc.
Joint Appointment in Pediatrics [2004]

David A. Sack, M.D.
Joint Appointment in Medicine [1985; 1976]

R. Bradley Sack, M.D., Sc.D.
Joint Appointment in Medicine [1985; 1976]

Mathuram Santosham, M.D., M.P.H.
Joint Appointment in Pediatrics [1985; 1976]

Edyth H. Schoenrich, M.D.
Joint Appointment in Medicine [1978; 1949]

Brian S. Schwartz, M.D.
Joint Appointment in Medicine [1990]

Peter C. Searson, Ph.D.
Joint Appointment in Oncology [2009]

Elizabeth Selvin, Ph.D., M.P.H.
Joint Appointment in Medicine [2007]

David M. Shade, J.D.
Joint Appointment in Medicine [2009; 2001]

Keerti V. Shah, Dr.P.H., M.B.B.S.
Joint Appointment in Oncology [2000]

Amy Lynne Shelton, Ph.D.
Joint Appointment in Neuroscience [2002]

MacHiko Shirahata, M.D.
Joint Appointment in Anesthesiology and Critical Care Medicine [1990; 1988]

Jane C. Shivnan, M.Sc.
Joint Appointment in Oncology [2009]

Katherine Clegg Smith, Ph.D.
Joint Appointment in Oncology [2005]

Mark C. Steinhoff, M.D.
Joint Appointment in Pediatrics [1987]

Donald M. Steinwachs, Ph.D.
Joint Appointment in Health Sciences Informatics [2006], Joint Appointment in Medicine [1988], Joint Appointment in Psychiatry [1986]

Ina Burrows Stephens, M.D.
Joint Appointment in Pediatrics [1995]

Frances Stillman, Ed.D.
Joint Appointment in Oncology [2005]

Paul T. Strickland, Ph.D.
Joint Appointment in Medicine [1995]

Veit Stuphorn, Ph.D.
Joint Appointment in Neuroscience [2005]

Elizabeth Sugar, Ph.D.
Joint Appointment in Oncology [2010]

David Joseph Sullivan, Jr., M.D.
Joint Appointment in Medicine [1998]

Moyses Szkal, M.D., M.P.H.
Joint Appointment in Medicine [2000]

Kawsar R. Talaat, M.D.
Joint Appointment in Medicine [2007]

David N. Taylor, M.D.
Joint Appointment in Medicine [2003]

Russell H. Taylor, Ph.D.
Joint Appointment in Radiology [1995], Joint Appointment in Surgery [1995; 2005]

Stephen P. Teret, J.D.
Joint Appointment in Emergency Medicine [1989], Joint Appointment in Pediatrics [1984]

James M. Tielsch, Ph.D.
Joint Appointment in Ophthalmology [1994; 1982]

Michael A. Trush, Ph.D.
Joint Appointment in Oncology [1997]

Barbara L. Van de Castle, M.S.N.
Joint Appointment in Health Sciences Informatics [2001]

Kala Visvanathan, M.B.B.S.
Joint Appointment in Oncology [2003]

Jiou Wang, B.M., Ph.D.
Joint Appointment in Neuroscience [2009]

Tza-Huei Wang, Ph.D.
Joint Appointment in Oncology [2009]

Virginia Marie Weaver, M.D., M.P.H.
Joint Appointment in Medicine [1993], Joint Appointment in Oncology [1996]

Jonathan P. Weiner, D.P.H.
Joint Appointment in Health Sciences Informatics [1982; 2007], Joint Appointment in Medicine [1982]

William M. Weiss, Dr.P.H.
Joint Appointment in Health Sciences Informatics [2007]

Jennifer A. Wenzel, Ph.D.
Joint Appointment in Oncology [2009]

Keith Parker West, Jr., D.P.H.
Joint Appointment in Ophthalmology [1994; 1982]

Denis Wirtz, Ph.D.
Joint Appointment in Oncology [2008]

Lawrence S. Wissow, M.D.
Joint Appointment in Pediatrics [1997; 1984], Joint Appointment in Psychiatry [2001]

Jennifer L. Wolff, Ph.D.
Joint Appointment in Medicine [2003]
Albert W. Wu, M.D.
Joint Appointment in Medicine [1990], Joint Appointment in Surgery [2007]

James D. Yager, Jr., Ph.D.
Joint Appointment in Oncology [1995]

Steven Yantis, Ph.D.
Joint Appointment in Neuroscience [2001]

Laurie S. Zabin, Ph.D.
Joint Appointment in Gynecology and Obstetrics [1986; 1979]

Peter P. Zandi, Ph.D., M.P.H.
Joint Appointment in Psychiatry [2006]

Ying Zhang, M.D., Ph.D.
Joint Appointment in Medicine [2004]

Barry R. Zirkin, Ph.D.
Joint Appointment in Gynecology and Obstetrics [1991]

INTERDIVISIONAL JOINT APPOINTMENTS EMERITI

Donald A. Cornely, M.D.
Joint Appointment Emeritus in Pediatrics [1991; 1966]

Sheppard G. Kellam, M.D.
Joint Appointment Emeritus in Psychiatry [2000; 1982]

Thomas W. Simpson, M.D.
Joint Appointment Emeritus in Medicine [1983; 1970]
ANESTHESIOLOGY AND CRITICAL CARE MEDICINE

Amy Eman Abdallah, M.D., M.P.H. 1
Ankur Anand, M.D. 1
Promise Temidayo Ariyo, M.D. 1
Dinani Matoso Fialho De Oliveira Armstrong, M.D. from 12/12/2011
Fidelis Eghoateh Atianjoh, Ph.D. from 12/12/2011
Jinsung Bae, M.D. to 07/15/2011
Bindu Balakrishnan, M.S.C., Ph.D. from 08/01/2011
Sean Barnes, M.D. 1
Steven David Beaudry, D.O. 1
Mark Christopher Bicket, M.D. 1
Kara Anne Bjur, M.D. 1
Bobby Ray Burches, Jr., D.O. 1
Molly B. Cason, M.D. 1
Stephanie Liang-Hsien Cha, M.D. 1
Tanveer Kaur Chaudhry, M.D. 1
Ellen Cho, M.D. 1
John T. Cleaves, M.D. from 01/01/2012 to 01/31/2012
Kimberly Marie Elliott, M.D. to 09/08/2011 1
Longchang Fan, Ph.D. from 12/01/2011
Marcos De Sousa Ferreira, M.D. to 10/18/2011
Dalia Figueroa, M.D. from 10/01/2011 to 10/31/2011
James Kevin Fitzpatrick, J.D., M.D. 1
Artemus Flagg, II, M.D., M.P.H. 1
Natan Fooks, M.D. from 08/01/2011 to 09/25/2011
Tiffany M. Frazee, M.D. 1
Jean Gauvin, M.D., Ph.D. 1
Steven L. Gibson, M.D.
Randeep Singh Gill, M.D. to 07/12/2011
Dheeraj Goswami, M.D. 1
Michael C. Grant, M.D. 1
Christy Deloris Butler Gray, M.D. 1
Rebecca Maria Grutsch, M.D. 1
Mary Jo Haley, M.D. 1
Jennifer Lorayne Hamrick, M.D. 1
Justin Thames Hamrick, M.D. to 01/15/2012 1
Matthew Paul Harper, M.D. 1
James A. Harris, D.O. from 02/01/2011 to 02/29/2012
Li Hua He, Ph.D. to 05/31/2012
Shaoqiu He, Ph.D. from 12/01/2011
Katherine Rose Heberlein, Ph.D. from 08/01/2011
Bommy Hong, M.D. 1
Fay Anne Horng, M.D. 1
Eugene Hsu, M.D. 1
Julie H.Y. Huang, M.B.A., M.D. 1
Joan B. Hunsberger, M.D. 1
Monique Eleasha James, M.D. 1
Kathryn Michelle Jaques, Ph.D. from 11/15/2011
Todd Jensen, D.O. from 02/01/2012 to 02/29/2012
Amar Jyoti, M.Sc., Ph.D. from 10/01/2011
Shruti Gupta Kapoor, M.D., M.P.H. to 08/21/2011
Kanchana Karuppiah, Ph.D. from 12/01/2011
Grace J. Kong, M.B.B.S. 1
Megan Presley Kostibas, M.D. 1
Caleb Edward Kroll, M.D. 1
Martin Kubin, M.D. 1
Sachin Subhash Kulkarni, M.D. 1
Arthur Kenneth Lammers, D.O. from 08/01/2011 to 08/31/2011
Usman Latif, M.B.A., M.D. 1
Frank Hanchong Lee, M.D. 1
Maggie Rhodes Lesley, M.D. 1
Laeben C. Lester, M.D. 1
Lingli Liang, M.D. to 05/31/2012
Isa Maria Lindgren, M.Sc., Ph.D. to 10/15/2011
Arul M. Lingappan, M.D. 1
Todd Justin Liu, M.D. 1
Justin Bradley Long, M.D. 1
Raina Marie Lourens, M.D. 1
Michael Fernandez Mantinan, M.D. 1
Courtney Goodwin Mase, M.D. to 01/15/2012 1
Courtney Goodwin Mase, M.D. from 01/16/2012
Timothy Mccormick, D.O. from 09/01/2011 to 09/30/2011
Lucas William Meuchel, Ph.D. from 01/01/2012
Arthur Randolph Mielke, M.D. from 11/01/2011 to 11/30/2011
Jessica A. Morgan, M.B.A., M.D. 1
Candice Kelley Morrissey, M.D., M.S.P.H. 1
Ami Naik, M.D. 1
Jess T. Nelson, M.D. from 09/01/2011 to 09/30/2011
Michael Nickerson, M.D. from 11/01/2011 to 11/30/2011
Michael J. Oleyar, D.O. 1
Sean Michael Owens, D.O. 1
Deepesh Raj Pandey, Ph.D. from 12/01/2011 to 05/05/2012
Jong Taek Park, Ph.D. from 01/20/2012
Amit Manu Patel, M.D. 1
Blake Martin Paterson, M.D. to 08/31/2011
Michael Buchanan Paul, M.D. from 12/01/2011 to 12/31/2011
Priyadarshini Ravichandran Pennathur, Ph.D. to 03/01/2012
Tyler Pezalski, M.D. from 01/01/2012 to 01/31/2012
Michael A. Purviri, M.D. 1
Jessica Mary Reardon, D.O. 1
Rebecca Lynn Reeves, D.O. 1
James Adam Rothschild, M.D. 1
Farrah Diba Sajan, M.D. 1
Richard Brandon Scharzt, M.B.A., M.D. 1
Andrei Dumitr Sdrulla, M.D., Ph.D. 1
Xiaoxu Shen, Ph.D.
Michael Jonathan Keiji Shigemasa, M.D. from 12/01/2011 to 12/31/2011
Gautam Sikka, M.D.
Ellen M. Soffin, M.B.B.S., Ph.D. 1
Jochen Steppen, M.D. 1
Lori Ann Wilkinson Suffredini, D.O. 1
Raoul Christian Sutter, M.D. from 09/01/2011
Dora Svin, M.D. 1
Carin Marie Tauriello, M.D. 1
Howard Teng, M.D. 1
Lia Ellen Ttron, M.D., M.P.H. 1
Jonelon Gabriel Tsang, M.B.B.S. 1
Bing Wang, M.D.
Emmett E. Whitaker, M.D. to 10/14/2011 1
Emmet E. Whitaker, M.D. from 10/15/2011
Janine M. Whiston-West, D.O. 1
Brian Gerald Wilhelmi, J.D., M.D. 1
Jamie Rene Wingate, M.D. 1
Caroline Culbertson Wright, M.D. 1
He Wu, Ph.D. (on leave of absence from 11/02/2011)
Sarah Elaine Wyhs, M.D. 1
Ya Yang, Ph.D.
Zhao Yang, M.D. 1
Diao-Yun Zhang, Ph.D. to 01/17/2012
Xiaochun Zhao, M.D. from 11/15/2011
Fei Zheng, M.D., M.P.H. 1
Wei Zheng, M.D.

Adult Cardiothoracic Anesthesiology
Robert E. Black, III, M.D.
Sanjay Dwarakanath, M.B.B.S.
Adam S. Evans, M.D.
Nadia Blakemore Hensley, M.D.
Neadum Odum, M.D.

Critical Care Medicine
Akram Hamed Al Nababteh, M.B.B.S. to 09/12/2011
Ranjit Vijay Deshpande, M.B.B.S. from 08/15/2011
Anquenetta Douglas, M.D. to 07/11/2011
Alexander N. Evans, M.B.A., M.D. from 01/02/2012
Dragos Mihael Galusca, M.D. to 07/11/2011
Tariq Keiker, M.D. from 07/11/2011
Aaron Nicholas LacKamp, M.D. to 08/15/2011
Donald Duk Sang Park, M.D. from 07/11/2011
Bilal A. Rana, D.O. to 07/11/2011
Leigh Ann Slater, M.D. to 07/11/2011
Christopher Yen, M.D. to 07/11/2011

Pain Medicine
Bret Bahn, M.D. from 08/15/2011
Michael Bottros, M.D. to 08/14/2011
Jeffrey Max Gambel, M.D. to 08/14/2011
Haroon Imran Hameed, M.B.B.S. from 07/15/2011
Sean Li, M.D. to 08/14/2011
Kai McGreevy, M.D. to 07/14/2011
Chitra Ramasubbu, M.D. from 08/15/2011
Ronen Shechter, M.D. from 01/01/2012
Nelson Tang, M.D. from 07/15/2011
Victor Tseng, D.O. from 10/01/2011 to 10/31/2011

Pediatric Critical Care
Devon Olatunbosun Aganga, M.D.
Elizabeth Alexis Charnovich, M.D.
Christina Luz Lopez Cifra, M.D.
Michael Dallman, M.D. from 09/24/2011 to 09/30/2011
Michael Dallman, M.D. from 11/06/2011 to 11/12/2011
Chinyere Chinenye Egbuta, M.D.
Aisha Hughes Frazier, M.D., M.P.H.
Paola V. Genovese, M.D. from 09/22/2011 to 10/19/2011
Karen Loran Jones, M.D.
John Christopher Mirmamesh, M.D. from 02/09/2012 to 03/07/2012
Corina Noje, M.D.
Melissa Jerdonek Sacco, M.D., M.S.
Alan Salas, M.D. from 11/21/2011 to 12/16/2011
Mary Wissa Saleh, M.B.B.Ch. to 10/31/2011
Katherine Marie Steffen, M.D.
Rajeev Singh Wadia, M.D.

Pediatrics
James Richard Eisznser, M.D.
Justin Thames Hamrick, M.D. from 01/16/2012
Monique Marie Marin-Santoni, M.D.
Matthew Robert Vana, M.D.
Monica A. Williams, M.D.

Biological Chemistry
Bradley Chun-Yee Akitahe, Ph.D.
Courtney Mei-ling Akitake, Ph.D. from 09/19/2011
Partha Sarathi Banerjee, Ph.D. from 09/19/2011
Raghothama Chaerkady, M.Sc., Ph.D. from 08/01/2011 to 10/31/2011
Zijing Chen, Ph.D.
Ronald Jarrod Copeland, Ph.D.
Bethany Joy Drehman, Ph.D. from 12/06/2011 to 12/31/2011
Kamau Mudada Fahie, Ph.D. from 11/14/2011
Melissa Ann Fowler, Ph.D.
Guangui Han, Ph.D.
Stephan Georges Marceau Hardiville, Ph.D.
Albert Lee, Ph.D. to 05/31/2012
Youngsoeck Lee, Ph.D. to 03/01/2012
Zhengzheng Li, Ph.D.
Junfeng Ma, Ph.D.
Clare Hannah Munns, Ph.D.
Suman Yadav Nanda, Ph.D.
David Samuel Ronderos, Ph.D. from 08/11/2011
Jessica Kimberley Sawyer, Ph.D.
Takaaki Sokabe, Ph.D.
Ho Lam Tang, Ph.D.
Becky JoAnne Tu-Sekine, Ph.D. to 08/31/2011
Meghna Waghrey, Ph.D. to 05/31/2012
Marquis Terrell Walker, Ph.D.
Jianyang Wang, Ph.D.
XiaoBo Wang, Ph.D. to 01/27/2012
Jessica Mary Ellis Wilcox, Ph.D.
Wan Hee Yoon, M.S., Ph.D. to 10/31/2011

Biomedical Engineering
Paul Jacob Adams, Ph.D.
Faris Alqadah, Ph.D.
Nirmalya Bandyopadhyay, Ph.D. from 01/02/2012
Pratim Chanda, Ph.D.
Yong Ping Chen, Ph.D.
Ivy Ellen Dick, Ph.D.
Stacey Delelia Finley, Ph.D.
Lixia Gao, Ph.D.
Nailkanth Veerabardran Ghone, Ph.D.
Adrian Mark Haith, Ph.D. to 04/30/2012
Wentao Huang, Ph.D. to 02/29/2012
Princess Izevbua Imoukhuede, Ph.D. to 08/31/2011
Toufic Gerges Jabbour, M.S., Ph.D. to 07/31/2011
Rosy Rani Joshi-Mukherjee, Ph.D.
Gang Liu, Ph.D. to 11/30/2011
Anil Digambar Maybhate, Ph.D.
Kartikeya Murari, Ph.D. to 12/31/2011
Kerri-Ann Norton, Ph.D. from 08/03/2011
Michael Scott Osmanek, Ph.D.
Ashwin Prahalad, Ph.D. from 12/15/2011
Princess Izevbua Imoukhuede, Ph.D. to 08/31/2011
Toufic Gerges Jabbour, M.S., Ph.D. to 07/31/2011
Rosy Rani Joshi-Mukherjee, Ph.D.
Gang Liu, Ph.D. to 11/30/2011
Anil Digambar Maybhate, Ph.D.
Kartikeya Murari, Ph.D. to 12/31/2011
Kerri-Ann Norton, Ph.D. from 08/03/2011
Michael Scott Osmanek, Ph.D.
Ashwin Prahalad, Ph.D. from 12/15/2011
Princess Izevbua Imoukhuede, Ph.D. to 08/31/2011
Toufic Gerges Jabbour, M.S., Ph.D. to 07/31/2011
Rosy Rani Joshi-Mukherjee, Ph.D.
Gang Liu, Ph.D. to 11/30/2011
Anil Digambar Maybhate, Ph.D.
Kartikeya Murari, Ph.D. to 12/31/2011
Kerri-Ann Norton, Ph.D. from 08/03/2011
Michael Scott Osmanek, Ph.D.
Ashwin Prahalad, Ph.D. to 12/15/2011
Princess Izevbua Imoukhuede, Ph.D. to 08/31/2011
Toufic Gerges Jabbour, M.S., Ph.D. to 07/31/2011
Rosy Rani Joshi-Mukherjee, Ph.D.
Gang Liu, Ph.D. to 11/30/2011
Anil Digambar Maybhate, Ph.D.
Kartikeya Murari, Ph.D. to 12/31/2011
Kerri-Ann Norton, Ph.D. from 08/03/2011
Michael Scott Osmanek, Ph.D.
Matthew Ralph Zahner, Ph.D. to 01/20/2012
Yuying Zhang, Ph.D.
Yi Zhou, Ph.D. to 09/30/2011

**BIOPHYSICS AND BIOPHYSICAL CHEMISTRY**

Colin Echeverria Aitken, Ph.D.
Christopher Edward Berndsen, Ph.D.
Poonam Jayendra Bheda, Ph.D. to 02/03/2012
Anita Ghosh, M.Sc., Ph.D. to 02/03/2012
Jennifer Marie Kavran, Ph.D.
Kwangsoo Kim, Ph.D.
Min Sung Kim, Ph.D. to 01/04/2012
Pankaj Kumar, Ph.D.
Ping Liu, M.S., Ph.D. to 10/21/2011
Subrata H. Mishra, M.S., Ph.D.
Michael Thomas Morgan, Ph.D.
Jagpreet Singh Nanda, Ph.D.
Vaishnavi Rajagopal, Ph.D.
Katarzyna Marta Rudzka, M.S.C., Ph.D.
Nadine Laure Samara, Ph.D. to 10/02/2011
Aleksandar Todorovic, Ph.D. from 10/10/2011
Mauricio Urquiza, Ph.D.
Sarah Elizabeth Walker, Ph.D.
Reuven Wiener, Ph.D.
Ming Yan, Ph.D.

**CELL BIOLOGY**

Marina Allary, Ph.D. to 04/14/2012
Yulia Artemenko, Ph.D.
Jemima R. Barrowman, Ph.D. to 05/21/2012
Rita Thomas Brookheart, Ph.D.
Huaqing Cai, M.S., Ph.D.
Chun-Lin Chen, Ph.D.
Rashmi Choudhary, Ph.D. from 01/01/2012
Se Yeon Chung, Ph.D.
Rebecca Marie Fox, Ph.D.
Chuan-Hsiang Huang, M.D., Ph.D.
Asfhan Ismat, Ph.D.
Kie Ito, Ph.D.
Thomas James Lampert, Ph.D. from 01/03/2012
Yu-Chun Lin, Ph.D. from 08/15/2011
Rajprasad Loganathan, M.S., Ph.D. from 11/16/2011 to 06/05/2012
Tianzhi Luo, Ph.D.
Rika Maruyama, Ph.D.
Takafumi Miyamoto, Ph.D.
Nghia Hoai Nguyen, Ph.D. from 02/01/2012
Sumana Raychaudhuri, Ph.D.
Wei Shao, Ph.D.
Alexandra Surcel, Ph.D.
Yasushi Tamura, Ph.D. to 03/31/2012
Ming Tang, Ph.D.
Calvin Tiengwe Weponeche, Ph.D.
Zongtian Tang, Ph.D.
Yu Wang, M.S., Ph.D.
Zhongyan Zhang, M.D., Ph.D. to 08/31/2011

**DERMATOLOGY**

Yevgenyi Balagula, M.D. 1
Margaret Welsh Cavanaugh-Hussey, M.D., M.P.H. 1
Amena Marie DeLuca, M.D. 1
Nada M. Elbuluk, M.D., M.S. 1
Anne Han, M.D. 1
Tamia Alisha Harris, M.D., Ph.D. 1
Catherine Hee Yong Lee, M.D., M.Sc. 1
Jo Marin Martin, M.D. 1
John Mavropoulos, M.D., Ph.D. 1
Amanda Marie Nelson, Ph.D.
Omolaro Mojisola Olowooye, M.D., M.P.H.
Helena Beth Pasieka, M.D. 1

Jeonghyun Shin, M.D. to 08/30/2011
Ho Seok Suh, M.D. from 08/10/2011
Barbara Summerer, M.D. from 10/15/2011
Mark Minh Tran, M.D. 1
Hoseong Yang, M.D., Ph.D. 1
Julie B. Zang, M.D. 1

**Pediatric Dermatology**

Andres Esteban Alarcon, M.D. from 01/12/2012 to 01/25/2012
Steven Altmayer, M.D. from 11/14/2011 to 11/29/2011
Brittany Blakney, D.O. from 08/01/2011 to 08/31/2011
Matthew Bremmer, M.D. from 01/23/2012 to 02/03/2012
Erin Dowd, D.O. from 02/09/2012 to 03/07/2012
Anna Leah Grossberg, M.D. from 10/31/2011 to 11/11/2011
Damon McClain, M.D. from 12/01/2011 to 12/31/2011
Russell Rowe, M.D. from 10/01/2011 to 10/31/2011
Leilani Townsend, D.O. from 08/29/2011 to 09/16/2011

**EMERGENCY MEDICINE**

Trisha Anest, M.D., M.P.H. 1
Marrissa Leigh Baker, M.D. 1
Sarah Jean Carle, M.D. 1
Timothy Ting-Han Chang, M.D. 1
Ryan W. Circh, M.D. 1
Michael Christopher Cordeiro, M.D. 1
Amanda Valerie Crichlow, M.D. 1
Anneliese Cuttle, M.D. 1
Matthew Lee DeAugustinis, M.D. 1
Patrick Quinn Eckert, M.D. 1

**DERMATOLOGY**

Andres Esteban Alarcon, M.D. from 01/12/2012 to 01/25/2012
Steven Altmayer, M.D. from 11/14/2011 to 11/29/2011
Brittany Blakney, D.O. from 08/01/2011 to 08/31/2011
Matthew Bremmer, M.D. from 01/23/2012 to 02/03/2012
Erin Dowd, D.O. from 02/09/2012 to 03/07/2012
Anna Leah Grossberg, M.D. from 10/31/2011 to 11/11/2011
Damon McClain, M.D. from 12/01/2011 to 12/31/2011
Russell Rowe, M.D. from 10/01/2011 to 10/31/2011
Leilani Townsend, D.O. from 08/29/2011 to 09/16/2011

**EMERGENCY MEDICINE**

Trisha Anest, M.D., M.P.H. 1
Marrissa Leigh Baker, M.D. 1
Sarah Jean Carle, M.D. 1
Timothy Ting-Han Chang, M.D. 1
Ryan W. Circh, M.D. 1
Michael Christopher Cordeiro, M.D. 1
Amanda Valerie Crichlow, M.D. 1
Anneliese Cuttle, M.D. 1
Matthew Lee DeAugustinis, M.D. 1
Patrick Quinn Eckert, M.D. 1

**DERMATOLOGY**

Andres Esteban Alarcon, M.D. from 01/12/2012 to 01/25/2012
Steven Altmayer, M.D. from 11/14/2011 to 11/29/2011
Brittany Blakney, D.O. from 08/01/2011 to 08/31/2011
Matthew Bremmer, M.D. from 01/23/2012 to 02/03/2012
Erin Dowd, D.O. from 02/09/2012 to 03/07/2012
Anna Leah Grossberg, M.D. from 10/31/2011 to 11/11/2011
Damon McClain, M.D. from 12/01/2011 to 12/31/2011
Russell Rowe, M.D. from 10/01/2011 to 10/31/2011
Leilani Townsend, D.O. from 08/29/2011 to 09/16/2011
Rebecca Lawrence Smith, M.D. 1
Sarah Anne Stewart De Ramirez, M.D., M.P.H., M.Sc. 1
Roshni Ishwarsinh Thakore, M.D. 1
Vanessa Vasquez, M.D. 1
Erik Verzemnieks, M.D. 1
Stephen Charles Viel, M.D. 1
Daniel Carl Windels, M.D. 1
Nathan Michael Woitman, M.D. 1

FUNCTIONAL ANATOMY AND EVOLUTION
Terence Reid Mitchell, Ph.D.

GYNECOLOGY AND OBSTETRICS
Modupe Veronique Agueh, M.D. 1
Francisco Aguirre, M.D. 1
Meredith Lee Birrner, M.D. 1
Alaina Joelle Brown, M.D. 1
Veena Choubey, M.D. 1
Lauren Patterson Cobb, M.D. 1
Christopher Carl DeStephano, M.D., M.P.H. 1
Jennifer Ann Duerie, M.A., M.D. 1
Cindy Maria Duke, M.D. 1
Sonia Dutta, M.D. 1
Amy Hilda Gueye, M.D., M.P.H. 1
Camille Catherine Gunderson, M.D. 1
Jennifer Lani Hallock, M.D. 1
Amelia Marie Jernigan, M.D. 1
Clark Timothy Johnson, M.D., M.P.H. 1
Dipa Mayur Joshi, M.D. 1
Colleen Michele Krajewski, M.D.
Lauren Dorothy Smith Krill, M.D. 1
Amr Mohamed Monir Madkour, M.D. 1
Stephen James Martin, M.D. 1
Tiffany Samara McNair, M.D. 1
Virginia Akua Mensah, M.D. 1
Sarah Oman, M.D. 1
Meghan E. Pratts, M.D. 1
Elizabeth O’Connor Purcell, M.D. 1
Nina Resetkova, M.B.A., M.D. 1
Sangini Bhadrik Sheth, M.D., M.P.H. 1
Khara Michelle Simpson, M.D. 1
Julie Sara Solomon, M.D. 1
Katherine Ikard Stewart, M.B.A., M.D. 1
Jill Tseng, M.D. 1
Chantel Washington, M.D. 1
Sarah Malena Wheeler, M.D. 1
MaryAnn Biker Bilbur, M.D. 1
Abigail Duncan Winder, M.D. 1
Irene Woo, M.D. 1
Emily Shuyi Wu, M.D. 1

Female Pelvic Medicine and Reconstructive Surgery
Sarah Friedman, M.D.
Hafsa Umair Memon, M.B.B.S.

Gynecologic Oncology
Aimee C. Fleury, M.D.
Christina Lynne Kushnir, M.D.
Ana Isabel Tergas, M.D.

Gynecologic Specialties
Leonel Francisco Maldonado-Gonzalez, M.D. from 07/25/2011

Maternal-Fetal Medicine
Cynthia Lee Anderson, M.D.
Haitham Ahmad Baghraf, M.B.B.S. from 09/01/2011

Elisabeth Nigrini, M.D.
Melissa Lauren Russo, M.D.
Amanda P. Stewart, M.D.
Christopher Wayock, M.D.

Reproductive Endocrinology
Paul Robert Brezina, M.B.A., M.D.
Mindy Sue Christianson, M.D.
Chelsea Crabtree, D.O. from 10/03/2011 to 10/28/2011
Guadalupe Herrera-Garcia, D.O. from 01/02/2012 to 01/27/2012
David J. Matthews, D.O. from 09/05/2011 to 09/30/2011
Sarah M. Singer, M.D. from 10/31/2011 to 12/02/2011
Benjamin Alan Solomon, M.D. from 08/01/2011 to 09/02/2011
Kyle J. Tobler, M.D.
Jessica Vernon, M.D. from 12/05/2011 to 12/30/2011
Jesse Xiyu Woo, M.D. from 01/30/2012 to 03/02/2012

HEALTH SCIENCES INFORMATICS
Yair G. Rajwan, Dr. Sc., M.Sc. to 08/31/2011
Terry Hsin-Yi Shen, M.P.H., Ph.D. to 08/31/2011

HISTORY OF MEDICINE
Karen Kruse Thomas, M.A., Ph.D.

INTERNAL MEDICINE/PEDIATRICS
Monica Clare Mix, M.D. 1
Sara Elizabeth Mixter, M.D., M.P.H. 1
Zachary Nayak, M.D. 1
Jocelyn Ronda, M.D. 1
Katherine Shaw, M.D. 1
Natalie Spicyn, M.D. 1
Jacqueline Deanna Wilson, M.D. 1

MCKUSICK-NATHANS INSTITUTE OF GENETIC MEDICINE
Vikas Bhambhani, M.B.B.S. from 12/01/2011 to 12/31/2011
Vikas Bhambhani, M.B.B.S. from 02/01/2012 to 02/29/2012
Pallav Bhatnagar, Ph.D.
Rebecca Deering Brose, Ph.D. from 09/01/2011 to 12/31/2011
Grzegorz Maciej Burzynski, Ph.D. from 09/01/2011 to 03/02/2012
Raghothama Chaerakady, M.Sc., Ph.D. to 07/31/2011
George Shawn Charames, Ph.D.
Pallavi Chaturvedi, Ph.D.
Alexander John Doyle, M.B.B.S.
Jefferson James Doyle, M.B.B.Ch., M.H.S.
Abdallah Frederic Elas, M.D.
Adam David Ewing, Ph.D. to 08/31/2011
Jill Ann Fahrner, M.D., Ph.D.
Audrey E. Fischer, Ph.D.
Elena Gallo, Ph.D.
Haifeng Geng, Ph.D.
Derese Getnet, Ph.D.
Daniele Marie Gilkes, Ph.D. from 08/31/2011

POSTDOCTORAL FELLOWS 449
Qian Jiang, Ph.D.
Ashish Kapoor, M.Sc., Ph.D.
Vikram Katju, Ph.D. to 10/03/2011
Weibo Luo, M.S., Ph.D. to 12/31/2011
Tanja Magoc, Ph.D.
Prabhat Kumar Mandal, Ph.D. to 03/31/2012
Teresa Martino, D.O.
Rebeca Maria Mejias-Estevez, Ph.D.
Sergio Rey, Ph.D. to 08/31/2011
Melissa Lauren Russo, M.D.
Luana Schito, Ph.D.
Neeraj Sharma, D.V.M., Ph.D.
Molly Barbara Sheridan, Ph.D. to 06/29/2012
Szilvia Solyom, Ph.D. to 05/31/2012
Zachary Elias Stine, Ph.D. from 07/08/2011
Naoharu Takano, Ph.D.
Todd James Treangen, Ph.D.
Hong Wei, M.D. to 03/31/2012
Philip Wayne Wittmer, M.S., Ph.D.
Chak Lui Wong, Ph.D. from 08/31/2011
Jun Zhong, M.S.C., Ph.D.
Xiaoli Zhong, Ph.D. from 12/22/2011

MEDICINE
Johns Hopkins Hospital House Staff-
Internal Medicine
Tolulope Adebisi Adesiyun, M.D. to 06/19/2012
Haitham Mohamed Ahmed, M.D., M.P.H.
Kevin M. Alexander, M.D.
Mohammed Ahmad Al-Hijji, M.D.
Gobind Anand, M.D.
Annukka Aida Rose Antar, M.D., Ph.D.
James Clifford Balvich, M.D., M.S.
Alexander Carl Billioux, M.D., Ph.D.
Robert W. Bradsher, III, M.D.
Emily Pfeil Brigham, M.D.
Jennifer Nicole Brudno, M.D.
Isida Byku, M.D. to 06/12/2012
Mirnela Byku, M.D., Ph.D.
Jennifer Xiaojin Cai, M.D.
Ashley Anderson Campbell, M.D.
Laura Christine Cappelli, M.D., M.S.
Souvik Chatterjee, M.D.
Pavan K. Cheruvu, M.D., M.Sc.
Eunpi Cho, M.D.
Jonathan Chrispin, M.D.
Bennett William Clark, M.D.
James N. Cooper, M.D.
Allison Leigh Tsao Coulter, M.D.
Matthew Tyler Crim, M.A., M.D., M.Sc.
William Brian Dalton, M.D., Ph.D.
Rebecca Hope Dezube, M.D.
Adel Rafeh El Bousheir, M.D.
Mohamed Badreldin Elshazly, M.D.
Swarthi Eluri, M.D.
Matthew Thomas Finn, M.D.
Finbar Timothy Foley, M.D., M.P.H., M.S.
Kunjali Gandhi, M.D.
Sumitha Santhoshini Ganji, M.D., M.P.H.
Sravanya Gavini, M.D.
Aida Maria Gertz, M.D., M.P.H.
Kevin Gibbs, M.D.
Christian Burris Gocke, M.D., Ph.D.
Alison Victoria Grazioli, M.A., M.D.
Keiko Iwashara Greenberg, M.D.
Evan Kandler Grove, M.D.
Ashley Procopio Helgeson, M.D.
David Joseph Heller, M.D., M.P.H.
Terence Edward Hill, M.D.
Lynn Jackson Howie, M.D.
Steven Hsu, M.D.
Andrew Hunter Hughes, M.D.
Richard Johnson, M.D.
Clare Kelleher, M.D.
Rina G. Khatri, M.D.
Kathryn A.F. Kline, M.D.
Ajar Kocher, M.D.
Bharati Kocher, M.D.
Matthew Christopher Konerman, M.D.
Monica Arlene Konerman, M.D.
Lara Cathleen Kowell, M.D.
Rupa Radhika Krishnawamy, M.D.
Tomas K. Kuprys, M.D.
David Kuten, M.D.
Edward Felix Lin, M.D.
Anna Litvak, M.D.
David Liu, M.D., M.S.
Gigi Y. Liu, M.D.
Kara Mari Loubser, M.D.
Raoul James Manalac, M.D.
Simon C. Mathews, M.D.
Blatthin Antoinette McMahon, M.B.B.Ch.
Christopher Joseph Melani, M.D.
Camille Michael Minder, M.D.
Satish Misra, M.D.
Robert Anthony Moran, M.B.B.Ch.
Dana Catherine Mueller, M.D.
Jennifer Sparr Nayor, M.D.
Matthew Gregory Nayor, M.D.
Phuong-Khanh Jessica Nguyen-Trong, M.D.
Timothy Michael Niessen, M.D., M.P.H.
Carmelle Tabitha Norice, M.D., M.P.H., Ph.D.
Arvind Kant Pandey, M.D.
Heather Anne Parsons, M.D., M.P.H.
Harsh Patel, M.D.
Yuval Adrash Dinesh Patel, M.D.
Bhavana Pathak, M.D.
Kaustubha Dilip Patil, M.D.
Srivatsan Raghavan, M.D., M.S., Ph.D.
Rod Amir Rahimi, M.D.
Nitya Prabhakar Raj, M.D.
Rekha R. Rapaka, M.D., Ph.D. (on leave of absence from 01/12/2012 to 04/12/2012)
Elizabeth Sara Rosenblatt, M.D.
Julie Lorraine Rosenthal, M.D.
Jonathan Rubin Kuzniecky, M.D.
Sudip Kumar Saha, M.D.
Sarina Sahetya, M.D.
Marcos Coutinho Schechter, M.D.
Sonja W. Scholz, M.D.
Daniel M. Schreeder, M.D., Ph.D.
Aaron Joel Schueneman, M.D.
Michelle Sharp, M.D.
Eugenie Chia-Shing Shieh, M.D.
Michael Jordan Silverman, M.D.
Davis Lok Sim, M.D., Ph.D.
Andrew C. Storm, M.D.
Tomeka Lynette Suber, M.D., Ph.D.
Kristopher J. Swiger, M.D.
Mark Wilson Tenforde, M.D., M.P.H.
Brian Michael Thomas, M.D.
David G. Tian, M.D.
Geoffrey Huang Tison, M.D., M.P.H.
Susan Anne Tuddenham, M.D., M.P.H.
Juan Carlos Varela, M.D.
Christine Lee Vigeland, M.D.
Michael N. Vranian, M.D.
Jonathan A. Webster, M.D.
Sophie Becker Wells, M.D.
Sasrutha Rasika Wickramasinghe, M.D., Ph.D.
Erin M. Wilfong, M.D.
Joseph Li-Han Yang, M.D.
Raymond K. Young, M.D.

Johns Hopkins Bayview Medical Center House Staff - Internal Medicine
Anthony Joseph Accurso, M.D.
Christopher Tran Bach, M.D.
Jemilat Olapeju Badamas, M.D.
Andrea Colleen Baines, M.D., Ph.D.
Andreas Sebastian Barth, M.D., Ph.D.
LaPrincess Cerie Brewer, M.D., M.P.H.
Deanna Rae Cettomai, M.D., M.H.S.
Ryan Edwin Childers, M.D.
Jennifer Lynn Cuhran, M.D.
Melissa Nicole Dattalo, M.D., M.P.H.
Huy Duc Do, D.O.
Justin Ewen Elfrey, D.O.
Lana Rae Elpert, M.D.
Olufunmilayo Olubukola Falade, M.D.
Lindsey Renae Fischer, M.D., Ph.D.
Kristina Michelle Frogale, M.D.
Panagis Galiatsatos, M.D.
Ashul Govil, M.D.
Lauren Elizabeth Graham, M.D., M.P.H.
Anthony Charles Gregory, II, M.D., M.P.H.
John Patrick Hemming, M.D.
Amber Elaine Johnson, M.D.
Hamid Majid Kargbo, M.D.
Sarah Sharfstein Kawasaki, M.D.
Daniel A. Kim, M.D.
Michael Davin Kornberg, M.D., M.S., Ph.D.
Madeline Li Leong, M.D.
Jonathan Enn-Yang Lio, M.D.
Stanley Shi-Dan Liu, M.D.
Gerardo Lopez-Mena, M.D.
Sunil Suresh Makadia, M.D.
Jennifer Beth Monti, M.D., M.P.H.
Agnes Mwakingwe, M.D., Ph.D.
Maria Berenice Nava, M.D.
Stephanie Kim Nothelle, M.D.
Roy Anthony Orden, M.D.
Sujay Pathak, M.D.
Fernanda Porto Carreiro, M.D.
Atoosa Rabiee, M.D.
Erlin Linna Reeve, M.D.
Stacey L. Schott, M.D.
Jane Meeyoung Lee, M.D.
Monica Williams Stanton, M.D.
Bradley Charles Strunk, M.D.
Sean Austin Tackett, M.D.
Paul Ravi Waldron, M.D., M.P.H.
Tanyaoporn Wansom, M.D.
Meraf Amde Wolle, M.D., M.P.H.
Mia Yang, M.D.

Johns Hopkins University/Sinai Hospital Program - Internal Medicine
Katrina Acedo Abadilla, M.D. to 06/22/2012
Hazel Mae Artap Abraham, M.D. to 06/22/2012
Ritika Ryfka Abraham, M.B.B.S. to 05/31/2012
Jurga Adomaityte, M.D. to 09/10/2011
Dhaval G. Aghera, M.B.B.S. to 06/22/2012

Venkata Ravi Kumar Angirekula, M.B.B.S. to 06/22/2012
Akshu Baliwan, M.B.B.S.
Ashtami Vishwanath Banavali, M.B.B.S. to 06/22/2012
Anisha Bassi, M.D. to 06/22/2012
Aarti Khushal Bhatia, M.B.B.S. to 06/22/2012
Amit Kumar Bhise, M.B.B.S. to 06/22/2012
Rashmi Chandra, M.B.B.S. to 06/22/2012
Gaurav Chaudhary, M.B.B.S. to 06/22/2012
Jyoti Chaudhary, M.B.B.S. to 06/22/2012
Danielle Sunshine Cherrick, M.D. to 06/22/2012
Graham Dondlinger, M.D. to 06/22/2012
Tanu Duggal, M.B.B.S. to 06/22/2012
Yuki Elliott, M.D. to 06/22/2012
Dennis Omoding Emuron, M.B.B.Ch. to 06/22/2012
Shashank Garg, M.B.B.S. to 06/22/2012
Mohit Girotia, M.B.B.S. to 05/31/2012
Gerardo Ismael Gacer Queco, M.D. to 06/22/2012
Rajeev Gupta, M.B.B.S. to 06/22/2012
Matthew Charles Hulse, M.D. to 06/22/2012
Laxmi Hariharan Iyer, M.B.B.S., M.P.H. to 06/22/2012
Priyanka Chandrasekhar Iyer, M.B.B.S. to 06/22/2012
Cleva Orian James, M.D. to 06/22/2012
Brijen Lal Joshi, M.B.B.S. to 06/22/2012
Vivek Kalia, M.D., M.P.H., M.S. to 06/22/2012
Kusuma Kanaparthi, M.B.B.S. to 08/17/2011
Sumit Kapoor, M.B.B.S. to 06/22/2012
Arshpreet Kaur, M.B.B.S. to 06/22/2012
Javid M. Khan, D.O. to 05/31/2012
Curtis K. Lawrence, M.D. to 06/22/2012
Daria Sergeevna Lymar, M.D. to 06/22/2012
Nagendra Yadav Madisi, M.B.B.S. to 06/22/2012
Keya Malhotra, M.B.B.S. to 06/22/2012
Justin David Mann, M.D. to 06/22/2012
Marshall Bernard Marcus, M.D. to 06/22/2012
Talha Abdul Rehman Meeran, M.B.B.S. to 06/22/2012
Rutika Jitesh Mehta, M.B.B.S. to 06/22/2012
Milos Miljkovic, M.D. to 06/22/2012
Ashrit Multani, M.B.B.S. to 06/22/2012
Kathleen Corcoran Oktavec, M.D. to 06/22/2012
Aileen Lenita Pan, M.D. to 06/22/2012
Manjari Pandey, M.B.B.S. to 06/22/2012
Sunhee Park, M.D. to 06/22/2012
Harish Bhanudevan Pillai, M.B.B.S. to 06/22/2012
Vedatrayee Pramanik, M.B.B.S. to 06/22/2012
Haoming Qiu, M.D. to 06/22/2012
Nira Amrita Roopnarinesingh, M.B.B.S. to 06/22/2012
Deeepanka Sharma, M.B.B.S. to 06/22/2012
Namita Singh, M.B.B.S. to 06/22/2012
Rupinder Singh, M.D. to 06/22/2012
Shailendra Singh, M.B.B.S. to 06/22/2012
Immanuel Pradeep Raj Susai, M.B.B.S. to 06/22/2012
Anu Verma, M.B.B.S. to 06/22/2012
Tammam Wangjam, M.B.B.S. to 06/22/2012
Cecilia Hiromi Yshii Tamashiro, M.D. to 06/22/2012
Ily Kristine Tolentino Yumul, M.D. to 06/22/2012

Advanced Rheumatology
Kristi Vergena Mizelle, M.D., M.P.H.
Jin Kyun Park, M.D.
Allergy and Clinical Immunology

Ping Fang, M.D. from 02/15/2012 to 08/18/2011
Matthew Michael Hewitt, Ph.D. to 07/31/2011
Takumi Kiwamoto, Ph.D.
Emily Clarke McGowan, M.D.
Miya Okada Paterniti, M.D.
Carl Robert Potenzier, Ph.D. to 12/02/2011
Adriano Nussa Salicru, M.D., Ph.D.
Jessica Rabe Savage, M.D., M.S.
Emily Clarke McGowan, M.D.
Yukiko Muroi, Ph.D.
Ho Jeong Na, Ph.D. to 09/30/2011
Dara Lee Neuman-Sunshine, M.D.
Jessica Rabe Savage, M.D., M.S.
Hao-Dong Li, Ph.D.
Yuqi Zhou, M.D. to 04/30/2012

Cardiovascular

Ashwin Sivappa Akki, M.B.B.S., Ph.D.
Majd Al Ghatrif, M.D. from 08/22/2011 to 09/18/2011
Bassel Alkhalil, M.D.
Nivee Pradip Amin, M.D.
Peter Andersen, Ph.D.
Fariba Ariaei, M.S., Ph.D. to 08/31/2011
Anderson da Costa Armstrong, M.D.
Roy Beinart, M.D. from 08/16/2011
Patricia Rizzi Belfort Rizzi Padilha Teixeira, M.D.
Niraj Mukundray Bhatt, Ph.D.
Angel T. Chan, M.D.
Hana Cho, M.D., Ph.D.
Grant Victor Chou, M.D.
Atul Radheshyam Chugh, M.B.B.S. to 04/24/2012
Fady Dawoud, Ph.D.
Andrew Paul DeFilippis, M.D., M.S. to 09/30/2011
Deeptankar Demazumder, M.D.
Rajat Dhungana, M.D. from 02/01/2012 to 02/29/2012
Sirisha Donekal, M.B.B.S.
Federica Farinelli, Ph.D.
Ning Feng, M.D., Ph.D.
Jose Roberto Fernandez, M.D. from 09/23/2011 to 10/20/2011
Justyna Patrycja Fert-Bober, Ph.D.
Nisha Aggarwal Gilotra, M.D.
Ola Gjesdal, M.D., Ph.D. to 11/05/2011 (on leave of absence to 09/04/2011)
Mukesh Gopalakrishnan, M.B.B.S. from 02/01/2012 to 02/29/2012
Ashish Gupta, M.S., Ph.D.
Mohammadai Habibi, M.D. from 01/01/2012 to 01/31/2012
James Richard Harkness, M.D.
Colleen Mary Harrington, M.D.
Rani Khalil Hasan, M.D.
Albert James Hicks, III, M.D.
Ronald Joseph Holewinski, Ph.D.
Aaron Horne, Jr., M.B.A., M.D.
Brian Allan Houston, M.D.
Christian John Hunter, M.D.
Haseeb Jafari, M.D.
Rahul Jain, M.B.B.S.
Gustavo Volpe Jardim, M.D. from 01/26/2012
Wenhua Jiang, M.S., Ph.D. to 09/30/2011
Zhicheng Jin, Ph.D.
Su-Hyun Jo, Ph.D.
Parag H. Joshi, M.D.
Nicholasos Kakouros, M.B.B.S.
Jackelyn Melissa Kembro, Ph.D. to 04/30/2012
Kerunne Segametsi Ketiogotsew, M.D.
Irfan Maqbool Khurram, M.B.B.S. from 10/01/2011
Jonathan Alder Kirk, Ph.D.
Satoru Kishi, M.D.
Viola Kooij, Ph.D. to 04/30/2012
Dong Ik Lee, Ph.D. (on leave of absence from 01/13/2012)
Andrew Robert Leventhal, M.D., Ph.D.
Kun Yan, Ph.D. from 09/01/2011 (on leave of absence from 12/01/2011 to 01/10/2012)
Hideki Uosaki, M.D.
Styliani Vakrou, M.D.
Jose Danilo Vargas, M.D., Ph.D.
Rohan Ravindra Wagle, M.D.
Shengbing Wang, Ph.D.
Vabren L. Watts, Ph.D.
Nandini Umesh Yadav, M.D. from 09/06/2011 to 10/16/2011
Kun Yan, Ph.D. from 09/01/2011 (on leave of absence from 12/01/2011 to 01/10/2012)
Hirad Yarmohammadi, M.D.
Kihei Yoneyama, M.D. to 09/13/2011
Amr Al Sayed Youssef, M.B.B.Ch., M.Sc. from 11/02/2011 to 11/28/2011
Omair Khwaja Yousef, M.D.
Tamaraz Soborniy, Ph.D. to 07/31/2011
Pingbo Zhang, Ph.D.
Xiaoxu Zheng, M.D. to 11/30/2011
Lufang Zhou, M.S., Ph.D. to 09/01/2011
Guangshuo Zhu, M.D.
Michelle Nabulumba Zikusoka, M.D.

Clinical and Molecular Rheumatology
Riika Ryfka Abraham, M.B.B.S. from 07/21/2011 to 07/22/2011
Jemima Felicity Languido Albayda, M.D.
Yu Pei Chock, M.D. from 09/21/2011 to 10/18/2011
Cornelia Diana Cudrici, M.D. from 01/03/2012 to 01/31/2012
Erika Lynn Darrah, Ph.D.
Maria Gennadjevna Del Grande, M.D. from 07/25/2011 to 12/31/2011
Andrea Fava, M.D.
Leyla Kochak Yazdi, M.D. from 08/30/2011 to 09/28/2011
Manish Kumar, M.V.Sc., Ph.D.
Horng-Chyi Richard Lai, M.D. from 02/06/2012 to 03/02/2012
Mehrdad Malili, M.D. to 07/28/2011
Anil Davanand Mankee, M.B.B.S. from 11/22/2011 to 12/05/2011
Zsuzsanna Hortobagyi McMahan, M.D.
Ana-Maria Orbai, M.D.
Julie Jisuon Paik, M.D.
Violeta Romero-Morales, Ph.D. to 05/31/2012
Vuk Sekicki, M.D. from 09/19/2011 to 10/16/2011
Lanaya Williams Smith, M.D.
George Stojan, M.D.
Lanaya Williams Smith, M.D.
Juwaria Waheed, M.D.
Eric Stafford Zollars, M.D., Ph.D.

Clinical Cardiac Electrophysiology
Hiroshi Ashikaga, M.D., Ph.D.
Sandeep Bansal, M.D., M.P.H.
John Catanzaro, M.D.
David Nash Edwards, M.D., Ph.D.
Sang Yong Ji, M.D. from 07/08/2011
Matthew Needelman, M.D.
Binu B. Philips, M.D.

Clinical Pharmacology
Francisco Jose Leyva, M.D., Ph.D.
Nicolette Alexandrea Louissaint, Ph.D.
Florence Marine McAllister, M.D.

Endocrinology and Metabolism
Katrina Acedo Abadilla, M.D. from 02/02/2012 to 02/29/2012
Sherley Abraham, M.D.
Shabina Roohi Ahmed, M.D.
Murugan Avaniyapuram Kannan, Ph.D.
Valentina Corazzini, M.D.
Mark Dominic Corriere, M.D.
Monica Nicole Giles, M.D.
Ratchaneewan Kwancharoen, M.D. from 05/01/2012
Clare Jung Eun Lee, M.D.
Keya Malhotra, M.B.B.S. from 02/02/2012 to 02/15/2012
Nestoras Nicolas Mathioudakis, M.D.
Donald Soutter Alexander McLeod, M.B.B.S.
Shumei Meng, M.D., Ph.D.
Javzandulam Natsag, M.D. from 01/18/2012 to 02/09/2012
Nira Amrita Roopnarinesingh, M.B.B.S. to 07/20/2011
Rupinder Singh, M.D. from 02/02/2012 to 02/29/2012
Ilias Spanakis, M.D.
Sritika Thapa, M.B.B.S. from 02/01/2012 to 02/28/2012
San Thida, M.B.B.S. from 07/05/2011
Reena Mary Thomas, M.B.B.S. from 09/13/2011 to 10/16/2011
Reena Mary Thomas, M.B.B.S. from 12/27/2011 to 01/30/2012
Vanessa Jeannette Walker Harris, M.D.

Gastroenterology
Tsion Abdi, M.D. from 09/06/2011
Elham Afghani, M.D.
Venkata Sandeep Akshintala, M.B.B.S. to 04/30/2012
Mohammed A. Alhajji, M.B.B.S. from 02/06/2012 to 03/04/2012
Victor Chedid, M.D. from 01/10/2012
Lea Ann Chen, M.D.
Po-Hung Chen, M.D.
Sameer Dhalla, M.D.
Winoah Anya Henry, M.B.B.S.
Julie Goeun In, Ph.D. from 01/09/2012
Shi Jin, Ph.D.
Daniela Jodorkovsky, M.D.
Rakesh Juneja, M.B.B.S. from 08/01/2011 to 12/30/2011
Sumit Kapoor, M.B.B.S. from 09/29/2011 to 10/12/2011
Brian Kim, M.D.
Joyce Michelle Koh, M.D.
Nyan L. Latt, M.D. from 12/01/2011 to 05/31/2012
Ling Liu, M.D. to 03/31/2012
Valeriy Ivanovich Lukyanenko, Ph.D.
Delgermaa Luvsanjav, Ph.D. from 09/06/2011
Kenolisa Onwueme, M.D., Ph.D.
Alyssa Maria Parian, M.D.
Sherri-Gae O. Scott, Ph.D.
Varsha Singh, Ph.D.
Panagiotis Trilianos, M.D.
Tinsay Ambachew Woreta, M.D., M.P.H.
Smita Yamanaka, Ph.D. to 04/30/2012
Jianbo Yang, Ph.D.

Gastrointestinal Motility
Rukshana Nadia Cader, M.B.B.Ch. from 12/01/2011 to 05/31/2012
Lisa Musaib-Ali, M.D. from 10/03/2011

General Internal Medicine
Amit Bansal, M.B.B.S. from 08/22/2011 to 09/17/2011
Lauren Dara Block, M.D.
Anders Chen, M.D.
Brooke Ayoka Cunningham, M.D., Ph.D.
Matthew W. DeCamp, M.D., Ph.D.
POSTDOCTORAL FELLOWS

Elizabeth W. Dzeng, M.D., M.P.H., M.S.
Stephanie Fitzpatrick, Ph.D. from 08/08/2011
Tabor E. Flickinger, M.D.
Meghana Dipti Gadgil, M.D., M.P.H.
Kimberly A. Gudzune, M.D.
Charles Richard Jonassaint, M.D., A.
Nadia N. Khan, M.D. from 01/03/2012 to 01/29/2012
Justin Paul Lafreniere, M.D.
Kimberly Daniella Martin, Ph.D.
Tabor E. Flickinger, M.D.
Lauren Andrea Martin, Ph.D.
Nadia N. Khan, M.D.
Samantha Irene Pitts, M.D., M.P.H.
Kimberly Daniella Martin, Ph.D.
Meta Mana Mobula, M.D.
Harmke Anthonia Bos, M.D. from 01/03/2012
Tolulope M. Fafowora, M.B.B.Ch. from 11/01/2011
Erin Rand Giovannetti, Ph.D. to 11/30/2011
Ariel Ruth Green, M.D., M.P.H.
Ashleigh Mica Hicks, M.D.
Chung Hao Lin, M.D.
Bryan John McCaron, Ph.D. from 08/01/2011
Robert P. McNeil, M.D.
Melissa Danielle Morgan-Gouveia, M.D.
Fatima Sheikh, M.B.B.S.
Mya Sandra Thein, M.B.B.S. from 01/03/2012
Maranda Ann Trahan, Ph.D.
Samuel Keith Williams, III, M.D.
Jean Yoo Campbell, M.D.
Sandeep N. Shah, Ph.D.
Peng Sun, Ph.D.
Kit Man Tsang, M.Phil., Ph.D.
Wei Yan, Ph.D. to 05/14/2012
Timothy Samuel Winkler, M.D.
Mona Haider Siddiqui, M.D.
Rohan Ravindra Wagle, M.D.
Salman Waheed, M.D.
Geriatric Medicine
Harmke Anthonia Bos, M.D. from 01/03/2012
Tolulope M. Fafowora, M.B.B.Ch. from 11/01/2011
Erin Rand Giovannetti, Ph.D. to 11/30/2011
Ariel Ruth Green, M.D., M.P.H.
Ashleigh Mica Hicks, M.D.
Chung Hao Lin, M.D.
Bryan John McCaron, Ph.D. from 08/01/2011
Robert P. McNeil, M.D.
Melissa Danielle Morgan-Gouveia, M.D.
Fatima Sheikh, M.B.B.S.
Mya Sandra Thein, M.B.B.S. from 01/03/2012
Maranda Ann Trahan, Ph.D.
Samuel Keith Williams, III, M.D.
Jean Yoo Campbell, M.D.
GI Advanced Therapeutics
Reem Sharaiha, M.B.B.S. from 08/15/2011
Hematology
Xiaosong Huang, Ph.D.
Dwella Kinmya Nelson, Ph.D.
Oxana V. Rusher, M.D. from 07/29/2011 to 08/25/2011
Sandee N. Shah, Ph.D.
Peng Sun, Ph.D.
Kit Man Tsang, M.Phil., Ph.D.
Wei Yan, Ph.D. to 05/14/2012
Infectious Diseases
Bintou Ahmadou Ahdjio, Ph.D. from 09/01/2011
Nicole C. Ammerman, Ph.D.
Claire Andrejak, M.D.
Justin Richard Bailey, M.D., Ph.D.
Theodore C. Bailey, M.D., M.S.
Lila Bouadma, M.D., Ph.D. to 11/30/2011
Edmond John Byrnes, Ph.D. to 08/26/2011
Michael Anand Chattergoon, M.D., Ph.D.
Trevor Adam Crowell, M.D.
Kausik Datta, Ph.D.
Brooke Decker, M.D. from 08/01/2011 to 10/02/2011
Bappaditya Dey, Ph.D.
Kerry Lynn Dierberg, M.D., M.P.H.
Christine Marie Durand, M.D.
Noton Kumar Dutta, Ph.D.
Oluwaseun Omotomiola Falade-Nwulia, M.B.B.S., M.P.H.
Emilia Liana Falcone, M.D. to 07/31/2011
Shashank Gupta, Ph.D.
Charles Franklin Haines, M.D.
Fiona Patricia Havers, M.A., M.D.
Abraham Joseph Kandathil, Ph.D.
Jae Seok Kim, M.D., Ph.D. to 08/31/2011
Lee G. Klinkenberg, Ph.D. to 08/31/2011
Anastasia Kolyva, M.D.
Fuat Mukaddasovic Kurbanov, M.D., Ph.D.
Olof Christer Larsson, Ph.D.
Richard Wayne LaRue, M.D.
Katherine Yenkhang Le, M.D.
Pasri Maharom, M.D.
Mamoudou Maiga, M.D.
Sarah Elizabeth Miller, M.D.
Supriya Shaunaek Munshaw, Ph.D.
Oon Tek Ng, M.B.B.S.
Veronique Rachelle Nussenblatt, M.D., M.H.S.
Ikwo K. Oboho, M.D.
Leilani Paitoonpong, M.D., M.Sc.
Shih-Jung Pan, Ph.D., Sc.M. from 01/09/2012
In Kwon Park, M.D., M.S. from 10/03/2011 to 11/30/2011
Sang Won Park, M.D., M.S., Ph.D.
Damani Arnold Piggott, M.D.
Andrew Davidson Redd, Ph.D.
Maria Rosario Salgado Bernal, Ph.D.
Patrice Savard, M.D.
Neel Bankim Shah, M.D.
Seema Madhumal Thyail, M.S., Ph.D. to 11/30/2011
Edith Torres-Chavolla, Ph.D. from 09/15/2011
Sarah Tschudin Sutter, M.D. from 09/01/2011
Edward Alan Weinstein, M.D.
Wei-Teng Yang, M.D. from 10/01/2011
Michelle Kim Zinchenko, Ph.D. to 06/15/2012
Infectious Diseases/Preventive Medicine
Kwei Akuete, M.D.
Sarah-Blythe Ballard, M.D.
Joy Ursula Blitz, M.D.
Ruth Brenner, M.D.
Arkaprava Deb, M.D.
Aurel Iuga, M.D.
Wonha Kim, M.D.
Patrick Ryan McKenna, D.O.
Brian Gerrit Ockerse, M.D.
Comfort Chinazom Onyiah, M.D.
Deepa Pawar, M.D.
Laura Dawn Sander, M.D.
Karyn Singer, M.D.
Jade Murphy Spurgeon, M.D.
Andrew Suchocki, M.D.
Jennifer L. Weinberg, M.D.
Interventional Cardiology
Amar-pal Singh Chana, M.D. from 10/01/2011
Peter Danyi, M.D., M.P.H.
Spyridon Gkizas, M.D., M.Sc., Ph.D.
Lupus Fellowship
Genevieve Mei Jan Law, M.D.
Homa Timlin, M.D.
Medical Genetics
Hooi Sian Eng, Ph.D. (on leave of absence from 08/29/2011 to 03/01/2012)
Molecular Medicine
David James Hiller, Ph.D.
Yun Liu, Ph.D.
Winston George Timp, Ph.D.
Nephrology
Dhaval G. Aghera, M.B.B.S. from 03/01/2012 to 03/28/2012
Sarina Ahuja, M.D. from 10/01/2011 to 10/31/2011
Fahad Eid Alotaibe, M.B.B.S. from 07/25/2011 to 07/27/2011
Bhavna Bhasin, M.B.B.S.
Valeriu Cebotaru, M.D.
Ping Chen, M.D. to 11/30/2011
Teresa Katie Chen, M.D.
Bunu Dragos, M.D. from 01/30/2012 to 02/24/2012
Matthew Carey Foy, M.D.
Tanya S. Johns, M.D.
Hyunho Kim, Ph.D.
Joshua David King, M.D.
Weizhe Li, Ph.D.
Dongyan Liu, M.D.
Jose Manuel Monroy Trujillo, M.D.
Ji-Eun Oh, M.D., Ph.D. to 04/30/2012
Patricia Outeda Garcia, Ph.D.
Rudolf Pullmann, M.D.
Namita Singh, M.B.B.S. from 07/21/2011 to 08/17/2011
Ching-Wei Tsai, M.D.
Rugmini P. Warrier, M.B.B.S.

Nephrology (Bayview)
Saira Bilal, M.B.B.S. from 10/18/2011 to 11/14/2011
Tatpong Chit-ua-aree, M.D.
Nargiz Mughanlinskaya, M.D. from 09/19/2011 to 11/13/2011
Gaurav Raman, M.B.B.S.
Megha Shah, M.B.B.S.
Parva Dogra Sharma, M.B.B.S.

Occupational Medicine
Lopa Basu, D.O.
Yi-Ning Cheng, M.D.
Michael Jason Crupain, M.D.
Travis Roswell Hobart, M.D.
Claudine Holt, M.D.
Nimisha Kalia, M.D.
Clarence K. Lam, M.D.
Elizabeth Marie Salisbury Afshar, M.D.
Young-Rok Shin, M.D.
Michelle Whitehead Sims, M.D. to 09/30/2011

Pulmonary and Critical Care Medicine
Jason Atticus Akulian, M.D., M.P.H.
Christian Bime, M.D.
Isabel Blanco, M.D. to 03/31/2012
Sonali Bose, M.D.
Andrew Thierman Braun, M.D.
Tatiana Bridges, M.D. from 02/16/2012 to 03/16/2012
Zeling Cao, M.D., Ph.D.
Neal F. Chaisson, M.D.
Ja-Young Cho, Ph.D.
Samuel Lester Collins, Ph.D.
William Arthur Fischer, II, M.D.
Brian Thomas Garibaldi, M.D.
Mohamed A.A. Gashouta, M.B.B.Ch.
Robert Stewart Hagan, M.D., Ph.D.
Robert William Hallowell, M.D.
Omar Ali Hamdan, M.D.
Margaret Mary Hayes, M.D.
Adam Breaux Hernandez, M.D.
Vidy Jagadeesan, M.B.B.S. from 01/31/2012 to 02/27/2012
Daniel B. Jamieson, M.D.
Mark Thomas Jennings, M.D.
Chellonda Johnson, M.D.
Biren Bharat Kamdar, M.D.
Krishna Chaitanya Keri, M.B.B.S. from 12/06/2011 to 12/26/2011
Todd Matthew Kolb, M.D., Ph.D.
Allison Ann Lambert, M.D.
Elizabeth Ann Lendermon, M.D.
Janice Margaret Leung, M.D.
Hoi Yan Amanda Lin, Ph.D.
Omar Abdul Wahab Mesawi, M.D.
Jason Robert Mock, M.D.
Karoline Moon, M.D.
Sungrayong Noh, M.D. from 01/02/2012 to 01/31/2012
Laura Marie Paulin, M.D., M.H.S.
Maria Grazia Perino, Ph.D.
Edward Marshall Pickering, M.D. from 08/01/2011 to 08/31/2011
Jan Polak, M.D., Ph.D.
Hataya Kristi Poonyagariyagorn, M.D.
Nirupama Putcha, M.D.
Dereddi Raja Shekar Reddy, M.D. from 07/25/2011 to 09/18/2011
Amy Parker Ruhl, M.D.
Nana Aba Saah, M.B.B.Ch. from 02/06/2012 to 03/04/2012
Fardad Sarabchi, M.D. from 09/05/2011 to 10/02/2011
Fardad Sarabchi, M.D. from 10/17/2011 to 11/13/2011
Deepankar Sharma, M.B.B.S. from 08/18/2011 to 09/14/2011
Mi-Kyung Shin, Ph.D.
Benjamin David Singer, M.D.
Srinivas Sirimalle, M.B.B.S.
Thiti Sricharoenchai, M.D. from 11/01/2011
Krishna Prasad Subedi, Ph.D. to 03/30/2012
Karthik S. Suresh, M.D.
Ying-Ming Tsai, M.D.
Natalie Elliott West, M.D.
Qiaoqiao Yao, M.B.B.S.
Yi Zhang, M.D. to 03/31/2012
Jason Zolak, M.D. from 01/02/2012 to 01/31/2012

Transplant Hepatology
Jennifer Cohen Price, M.D.

Transplant Nephrology
Sarina Ahuja, M.D. from 02/01/2012 to 02/29/2012
Gaurav Gupta, M.B.B.S.

Transplantation Infectious Diseases
Simon Dufresne, M.D.

MOLECULAR AND COMPARATIVE PATHOBIOLOGY
Nicole Minnette Azene, D.V.M., M.S.
Emily J. Bailey, D.V.M.
Victoria Kate Baxter, D.V.M.
Sarah Evelyn Beck, D.V.M.
Kathleen Kelly Brennan, D.V.M.
LaTasha Kareem Crawford, V.M.D. from 07/11/2011
Zachary Thomas Freeman, D.V.M. from 07/05/2011
Postdoctoral Fellows

Caroline Mark Garrett, D.V.M.
Tracey Ann Graham, D.V.M.
Katharine Melissa Laughlin, Ph.D. to 01/31/2012
Simon Yat-Ming Long, V.M.D.
Lisa Michelle Mangus, D.V.M.
Theresa Marie Meade, D.V.M., M.S. from 07/11/2011
Kelly Ann Meulendyke, Ph.D. from 10/08/2011
Kelley Ann Metcalf Pate, D.V.M.
Kelly Ann Rice, D.V.M.
Jennell Lynn Romero, D.V.M., M.S.
Gillian Curtis Shaw, D.V.M., M.S.
Brian Wesley Simons, D.V.M.
Ceereena Ubaida Mohien, Ph.D.
Kenneth Whitaker Witwer, Ph.D. to 09/30/2011

MOLECULAR BIOLOGY AND GENETICS

Alaa Abdine, Ph.D. from 11/01/2011
Pragathi Achanta, Ph.D. from 11/01/2011
Hugh Brian Cahill, Ph.D. to 07/08/2011
Jing Cai, Ph.D.
Yizhi Cai, Ph.D.
Hao Chang, Ph.D.
Qian Chen, Ph.D.
Ki Young Choi, Ph.D.
Kyung-Suk Choi, M.S., Ph.D. from 11/01/2011
Eric Michael Cooper, Ph.D. to 07/31/2011
Junbiao Dai, Ph.D. to 07/31/2011
Lixin Dai, Ph.D.
Karen Kate Ocampo David, Ph.D.
Hua Deng, Ph.D.
Sergej Djuranovic, Ph.D. to 02/15/2012
Rui Duan, Ph.D. to 07/08/2011
Jessica Erin Siegel Dymond, Ph.D. to 07/31/2011
Bo Huang, Ph.D.
Ji Hoon Kim, M.S., Ph.D.
Sang Joon Kim, Ph.D. to 07/31/2011
Laura Michelle Koontz, Ph.D. from 11/01/2011
Chih-Yung Sean Lee, Ph.D. from 12/03/2011
Christopher Lee Cooper, Ph.D. from 09/17/2011
Christopher Lee Cooper, Ph.D. from 09/17/2011
Yi Liu-Chittenden, Ph.D. from 08/01/2011
Leslie A. Mitchell, Ph.D. from 08/08/2011
Syed Mohammad Moin, Ph.D. to 08/31/2011
Tammy Mornish, Ph.D. to 08/14/2011
Fumio Motegi, Ph.D.
Heloise Marie Muller, Ph.D.
Seng Kai Ong, Ph.D. to 05/31/2012
Alexandre Paix, Ph.D.
Alexandros Petropoulos, Ph.D. to 12/31/2011
Vinod Ranganathan, Ph.D. from 07/12/2011 to 09/05/2011
Maria Sevdali, Ph.D. to 05/31/2012
Weifeng She, Ph.D. from 12/01/2011
Khurts Shilagardi, Ph.D. to 03/31/2012
Jean Kristin Smith-Koutmos, Ph.D. from 08/01/2011
Rita Lee Stack, Ph.D. to 12/31/2011
Max Alexander Tischfield, Ph.D.
Hui-L K. Tom, M.S., Ph.D. to 09/06/2011
Christopher John Viggiani, Ph.D. to 01/15/2012
Pei Wen, Ph.D.
Hao Wu, Ph.D. to 06/15/2012
Rui Xie, Ph.D.
Feng Yin, M.D., Ph.D. to 03/31/2012
Huimin Yu, M. Med, Ph.D.
Jianzhong Yu, Ph.D.
Hani Zaher, Ph.D.
Yonggang Zheng, Ph.D. to 12/31/2011
Rebecca Elizabeth Zordan, Ph.D.

NEUROLOGICAL SURGERY

Sara Abbadi, Ph.D. (on leave of absence from 09/01/2011 to 11/21/2011)
Pragathi Achanta, Ph.D. to 10/31/2011
Feraz Azhar, Ph.D.
Chetan Betegowda, M.D., Ph.D.
Mohamad Bydon, M.D.
Vivian Capilla Gonzalez, Ph.D. from 01/09/2012
Justin Michael Caplan, M.D.
Kaisorn Lee Chaichana, M.D.
Jennifer Jay Cheng, M.D., M.S.
David Andrew Chesler, M.D., Ph.D.
Geoffrey Philip Colby, M.D., Ph.D.
Benjamin D. Elder, M.D.
Chikezie Ikechukwu Eseonu, M.D.
Tomas Garzon-Muvdi, M.D.
Courtney Rory Goodwin, M.D., Ph.D.
Mari Louise Asaoka Groves, M.D.
Brian Yujin Hwang, M.D.
Avadhut Divakar Joshi, Ph.D.
Thomas Adam Kosztowski, M.D.
Qian Li, Ph.D. from 08/18/2011
Jason Andrew Liu, M.D.
Li-Mei Lin, M.D.
Chang-Chia Liu, M.S., Ph.D. to 08/31/2011
Sheng-fu Larry Lo, M.H.S.
Dimitrios Mathios, M.D. from 09/15/2011
Kyriakos Papadimitriou, M.D.
Jonathan Auram Pindrik, M.D.
Magdalena Joanna Polanczyk, Ph.D. from 07/15/2011
Gustavo Pradilla, M.D.
Shaana Mohammed Raza, M.D.
Pablo Fernando Recinos, M.D.
Sussan Janett Salas, M.D. from 07/11/2011
Rachel Sarabia-Estrada, Ph.D. to 02/28/2012
Paula Valentina Schiapparelli, Ph.D.
Candice Ann Shaifer, Ph.D. to 12/31/2011
Graeme Frederick Woodworth, M.D.
Jicong Zhang, Ph.D. from 09/01/2011

Pediatric Neurosurgery

Patrick Ekow Bankah, M.B.B.Ch. from 01/09/2012
Justin Andrew Slavin, M.D. to 09/30/2011

Spine Division

Sandy Venugopal, M.B.B.S. from 08/01/2011 to 05/21/2012

NEUROLOGY

Fawaz Ahmad, M.D. from 07/05/2011 to 08/01/2011
Yama Akbari, M.D.
Arun K. Azhagiri, M.Sc., Ph.D.
Mihyun Baeg, Ph.D.
Mona Bahouth, M.D.
Jee Yun Agnes Bang, M.D.
Amit Bansal, M.B.B.S. from 10/03/2011 to 10/30/2011
David Roger Benavides, M.D.
James Francis Berry, Ph.D.
Bridgette Jeanne Billoux, M.D.
Michael A. Bonaguidi, Ph.D.
Saurav Brahmachari, Ph.D.
Manuel Mauricio Buitrago Blanco, M.D., Ph.D.
Nu Chai, M.D. 1
Zhikai Chi, M.D., Ph.D.
Kimberly Michele Christian, Ph.D.
Kuei-Fang Chung, Ph.D. from 02/01/2012
Pradeep Dahal, M.B.B.S. from 08/01/2011 to 08/31/2011
Chinar Dara, M.A., Ph.D. (on leave of absence from 09/21/2011)
Shannon Lee Dean, Ph.D. from 01/23/2012 to 06/15/2012
Jennifer Lea Dearborn, M.D. 1
Rajat Dhungana, M.B.B.S. to 07/31/2011
Stephen Matthew Eacker, Ph.D.
Romanus Roland Faigle, M.D. 1
Elizabeth Ann Felton, M.D. 1
Anthony R. Frattalone, M.D.
Carolyn Anne Fredericks, M.D. 1
Yuanzheng Gao, Ph.D. to 01/02/2012
Mehdi Ghasemi, M.D.
Junjie Guo, Ph.D. from 09/02/2011
Yi-Chun Hsieh, Ph.D.
Vidya Jagadeesan, M.B.B.S. from 08/30/2011 to 09/26/2011
Shyian S. Jen, M.D. 1
Haisong Jiang, Ph.D.
Madhavi Jinka, M.B.B.S. 1
Tannia Joson, M.D. from 02/29/2012 to 03/28/2012
Tarja Alison Juopperi, D.V.M., M.S., Ph.D. to 02/28/2012
Ho Chul Kang, M.S., Ph.D. to 10/31/2011
Sung Ung Kang, Dr.Med.Sc. to 04/30/2012
Senthilkumar Shanmugam Karuppagounder, Ph.D.
Ezza Asiam Khan, M.B.B.S. from 01/31/2012 to 02/27/2012
Amirhossein Seyed Kheradmand, M.D.
Donghoon Kim, Ph.D.
Ju Young Kim, M.S., Ph.D. to 02/29/2012
Namshik Kim, Ph.D. from 01/16/2012
Sung Hun Kim, Ph.D. to 08/12/2011
Woon Ryoung Kim, Ph.D. to 02/28/2012
Yong Jun Kim, M.S., Ph.D. from 12/01/2011
Krupa Hemantkumar Shukla, Ph.D.
Carrie Leanne Simms, Ph.D. to 04/14/2012
Alexis Nets Simpkins, M.D., Ph.D. 1
Jonathan Michael Slezak, Ph.D.
Juan Song, Ph.D.
Jeanette Nicole Stankowski, Ph.D.
Yijing Su, Ph.D. to 11/30/2011
Million Adane Tegenge, Ph.D. to 05/31/2012
Rameet Thapa, M.B.B.S. from 01/03/2012 to 01/30/2012
Reena Mary Thomas, M.B.B.S. from 02/28/2012 to 03/26/2012
Luis Bernardo Tovar yromo, Ph.D.
George K. Essien Umanah, Ph.D.
Angela Wabulya, M.B.Ch.B. 1
Zhixing Wen, Ph.D.
Yi-Lan Weng, Ph.D. to 05/29/2012
Shawniqua T. Williams, M.D. 1
Sharifia Shunta Wills, Ph.D.
Yulan Xiong, Ph.D.
Sang Hun Kang, M.D. from 10/26/2011 to 11/21/2011
Lori Ann Lebson, Ph.D.
Byoung Dae Lee, Ph.D. to 08/31/2011
Youngjin Lee, Ph.D.
Yunjom Lee, Ph.D. from 09/16/2011
Ying Li, Ph.D.
Qili Liu, Ph.D.
Shuixi Liu, Ph.D.
Shahnaz Rahman Lone, Ph.D. from 07/21/2011
James Brian Machamer, Ph.D.
Georgios Mantokoudis, M.D. from 10/01/2011
Xiaobao Mao, Ph.D.
Ian Martin, Ph.D.
Payam Mohassel, M.D. 1
Melanie Mueller, Ph.D.
Kwan Leung Ng, M.D. 1
Olivia Nirmalasari, M.D. from 01/02/2012 to 01/30/2012
Sungryong Noh, M.D. from 09/01/2011 to 10/02/2011
Nutan, M.B.B.S. from 01/31/2012 to 02/28/2012
Ozioma Chima Onokw, Ph.D. to 08/31/2011
Margaret Ayo Owegi, D.O. 1
Amalewari Pamarthly, M.D. from 11/22/2011 to 12/19/2011
Brian Nathaniel Pasley, Ph.D.
Hui Peng, M.D. from 09/27/2011 to 10/24/2011
Amanda Maureen Phillips, Ph.D.
Nyan Wai Phyo, M.B.B.S. from 11/28/2011 to 01/01/2012
Tarran Jean Pierfelice, Ph.D. to 07/06/2011
Louis-Jan Pilaz, Ph.D.
Emily Grace Potter, Ph.D.
John Calvin Probasco, M.D. 1
Abid Y. Qureshi, M.D. 1
David Shannon Race, Ph.D.
Rana Rais, Ph.D.
Liana Isa Shapiro Rosenthal, M.D.
Ali Shabahang Saber Tehrani, M.D.
Bogachan Sahin, M.D., Ph.D. 1
Guneet Sarai, M.B.B.S. from 10/31/2011 to 11/27/2011
Logan Douglas Schneider, M.D. 1
Augusta Y. Shestuyk, Ph.D.
JooHo Shin, Ph.D.
Krupa Hemantkumar Shukla, Ph.D.
Carrie Leanne Simms, Ph.D. to 04/14/2012
Alexis Nets Simpkins, M.D., Ph.D. 1
Jonathan Michael Slezak, Ph.D.
Juan Song, Ph.D.
Jeanette Nicole Stankowski, Ph.D.
Yijing Su, Ph.D. to 11/30/2011
Million Adane Tegenge, Ph.D. to 05/31/2012
Rameet Thapa, M.B.B.S. from 01/03/2012 to 01/30/2012
Reena Mary Thomas, M.B.B.S. from 02/28/2012 to 03/26/2012
Luis Bernardo Tovar y Roma, Ph.D.
George K. Essien Umanah, Ph.D.
Angela Wabulya, M.B.Ch.B. 1
Zhixing Wen, Ph.D.
Yi-Lan Weng, Ph.D. to 05/29/2012
Shawniqua T. Williams, M.D. 1
Sharifia Shunta Wills, Ph.D.
Yulan Xiong, Ph.D.
Jinchong Xu, Ph.D.
Jing Xu, Ph.D. from 08/01/2011
Jeffrey Min-In Yau, Ph.D.
Huimei Yu, Ph.D.
Changqiang Yuan, Ph.D.
K-Jun Yun, Ph.D.
Yaxue Zeng, Ph.D. from 08/15/2011 to 02/19/2012
Chun Zhong, Ph.D.
Jing Zhu, Ph.D. to 05/31/2012
Clinical Neurophysiology
Taryn Fortune, M.D. to 05/24/2012
Sarah Aminoff Kelley, M.D.
Tung T. Tran, M.D.
Epilepsy
Sara M. Szczepanski, M.A., Ph.D. from 01/17/2012
Kennedy Krieger Institute
Anita Dyan Barber, Ph.D.
Ann Sunah Choe, Ph.D.
Parastoo Jangouk, M.D.
Doris Leung, M.D.
Peter Marschik, Ph.D. from 02/01/2012 to 06/10/2012
Mary Elizabeth Nebel, Ph.D.
Andre Wayne Phillips, Ph.D.
Md Al Rahim, Ph.D.
Prakash Rath, Ph.D. to 10/13/2011
Jean-Philippe Georges Louis Richard, Ph.D.
Jaswinder Kaur Sharma, M.D.
Xiaohai Shi, Ph.D. to 12/31/2011
Keri Shielis, Ph.D.
Raj Amin Stewart, Ph.D. to 07/31/2011

Movement Disorders
Chizoba Umeh, M.D.

Neurocritical Care
Tiffany Chang, M.D.
Jacob Collen, M.D. from 12/12/2011 to 01/15/2012
Glen A. Cook, M.D. from 02/01/2012 to 02/29/2012
Atul Kalanuria, M.B.B.S.
Maresa Lugo, M.D. from 10/01/2011 to 10/31/2011
Jennifer Miller, M.D. from 08/01/2011 to 08/31/2011
Melissa Motta, M.D., M.P.H.

Neuroimmunology and Neurological Infections
Pavan Bhargava, M.B.B.S. from 10/01/2011 to 10/31/2011
Dorlan J. Kimbrough, M.D.
Farrah Jasmine Mateen, M.D.
Achilles Ntranos, M.D. from 10/03/2011
Jiwon Oh, M.D.
Neha Prakash Patel, Ph.D.
Shiv Saidha, M.B.B.Ch.
Maytal Hanina Shabat Simon, M.Sc., Ph.D. to 03/31/2012
Srilekshmi Missula Sharma, M.B.B.Ch. to 05/16/2012
Bryan Richard Smith, M.D.
Ik Lin Tan, M.B.B.S.
Gloria von Geldern, M.D.

Neurology-Vascular
Dalia Youssef Abou Zeky, M.D. from 11/15/2011
Omar Mian Ahmad, Ph.D. from 10/25/2011
Martinson Kweku Arnan, M.D.
Elisabeth Breese Marsh, M.D.

Neuromuscular Medicine
Akhata Anand Almad, Ph.D. to 12/31/2011
Tae Hwan Chung, M.D.
Christopher James Donnelly, Ph.D. from 07/18/2011
Mahsa Mehrzad, M.D.
Thy P. Nguyen, M.D. from 08/03/2011 to 01/31/2012
Jae Sung Park, Ph.D.
Kalpana Prasad, M.B.B.S. from 12/01/2011
Jeremy Michael Sullivan, Ph.D. to 01/31/2012
Shuo Wang, M.D. from 08/01/2011

Neuro-Oncology
David Scott Wolf, M.D., Ph.D.

Pediatric Neurology
Alison Marie Dolce, M.D. ¹
Ryan Jordan Felling, M.D. ¹

Movement Disorders
Chizoba Umeh, M.D.

Neurocritical Care
Tiffany Chang, M.D.
Jacob Collen, M.D. from 12/12/2011 to 01/15/2012
Glen A. Cook, M.D. from 02/01/2012 to 02/29/2012
Atul Kalanuria, M.B.B.S.
Maresa Lugo, M.D. from 10/01/2011 to 10/31/2011
Jennifer Miller, M.D. from 08/01/2011 to 08/31/2011
Melissa Motta, M.D., M.P.H.

Neuroimmunology and Neurological Infections
Pavan Bhargava, M.B.B.S. from 10/01/2011 to 10/31/2011
Dorlan J. Kimbrough, M.D.
Farrah Jasmine Mateen, M.D.
Achilles Ntranos, M.D. from 10/03/2011
Jiwon Oh, M.D.
Neha Prakash Patel, Ph.D.
Shiv Saidha, M.B.B.Ch.
Maytal Hanina Shabat Simon, M.Sc., Ph.D. to 03/31/2012
Srilekshmi Missula Sharma, M.B.B.Ch. to 05/16/2012
Bryan Richard Smith, M.D.
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Neurology-Vascular
Dalia Youssef Abou Zeky, M.D. from 11/15/2011
Omar Mian Ahmad, Ph.D. from 10/25/2011
Martinson Kweku Arnan, M.D.
Elisabeth Breese Marsh, M.D.

Neuromuscular Medicine
Akhata Anand Almad, Ph.D. to 12/31/2011
Tae Hwan Chung, M.D.
Christopher James Donnelly, Ph.D. from 07/18/2011
Mahsa Mehrzad, M.D.
Thy P. Nguyen, M.D. from 08/03/2011 to 01/31/2012
Jae Sung Park, Ph.D.
Kalpana Prasad, M.B.B.S. from 12/01/2011
Jeremy Michael Sullivan, Ph.D. to 01/31/2012
Shuo Wang, M.D. from 08/01/2011

Neuro-Oncology
David Scott Wolf, M.D., Ph.D.

Pediatric Neurology
Alison Marie Dolce, M.D. ¹
Ryan Jordan Felling, M.D. ¹

Movement Disorders
Chizoba Umeh, M.D.

Neurocritical Care
Tiffany Chang, M.D.
Jacob Collen, M.D. from 12/12/2011 to 01/15/2012
Glen A. Cook, M.D. from 02/01/2012 to 02/29/2012
Atul Kalanuria, M.B.B.S.
Maresa Lugo, M.D. from 10/01/2011 to 10/31/2011
Jennifer Miller, M.D. from 08/01/2011 to 08/31/2011
Melissa Motta, M.D., M.P.H.

Neuroimmunology and Neurological Infections
Pavan Bhargava, M.B.B.S. from 10/01/2011 to 10/31/2011
Dorlan J. Kimbrough, M.D.
Farrah Jasmine Mateen, M.D.
Achilles Ntranos, M.D. from 10/03/2011
Jiwon Oh, M.D.
Neha Prakash Patel, Ph.D.
Shiv Saidha, M.B.B.Ch.
Maytal Hanina Shabat Simon, M.Sc., Ph.D. to 03/31/2012
Srilekshmi Missula Sharma, M.B.B.Ch. to 05/16/2012
Bryan Richard Smith, M.D.
Ik Lin Tan, M.B.B.S.
Gloria von Geldern, M.D.

Neurology-Vascular
Dalia Youssef Abou Zeky, M.D. from 11/15/2011
Omar Mian Ahmad, Ph.D. from 10/25/2011
Martinson Kweku Arnan, M.D.
Elisabeth Breese Marsh, M.D.

Neuromuscular Medicine
Akhata Anand Almad, Ph.D. to 12/31/2011
Tae Hwan Chung, M.D.
Christopher James Donnelly, Ph.D. from 07/18/2011
Mahsa Mehrzad, M.D.
Thy P. Nguyen, M.D. from 08/03/2011 to 01/31/2012
Jae Sung Park, Ph.D.
Kalpana Prasad, M.B.B.S. from 12/01/2011
Jeremy Michael Sullivan, Ph.D. to 01/31/2012
Shuo Wang, M.D. from 08/01/2011

Neuro-Oncology
David Scott Wolf, M.D., Ph.D.

Pediatric Neurology
Alison Marie Dolce, M.D. ¹
Ryan Jordan Felling, M.D. ¹
Min Jung Park, Ph.D.
Sungjin Park, Ph.D.
Brad Erich Pfeiffer, Ph.D.
Santosh Ramamurthy, Ph.D. to 03/21/2012
Feng Rao, Ph.D.
Xiaozhi Ren, Ph.D.
Martin Miguel Riccomagno, M.S., Ph.D.
Satish Jayaram, M.B.B.S. from 10/03/2011
Juan Ignacio Sbodio, Ph.D.
Gek Ming Sia, Ph.D.
Richa Tyagi, M.Sc., Ph.D.
Juan Ignacio Sbodio, Ph.D.
Gelsy Torres-Oviedo, Ph.D. to 12/17/2011
Jocelyn Widagdo, Ph.D. to 02/23/2012
Kevin Michael Wright, Ph.D.
Jing Xu, M.D., Ph.D. to 03/16/2012
Haibo Yu, Ph.D.
Jing Zhang, Ph.D.
Mei Zhang, Ph.D.
Wenchi Zhang, Ph.D.
Yong Zhang, Ph.D.
Jing Zhu, Ph.D.
Cristina Zibetti, Ph.D.
Amanda Leah Zimmerman, Ph.D. from 10/03/2011
Camila Lidia Zold, M.S., Ph.D.
Beiyan Zou, Ph.D.
ONCOLOGY CENTER
Alexander Vladimirovich Favorov, Ph.D. to 05/20/2012
Liangfeng Han, M.D., Ph.D.
Kideok Jin, M.S., Ph.D.
Vanessa Ferreira Merino, M.A., Ph.D.
Loris Mularoni, Ph.D. to 10/15/2011
Ting Yang, Ph.D.
Brain Cancer
Guneet Sarai, M.B.B.S. from 01/31/2012 to 02/28/2012
Breast Cancer
Seung Joon Chung, D.O. from 08/24/2011
Joseph Paul Garay, Ph.D. to 09/09/2011
Cancer Biology
Marsilio Adriani, Ph.D.
Valentina Battaglia, Ph.D. from 11/14/2011
Sheetal Bhan, M.Sc., Ph.D. from 09/01/2011
Kirsten Florence Block, Ph.D.
Evan Thomas Brower, Ph.D.
Yi Cai, Ph.D.
Yong Gu Cho, M.M.S., Ph.D. to 03/31/2012
Su Mi Choi, Ph.D.
Young Bong Choi, Ph.D. to 12/31/2011
Eriko Greene Clements, Ph.D. to 07/08/2011
Liudmila Vladimirovna Danilova, Ph.D. (on leave of absence to 09/11/2011)
Soma Ghosh, M.S., Ph.D.
Christin Lee Hanigan, Ph.D.
Megan Albert Healey, Ph.D. to 07/22/2011
Margaret Lynne Hoang, Ph.D.
Mohammad Zulfiquer Hossain, Ph.D.
Jason David Howard, Ph.D.
Alicia Hulbert, M.D.
Hee Jung Hwang, Ph.D. to 07/15/2011
Yuchen Jiao, M.D., Ph.D.
Lihua Jin, Ph.D.
Chandrashekar Dwarkanath Katam, Ph.D.
Alexi Christopher King, M.D. from 07/18/2011 to 06/19/2012
Rebecca Jane Leary, Ph.D.
Hui Li, Ph.D.
Meng Li, M.D., Ph.D.
Renfeng Li, Ph.D.
Liang Liang, Ph.D.
Hua Liu, M.D., Ph.D.
Jianjun Luo, Ph.D. (on leave of absence to 08/31/2011)
Jianjun Luo, Ph.D. from 09/01/2011
Shannon Lyn Nowotarski, Ph.D.
Philipp Nuhn, M.D.
Hiroyuki Ozawa, Ph.D. to 03/31/2012
Kalpeshkumar Govindbhai Patel, M.B.B.S.
Yuan Qiao, M.D., M.S., Ph.D.
Carlo Rago, Ph.D. to 11/04/2011
Yunzhalo Ren, M.D., Ph.D.
Sergio Rey, Ph.D. from 09/01/2011
Subhojit Sourendra Sen, Ph.D.
Andrew Dixon Skora, Ph.D.
Hsing-Chen Tsai, M.D., M.S., Ph.D.
Sari Johanna Tuupanen, Ph.D. to 08/15/2011
Michelle Phyllis Vaz, M.S., Ph.D. from 10/03/2011
Shondelle Marie Wilson, Ph.D. to 09/30/2011
Jian Wu, A.M., M.Phil., Ph.D. (on leave of absence from 12/01/2011 to 02/28/2012)
Yu Wu, M.D., Ph.D. to 12/31/2011
Jian Yang, Ph.D.
Ming Zhang, Ph.D.
Yang Zhang, Ph.D.
Rebekah Lorah Zinn, Ph.D.
Experimental Therapeutics
Dimitar Bogdanov Avtanski, M.Sc., Ph.D.
Brian G. Blair, Ph.D.
Shuangling Chen, M.D. to 08/31/2011
Yong Soon Chun, M.D., Ph.D. to 08/31/2011
Grace Ann Cornblatt, Ph.D. to 07/08/2011
Maria Cristina Figueroa Magalhaes, M.D. from 11/07/2011
Michael C. Haffner, M.D.
Preethi Chandran Korangath, Ph.D.
Maya Blagoeva Kostova, Ph.D.
Arumugam Nagalingam, M.S., Ph.D.
Eman Samih Sbaity, M.D. from 08/10/2011 to 02/01/2012
Somdutta Sinha Roy, Ph.D.
Kyung Hee Yi, M.S., Ph.D.
Takahiro Yoshida, M.D., Ph.D.
Hematologic Malignancies
Jasmin Roya Agarwal, M.D.
Mark Robert Coyne, M.B.B.Ch. to 07/11/2011
Sudipto Ganguly, Ph.D.
Marta Medeot, M.D. to 05/14/2012
Toshihiko Tanno, Ph.D.
Hematology/Medical Oncology
Dhaval G. Aghera, M.B.B.S. from 07/21/2011 to 08/15/2011
Olaide Ifelola Ajayi, M.B.B.S. from 01/13/2012 to 02/09/2012
Miguel Albino Gonzalez, M.D. from 10/24/2011 to 11/18/2011
Amol Ashraf, M.B.B.S. from 11/03/2011 to 12/02/2011
POSTDOCTORAL FELLOWS 459
Akshu Balwan, M.B.B.S. from 12/08/2011 to 01/04/2012
Julia Ann Beaver, M.D.
Sosipatros Boikos, M.D.
Evan Mark Braunstein, Ph.D.
Timothy Francis Burns, M.D., Ph.D.
Ria Arlina Cebu Calata, M.D. from 02/06/2012 to 03/04/2012
Jian Li Campian, M.D., M.S., Ph.D.
Shan Shan Chen, M.B.B.S. from 11/14/2011 to 12/12/2011
Kevin J. Cheung, M.D.
Amy Elizabeth DeZern, M.D.
Ibilola Abike Fashoyin-Aje, M.D.
Patrick Forde, M.B.B.Ch.
Stephanie Louise Gaillard, M.D., Ph.D.
Gabriel Ghiaur, M.D., Ph.D.
Lukasz Pawel Gondek, M.D.
Michael Richard Grunwald, M.D.
Nidhi Gupta, M.B.B.S. from 02/01/2012 to 02/29/2012
Christopher Simon Hourigan, B.M.-B.Ch., D.Phil. to 12/31/2011
Hatim Husein, M.D.
Laxmi Hariharan Iyer, M.B.B.S., M.P.H. from 01/05/2012 to 02/01/2012
Danijela Jelovac, M.D. to 07/31/2011
Christopher George Kanakry, M.D.
Jennifer Ann Kanakry, M.D.
Heiko Konig, M.D.
Metin Kurtoglu, M.D. from 09/19/2011 to 10/16/2011
Curtis K. Lawrence, M.D. from 09/15/2011 to 10/12/2011
Elisabet Esteve Manasanch, M.D. from 09/26/2011 to 10/23/2011
Sabrina Martyr, M.D. from 01/04/2012 to 01/29/2012
Luckson Noe Mathieu, M.D.
Lauren Ann Mauro, M.D.
Florence Marine Mcalister, M.D.
Milos Miljkovic, M.D. from 02/02/2012 to 02/29/2012
Kelly Westbrook Mitchell, M.D.
Anil Nadipell, M.B.B.S. from 08/22/2011 to 09/18/2011
Rakhi Prakash Naik, M.D.
Folashade Mosunjola Otegbeye, M.B.B.Ch. from 01/04/2012 to 01/31/2012
Channing J.C. Paller, M.D.
Hom Nath Pant, M.B.B.S. from 09/19/2011 to 10/16/2011
Nirav Dilipbhai Patel, M.B.B.S. to 07/14/2011
Priyankumar Patel, M.D. from 09/28/2011 to 11/20/2011
Lorraine Peloosof, M.D., Ph.D.
Gabrielle Tova Prince, M.D.
Jeffrey J. Pu, M.D.
Ali Qamar, M.B.B.S. from 01/09/2012 to 02/05/2012
Haoming Qiu, M.D. from 02/28/2012 to 03/11/2012
Cesar Augusto Santa-Maria, M.D.
Michael Thomas Schweizer, M.D.
Vuk Sekicki, M.D. from 12/13/2011 to 01/08/2012
Rupinder Singh, M.D. from 08/18/2011 to 09/14/2011
Immanuel Pradeep Raj Susai, M.B.B.S. from 01/05/2012 to 02/01/2012
Anu Verma, M.B.B.S. from 11/10/2011
Sri Shanmgu Priyaa Viswanathan, M.B.B.S. from 07/25/2011 to 08/21/2011
Breelyn Ann Wilky, M.D.
Jocelyn Wozney, M.D.
John Wrangle, M.D., M.P.H.
Kelvin Young, M.D. from 11/09/2011 to 12/06/2011
Ily Kristine Tolentino Yunul, M.D. to 07/20/2011
Hyun Don Yun, M.D. from 10/21/2011 to 11/03/2011
Amer Methqal Zeidan, M.B.B.S.
Joshua Franklin Zeidner, M.D.

Immunology/Hematopoiesis
Joseph James Barbi, M.S., Ph.D.
William Nathaniel Brennen, Ph.D.
Thi Vu Bui, Ph.D. to 03/01/2012
Yukan Duan, Ph.D.
Deepak Kumar Kana Kadayakkara, Ph.D. to 12/31/2011
Yan Liu, M.D., M.Sc., Ph.D. to 07/31/2011
Eric Richard Lutz, Ph.D.
Ying Zheng, Ph.D.

Medical Oncology
Susannah Gabrielle Batko-Yovino, M.D.
Haixia Cheng, Ph.D.
Andrew S. Delmas, M.D. from 07/25/2011
Chenglai Fu, M.D., Ph.D.

Pediatric Oncology
Sama Farheen Ahsan, M.D.
Catherine Michelle Albert, M.D.
Nawal W. Alkarouf, M.D., M.S.
Colleen Elizabeth Annesley, M.D.
James Thomas Curry Badgett, M.D., Ph.D.
Theresa Jean Barberi, Ph.D. from 01/03/2012
Nataliya A. Buxbaum, M.D.
Stacy Lorine Cooper, M.D.
Lea C. Cunningham, M.A., M.D.
Hema Kishore Dave, M.B.B.S.
Julia E. Dooher, M.S., Ph.D.
Rachel Eve Ershler, M.D. from 08/01/2011
Yingmei Feng, Ph.D. from 09/12/2011
Hong Guo, Ph.D.
Jennie Hart, M.D. from 10/14/2011 to 11/09/2011
Masonari Hayashi, M.D.
Christine Marie Heske, M.D.
Sun Hwa Hong, M.S., Ph.D. to 09/30/2011
Jeffrey Sean Huo, M.D., Ph.D.
Ian Maharer Kaplan, Ph.D. to 10/05/2011
Chimen A. Kesserwan, M.D.
Brian Hansen Ladle, M.D., Ph.D.
Calvin K. Lee, M.D.
Daniel W. Lee, III, M.D.
Deena Rachel Levine, M.D.
Nicolas Jose Llosa, M.D.
Ou Ma, Ph.D.
Allison Martin, M.D.
Joseph Brady Moore, IV, M.S., Ph.D.
Ashley Taylor-King Munchel, M.D.
Sanddeep Singh Negi, Ph.D.
Toshihiro Onishi, M.D.
Tea Soon Park, Ph.D.
Nirali N. Shah, M.D.
Jessica Carolyn Shand, M.D., M.H.S.
John Frederick Shern, M.D.
Edward Allan R. Sison, M.D.
Yang Song, Ph.D.
Matteo M. Trucco, M.D.
Heather Wasserstrom, M.D.
Jing Zhang, Ph.D. from 08/22/2011 to 05/14/2012
Qingsong Zhu, M.Sc., Ph.D.
Ludovic Zimmerlin, Ph.D. from 11/01/2011

Prostate Cancer/GU
Janet Mendonca, Ph.D.

Upper Aerodigestive Cancer
Ana Markovic, Ph.D.
Hiroyuki Ozawa, Ph.D. from 04/01/2012

Viral Oncology
Alfonso Lavorgna, Ph.D. from 01/03/2012

OPHTHALMOLOGY
Rachel Edet Annam, M.B.B.Ch., M.P.H. from 09/01/2011 to 05/31/2012
Vincent Z. Beachley, Ph.D. from 09/01/2011
John Peter Campbell, M.D., M.P.H. 1
Connie June Chen, M.D. 1
Pavlík Doroslovackí, M.D. 1
Malia Michelle Edwards, Ph.D.
Alien Omid Eghrari, M.D. 1
John Anthony Fuller, Ph.D.
Marcos Esteban Garza-Madrid, Ph.D. to 04/30/2012
Yan Ge, M.D.
Ron Gutmark, M.D. 1
Bing Han, Ph.D. to 04/14/2012
Ian Carlos Han, M.D. 1
Elizabeth Houle, M.D. 1
Jianfei Hu, Ph.D.
Woohang Hwang, Ph.D.
Takeshi Iwase, M.D.
Mona A. Kaleem, M.D. from 09/26/2011 to 10/24/2011
Amanda E. Kiely, M.D. 1
Anthony J. Kim, Ph.D.
Chae Kyu Kim, Ph.D. from 02/01/2012
Fang Sarah Ko, M.D. 1
Wojciech Grzegorczyk Lesniak, Ph.D. from 01/09/2011
Julien Antoine Maruotti, Ph.D.
Manoj Mishra, Ph.D. from 09/06/2011
Christina Soyoung Moon, M.D. 1
Valliammi Muthappan, M.D. 1
Afshan Amin Nani, M.D., M.P.H. 1
David Yao Fei Poon, M.D. 1
Fatemeh Rajaii, M.D., Ph.D. 1
David James Ramsey, M.D., Ph.D. 1
Vinod Ranganathan, Ph.D. from 09/06/2011
Shawn B. Robinson, M.D. 1
Mira Menon Sachdeva, M.D., Ph.D. 1
Surajit Saha, M.D. 1
Shannon Jie Cui Shan, M.D., M.S. 1
Jung Soo Suk, Ph.D.
Guo Ying Sun, Ph.D. to 02/28/2012
Malikia Valapala, M.S., Ph.D.
Maria Natalia Vergara, Ph.D.
Karl Jonas Wahlin, M.S., Ph.D.
Yan Hong Wei, B.M., Ph.D.
Christina Yee Ke Wang, M.D. 1
Xiaobin Xin, Ph.D. from 07/18/2011 to 06/16/2012
Qingguo Xu, Ph.D. to 02/29/2012
Xinrong Zhou, M.D., Ph.D.

Cornea and Anterior Segment Service
Fabiana Kimi Kashiwabuchi, M.D. to 02/13/2012
Eun Chul Kim, Ph.D.
Eva-Maria Lackner, M.D. from 02/06/2012
Mario Magnus Goswin Matthias, M.D.
Qing Pan, M.D.
Carlos Gustavo Bonfadini Rocha, M.D. to 03/13/2012
Murilo Wendeborn Rodrigues, Jr., M.D. to 04/14/2012
Li Tang, M.D. to 03/20/2012
Andrea Isabela Zambrano, M.D.

Glaucoma Service
Fiona Elizabeth Seager, M.B.B.Ch. from 08/29/2011 to 06/22/2012
Wasu Supakontanasan, M.D. to 05/31/2012
Li Xu, M.D. from 12/01/2011

Low Vision Service
Pamela E. Jeter, M.A., Ph.D.
Hendrik Christiaan Stronks, Ph.D.

Neuro-ophthalmology/Orbital Unit
Ghada Abdel Hafez, M.B.B.S. to 08/13/2011
Franz Marie Octavio Cruz, M.D.
Pedro Martins Fonseca, M.D. from 10/31/2011
Allison Norah McCoy, M.D., Ph.D.
Kyung-Ah Park, M.D. from 03/01/2012
Hangxiu Xu, M.D., Ph.D. to 03/14/2012

Oculoplastic Service
Raymond Albert Enke, Ph.D.
Verity Frances Oliver, Ph.D.
Yun-Dun Shen, M.D. to 08/31/2011

Retinal Vascular Service
Owhofasa Onovugbe Aghedia, M.B.B.S., M.P.H. from 08/08/2011 to 05/31/2012
Katayo Ono Baradan Ebrahim, M.D.
Millena Gomes Bittencourt, M.D.
Kristen Elizabeth Bowles, O.D. from 09/06/2011
Emily Claire Fletcher, M.B.B.Ch. from 10/24/2011
Jangwon Heo, Ph.D. to 12/30/2011
Chie Iwase, M.D. to 12/31/2011 (on leave of absence to 08/08/2011)
Ahmed Asim Khwaja, M.B.B.S.
Hong Ting Liu, M.D. from 08/22/2011
Keichi Mita, M.D. to 09/16/2011
Ahmadreza Moradi, M.D. from 02/01/2012
Masayuki Ohnaka, M.D.
Tanuree Sen, Ph.D.
Mizuki Tagami, M.D. to 03/15/2012
Lei Wang, Ph.D. to 04/30/2012
Yulia Wolfson, M.D.
Shiri Zayit-Soudry, M.D. to 08/31/2011
Xufeng Zhong, Ph.D.

Strabismus and Pediatric Ophthalmology
Fong Yee Foo, M.B.B.S. from 08/24/2011
Brinda Muthasamy, M.B.B.Ch. from 10/03/2011

Vitreo-Retinal Surgical Service
Elham Hatef Naimi, M.D. to 07/12/2011
Mohamed A. Ibrahim, M.B.B.Ch.

ORTHOPAEDIC SURGERY
Zaki Abou Zahr, M.D. from 05/31/2012
Rishi Balkissoon, M.D., M.P.H. 1
POSTDOCTORAL FELLOWS

Johnathan Alexander Bernard, M.D. 1
Jaysson Trevor Brooks, M.D. 1
Pradeep Dahal, M.B.B.S. from 09/01/2011 to 10/02/2011
Ashvin Kumar Dewan, M.D. 1
Mostafa Hossam El Dafrawy, M.B.B.Ch. from 07/31/2011
Min Guan, Ph.D. from 12/19/2011
Jiong Jiong Guo, Ph.D. to 04/26/2012
Barkha Gurbani, M.D. 1
Hamid Hassanazadeh, M.D. 1
Wenyong He, M.D. to 01/30/2012
Casey Jo Humbyrd, M.D. 1
Adam Jester, M.D. to 09/04/2011
Dhruv Joshi, M.B.B.S. from 04/30/2012 to 05/30/2012
Thomas J. Kim, M.D., M.S. 1
Yun Tai Kim, Ph.D. to 01/27/2012
Sanjivani Avinash Kolge, M.B.B.S. from 03/29/2012 to 04/29/2012
Judith E. Kopinski, M.D. from 01/01/2012
Rushyuan Jay Lee, M.D. 1
Chang Jun Li, M.D. to 06/14/2012
Chunyu Li, M.D. to 04/24/2012
Barkha Gurbani, M.D. 1
Hamid Hassanazadeh, M.D. 1
Wenyong He, M.D. to 01/30/2012
Casey Jo Humbyrd, M.D. 1
Adam Jester, M.D. to 09/04/2011
Dhruv Joshi, M.B.B.S. from 04/30/2012 to 05/30/2012
Thomas J. Kim, M.D., M.S. 1
Yun Tai Kim, Ph.D. to 01/27/2012
Sanjivani Avinash Kolge, M.B.B.S. from 03/29/2012 to 04/29/2012
Judith E. Kopinski, M.D. from 01/01/2012
Rushyuan Jay Lee, M.D. 1
Chang Jun Li, M.D. to 06/14/2012
Chunyu Li, M.D. to 04/24/2012
Barkha Gurbani, M.D. 1
Hamid Hassanazadeh, M.D. 1
Wenyong He, M.D. to 01/30/2012
Casey Jo Humbyrd, M.D. 1
Adam Jester, M.D. to 09/04/2011
Dhruv Joshi, M.B.B.S. from 04/30/2012 to 05/30/2012
Thomas J. Kim, M.D., M.S. 1
Yun Tai Kim, Ph.D. to 01/27/2012
Sanjivani Avinash Kolge, M.B.B.S. from 03/29/2012 to 04/29/2012
Judith E. Kopinski, M.D. from 01/01/2012
Rushyuan Jay Lee, M.D. 1
Chang Jun Li, M.D. to 06/14/2012
Chunyu Li, M.D. to 04/24/2012
Barkha Gurbani, M.D. 1
Hamid Hassanazadeh, M.D. 1
Wenyong He, M.D. to 01/30/2012
Casey Jo Humbyrd, M.D. 1
Adam Jester, M.D. to 09/04/2011
Dhruv Joshi, M.B.B.S. from 04/30/2012 to 05/30/2012
Thomas J. Kim, M.D., M.S. 1
Yun Tai Kim, Ph.D. to 01/27/2012
Sanjivani Avinash Kolge, M.B.B.S. from 03/29/2012 to 04/29/2012
Judith E. Kopinski, M.D. from 01/01/2012
Rushyuan Jay Lee, M.D. 1
Chang Jun Li, M.D. to 06/14/2012
Chunyu Li, M.D. to 04/24/2012
Barkha Gurbani, M.D. 1
Hamid Hassanazadeh, M.D. 1
Wenyong He, M.D. to 01/30/2012
Casey Jo Humbyrd, M.D. 1
Adam Jester, M.D. to 09/04/2011
Dhruv Joshi, M.B.B.S. from 04/30/2012 to 05/30/2012
Thomas J. Kim, M.D., M.S. 1
Yun Tai Kim, Ph.D. to 01/27/2012
Sanjivani Avinash Kolge, M.B.B.S. from 03/29/2012 to 04/29/2012
Judith E. Kopinski, M.D. from 01/01/2012
Rushyuan Jay Lee, M.D. 1
Chang Jun Li, M.D. to 06/14/2012
Chunyu Li, M.D. to 04/24/2012
Barkha Gurbani, M.D. 1
Hamid Hassanazadeh, M.D. 1
Wenyong He, M.D. to 01/30/2012
Casey Jo Humbyrd, M.D. 1
Adam Jester, M.D. to 09/04/2011
Dhruv Joshi, M.B.B.S. from 04/30/2012 to 05/30/2012
Thomas J. Kim, M.D., M.S. 1
Yun Tai Kim, Ph.D. to 01/27/2012
Sanjivani Avinash Kolge, M.B.B.S. from 03/29/2012 to 04/29/2012
Judith E. Kopinski, M.D. from 01/01/2012
Rushyuan Jay Lee, M.D. 1
Chang Jun Li, M.D. to 06/14/2012
Chunyu Li, M.D. to 04/24/2012
Barkha Gurbani, M.D. 1
Hamid Hassanazadeh, M.D. 1
Wenyong He, M.D. to 01/30/2012
Casey Jo Humbyrd, M.D. 1
Adam Jester, M.D. to 09/04/2011
Angela Wenzel, M.D. from 02/01/2012 to 12/31/2011
Gaosong Wu, Ph.D. to 09/30/2011
Haifeng Yin, Ph.D. to 09/30/2011
Geoffrey D. Young, M.D., Ph.D.

Dental and Oral Medicine
Justin Henry Deckard, D.M.D. 1
Sophie Le Oswald, D.D.S. from 09/01/2011 to 01/30/2012
Haifeng Yin, Ph.D. to 08/31/2011
Geoffrey D. Young, M.D., Ph.D.
Dental and Oral Medicine
Justin Henry Deckard, D.M.D. 1
Sophie Le Oswald, D.D.S. from 09/01/2011 to 01/30/2012
Haifeng Yin, Ph.D. to 08/31/2011
Geoffrey D. Young, M.D., Ph.D.

Otology-Neurotology
Yuri Agrawal, M.D.
Howard Moskowitz, M.D., Ph.D.

PATHOLOGY
David Vincent Baewer, M.D., Ph.D. 1
Alexander S. Baras, M.D., Ph.D. 1
Erin Michelle Carney, M.D. 1
Jamal Carter, M.D. 1
Guoli Chen, M.D. 1
Ashley Marie Cimino-Mathews, M.D. 1
Nathan S. Cuka, M.D. 1
Hillary Rose Elwood, M.D. 1
Baojin Fu, M.D. 1
Whitney Morgen Green, M.D. 1
Grzegorz T. Gurda, M.D., Ph.D. 1
Cheng-Ying Ho, M.D. 1
Brittany Joy Holmes, M.D. 1
Matthew Scott Karafin, M.D. 1
Robert Eric LeBlanc, M.D. 1
Gloria Huang Lewis, M.D. 1
Chad Michael McCull, M.D. 1
Zina Meriden, M.D. 1
Delicia La Shaun Munfus-McCray, M.D. 1
David William Nauen, M.D., Ph.D. 1
Doreen N. Nguyen, M.D. 1
Matthew Theodore Olson, M.D. 1
Justin Scott Poling, M.D. 1
Scott A. Robertson, M.D., Ph.D. 1
Nemanja Rodic, M.D. 1
Erika Franco Rodriguez, M.D., Ph.D. 1
Safia Nawazish Salaria, M.B.B.S. 1
Mark Atienza Samolis, M.D., Ph.D. 1
Nathaniel Evan Smith, M.D. 1
Matthew Paul Tilson, M.D. 1
Christopher James VandenBussche, M.D., Ph.D. 1
Jeremy Vincent, M.D. 1
Laura DeLong Wood, M.D., Ph.D. 1
Gang Zheng, B.M., Ph.D. 1

Autopsy Pathology
Sarah Evelyn Beck, D.V.M.
Kathleen Kelly Brennan, D.V.M.
LaTasha Kareem Crawford, V.M.D. from 07/11/2011
Simon Yat-Ming Long, V.M.D.
Lisa Michelle Mangus, D.V.M.
Jenell Lynn Romero, D.V.M., M.S.
Gillian Curtis Shaw, D.V.M., M.S.
Brian Wesley Simons, D.V.M.

Cardiovascular Pathology
Samarjit Das, Ph.D.
Oliver Andrew Kent, Ph.D. to 12/16/2011
Mark Jeffrey Kohr, Jr., Ph.D.
Toshiyuki Yano, Ph.D.

Clinical Chemistry
Paul Oluwaseyi Aiyetan, M.B.B.S. from 02/01/2012 to 05/19/2012
Jing Chen, M.S., Ph.D. from 10/01/2011
Anna K. Fuezery, Ph.D.
Claudia L. Henemyre-Harris, Ph.D.
Mark Albert Marzinkle, Ph.D.
Punit Kiran Shah, Ph.D. from 11/01/2011
Shisheng Sun, Ph.D. from 09/12/2011
Xiangchun Wang, Ph.D. to 06/13/2012
Shuang Yang, Ph.D.
Weiming Yang, Ph.D. from 11/15/2011

Cytopathology
Ramneesh Virk Bhatnagar, M.D. from 08/01/2011 to 08/31/2011
Ramneesh Virk Bhatnagar, M.D. from 10/01/2011 to 10/31/2011
Alexandra Bovbel, M.D. from 10/01/2011 to 10/31/2011
Srividya Sathiyamoorthy, M.B.B.S.
Andrea Proctor Subhawong, M.D.
Scott A. Whitworth, M.D.
Lauren Fang Xu, M.D. from 09/01/2011 to 09/30/2011

GI-Liver Pathology
Vijayalakshmi Ananthanarayanan, M.B.B.S. from 08/01/2011 to 08/31/2011
Haibo Bai, Ph.D.
Seungmin Bang, M.D.
Venugopal Chenna, M.S., Ph.D.
Yunfeng Cui, M.D. to 05/10/2012
Marco Dal Molin, M.D. to 10/31/2011
Hubert Darius J. Daniel, M.Sc., Ph.D.
Sonal Gupta, Ph.D.
Chaoxin Hu, Ph.D.
Thomas A. Huebner, M.D. to 02/07/2011
Jiju Joseph, M.S., Ph.D. to 12/31/2011
Mitsuro Kanda, Ph.D.
Peter Ronald Langford, Ph.D. from 01/03/2012
Julie Odile Leclerc, Ph.D.
Lili Lee, M.D. from 10/31/2011 to 11/18/2011
Ang Li, Ph.D.
Ta-Chiang Liu, M.D.
Yoshihisa Matsushita, Ph.D.
Oliver Gene McDonald, M.D., Ph.D.
Salvador Naranjo-Suarez, Ph.D. from 10/03/2011
Roya Setarehshenas, M.D. from 10/03/2011 to 10/31/2011
Aatur Dilip Singhi, M.D., Ph.D.
Mirta Mayke Streppel, M.D.
Abeer Z. Tabbarah, M.D. from 11/28/2011 to 12/16/2011
Audrey Louise Josette Vincent, Ph.D. to 12/09/2011
Yang Xu, Ph.D. to 11/25/2011
Shinichi Yabuuchi, Ph.D.
Jun Yu, Ph.D.
Yi Zhong, M.D.

Gynecologic Pathology
Laura Ardighieri, M.B.B.S. to 09/30/2011
Min Gao, M.D.
BNP Gomez, Ph.D.
Bin Guan, Ph.D. to 04/30/2012
Hsiang-Ling Ho, Ph.D. to 07/31/2011
Jin Gyoung Jung, Ph.D. from 02/01/2012
Tae Heung Kang, D.Sc. to 03/31/2012
Tae Woo Kim, Ph.D. to 06/12/2012
Elisabetta Kuhn, M.B.B.S.
Sung Yong Lee, Ph.D.
Pradeep Kumar Panuganti, M.B.B.S. to 08/31/2011
Ruey-Shyang Soong, M.D. from 10/18/2011
Alexander Stoeck, Ph.D.
Abeer Z. Tabbarah, M.D. from 11/01/2011 to 11/25/2011
Hsiang-Tsai Chen, M.D. to 08/31/2011
Chen Hsuan Wu, M.D. from 07/11/2011
Wai-Hong Wu, Ph.D.
Lihua Yang, Ph.D. from 09/13/2011

Hematologic Pathology
Joseph Aoki, M.D.
Seble Chekol, M.D. from 11/01/2011 to 11/30/2011
Jiankun Tong, M.D. from 02/01/2012 to 02/29/2012
Patrizia Vitullo, Ph.D. from 09/26/2011
Rui Zheng, M.D., Ph.D.

Immunopathology
Alessandra De Remigis, M.D. from 10/10/2011
Shintaro Iwama, M.D., Ph.D.
Stanislav Vladimirovich Khoruzhenko, M.D. to 04/30/2012
Ae Ryon Kim, Ph.D. to 04/30/2012
Melissa Anne Landek-Salgado, Ph.D. to 08/14/2011
Taylor Louise Reynolds, D.V.M.
Christian Schuetz, Ph.D. from 02/01/2012
Shey-Cherng Tzou, Ph.D.
Dongmei Xing, M.D., Ph.D.

Informatics
Hao Shi, M.D. to 01/09/2012
Hong Tai, Ph.D.

Kidney-Urologic Pathology
Kirstie Anne-Merrea Adams, Ph.D. to 08/05/2011
Carlise Renee Bethel, Ph.D. to 03/31/2012
William Dean Brandt, Ph.D.
Alex Gee Mun Chiang, M.D.
Antonio Tadeo Chaux, M.D. to 12/31/2011
Jing Chen, M.S., Ph.D. to 09/30/2011
Susmita Ghosh, Ph.D.
Nilda Diana Gonzalez Roibon, M.D.
Berrak Gumuskaya Ocal, M.D. from 10/01/2011
Bora Gurel, M.D. to 09/30/2011
Christopher Michael Heaphy, Ph.D.
Stephen Lee, M.B.B.S.
Xuguang Nie, Ph.D. from 08/01/2011
Akshay Sood, M.B.B.S.

Medical Microbiology
Amy Elizabeth Greer, Ph.D.
Kennard-Eu-Keong Tan, M.D. to 06/26/2012

Molecular Genetic Pathology
Shuko Harada, M.D. to 07/31/2011
Keila L. Rivera-Roman, M.D. to 12/22/2011
Jonathan D. Young, M.D. from 02/01/2012 to 03/31/2012

Neuropathology
Kerstin Elisabeth Braunstein, Ph.D.
Qing Chang, Ph.D.
Po-Min Chiang, M.D., Ph.D. to 07/31/2011
Qian Chu, Ph.D.
Kari-Eliise Tryggstad Codispoti, M.D. (on leave of absence to 08/31/2011)
Yun Ha Jeong, Ph.D.
Kristin Ann Johnson, M.D.
Maria Martinez-Lage Alvarez, M.D. from 02/06/2012 to 03/02/2012
Ayman Samkari, M.D. from 11/01/2011 to 11/30/2011
Jonathan Wei-Che Yu, Ph.D.

Ophthalmic Pathology
Laura Asnaghi, M.S., Ph.D. to 01/31/2012
Abdalhossein Ghafourian, M.D.
Brent Alan Orr, M.D.
Palak S. Sitwala, M.B.B.S. (on leave of absence from 09/07/2011 to 12/07/2011)

Selective (Renal)
Carla Lashannon Ellis, M.D., M.S.
Abeer Z. Tabbarah, M.D. from 12/19/2011 to 12/30/2011

Selective (Urological)
Huimin Guo, M.D. from 01/01/2012 to 01/30/2012
Jeong Seok Han, M.D., M.S.
Parisa Karimi, M.D. from 08/01/2011
Qinghu Ren, M.D. from 10/24/2011 to 11/18/2011
Hillary Maren Ross, M.D.
Maria Tretiakova, M.D. from 11/01/2011 to 11/30/2011

Surgical Pathology
Lindsay Blake Goicochea, M.D. from 10/01/2011 to 10/31/2011

Transfusion Medicine
Angela Treml, M.D.
Yihua Xu, M.D., Ph.D. from 09/26/2011 to 05/31/2012

PEDIATRICS
Lubna Qazi Abdullah, M.D. 1
Sonali Deivas Advani, M.B.B.S. from 10/03/2011 to 05/31/2012
Amir Agraawan, M.D.
Sharon Kaur Ahluwalia, M.D.
Jennifer Rebecca Albon, M.D. 1
Kristin Marie Arcara, M.D.
Melanie Hope Bachmeyer, Ph.D. to 08/31/2011
Stephanie Bader, Ph.D. from 09/01/2011
Harriet Nkhwaniwa Banda, M.D.
Danielle Marie Baran, Ph.D. from 09/01/2011
Breanna Skye Barger-Kamate, M.D. 1
Mihee Jeon Bay, M.D.
Lauren Beard, M.D. 1
Katherine A. Beckwith-Fickas, M.D., M.P.H. 1
Jaime Lynne Benson, Ph.D. from 09/01/2011
Tal Eliram Berkowitz, M.D., M.P.H. 1
Meghan Laura Bernier, M.D. 1
Nrupen Anjan Bhavsar, Ph.D. from 09/01/2011
Melanie Lyn Bierenbaum, M.S., Ph.D. from 09/01/2011
Alexis Marie Fisher Bierman, Ph.D. to 04/30/2012
Ram Niwas Bishnoi, M.B.B.S.
Kari Louise Bjornard, M.D. 1
Hans Tomas Bjornsson, M.D., Ph.D. 1
Ashley Marie Blouin, Ph.D.
Challice Lee Bonfaint, M.D. 1
Emily O. Boudreaux, M.A., Ph.D. to 08/12/2011
Roy Justin Boyd, M.S., Ph.D. from 09/01/2011
Gia Marie Bradley, M.D.
Emily Grace Braun, M.D. 1
Christine Briccetti, M.D.
Christina Breisch Brooks, M.A., Psy.D. to 08/31/2011
Christopher Earl Bullock, M.S., Ph.D.
Jennifer C. Burnsed, M.D.
Vera Joanna Burton, M.D., Ph.D.
Silvia Capellino, Ph.D.
Rebecca Faith Carlin, M.D.
Elaine Carrasco Cornelio, M.D.
Diana Nicole Carvajal, M.D. to 08/21/2011
Sarah Elizabeth Cavanagh, Ph.D. to 08/31/2011
Jason Paul Cervenka, M.D. 1
Christopher Earl Bullock, M.S., Ph.D.
Jennifer C. Burnsed, M.D.
Vera Joanna Burton, M.D., Ph.D.
Silvia Capellino, Ph.D.
Rebecca Faith Carlin, M.D.
Elaine Carrasco Cornelio, M.D.
Diana Nicole Carvajal, M.D. to 08/21/2011
Sarah Elizabeth Cavanagh, Ph.D. to 08/31/2011
Jason Paul Cervenka, M.D. 1
Stephanie Ann Chin-Sang, M.D. 1
Sara Marie Christianson, M.A., Ph.D. to 08/31/2011
Jessica Pease Clarke-Pounder, M.D.
Gordon James Cohen, M.D., M.P.H. 1
Katherine Anne Connor, M.D. to 06/29/2012
Janet L. Crane, M.D.
Sarah Ann Crawley, M.A., Ph.D. from 09/01/2011
Erin Kathleen Dahlinghaus, M.D.
Sumito Dateki, Ph.D.
Susan Davidson, M.D. 1
Stephanie Solter de Wit, M.D.
Lisa Ross DeCamp, M.D.
Marissa Janel DeFreitas, M.D. 1
Neal Arledge deJong, M.D. 1
Timothy Michael Dempsey, Ph.D. from 09/01/2011 to 09/21/2011
Johana Diaz, M.D. from 08/25/2011 to 09/21/2011
Nagina Dhir, M.D. from 08/25/2011 to 09/21/2011
Johana Diaz, M.D. from 10/20/2011 to 11/02/2011
Edith Root McMillan Dietz, M.D. 1
Shamieka Virella Dixon, M.D.
Paul James Doherty, M.D. 1
Abigail A. Donaldson, M.D.
Jeanne Marie Donaldson, Ph.D. from 01/01/2012
Peter Nikolai Doshi, Ph.D. from 09/01/2011
Erin Dowd, D.O. from 01/12/2012 to 02/08/2012
Jessica Bulbin Duis, M.D., M.S.
Cullen Matthew Dutmer, M.D. 1
Anuradha S.K. Dutt, Ph.D. to 07/15/2011
Erica Nicole Elzey, M.D. 1
Andra N. Eng, M.D. 1
Oluwatosin Oyefolake Fatusin, M.D. 1
Beth Anne Newman Feldman, Ph.D. from 09/01/2011
Marie Fiero, M.D. 1
Jill Cherie Fodstad, Ph.D. from 09/01/2011
Anuradha Amar Gajjar, M.D. 1
Paola V. Genovese, M.D. from 01/01/2012 to 02/08/2012
Anna Christine George, M.S., Psy.D. from 09/01/2011
Tanjala Trinette Gibson, M.D. to 03/31/2012
Michael Paul Goldsmith, M.D. 1
Kimberly Louise Goodman, M.S., Ph.D. to 08/31/2011
Swathi M. Gowtham, M.D. from 11/03/2011
Margaret E. Grale, M.D. 1
Deanna Mae Green, M.D. to 07/31/2011
Mary Lee Gregory, M.D., Ph.D.
Catherine Gretchen, M.D. 1
Amy Christine Gross, M.S., Ph.D. to 08/31/2011
Abha Gupta, M.D., M.S. 1
Christa M. Whelan Habel, M.D., Ph.D. 1
Lisa Renee Halbsgut, M.D. 1
Jenna Hammond, D.O. from 11/17/2011 to 12/14/2011
Jessica Belle Handelsman, Ph.D. from 01/02/2012
Jessica Curley Hankinson, M.A., Ph.D. to 08/31/2011
Ran He, Ph.D.
Andrew Robert Heckman, Ph.D.
Jocelyn Rachael Helwig, M.Ed., Ph.D. from 09/01/2011
Bernadette Anise Hillman, M.D. to 08/31/2011
Elizabeth Quaal Hines, M.D. to 09/19/2011 1
Elizabeth Quaal Hines, M.D. from 09/20/2011
Hitwot Huruy, M.D.
Justin Robert Hollon, M.D.
Suchitra K. Hourigan, B.M.-B.Ch. (on leave of absence from 10/17/2011 to 02/29/2012)
Jessica Ann Howlett, M.D.
Elizabeth Routh Jalazo, M.D. 1
Joan Jasiens, M.D.
Julia Johnson, M.D. 1
Kristen Elaine Johnson, M.D. 1
Jennifer K. Jubulis, M.D.
Svetlana Sarah Kachen-Liu, M.D. 1
Arun Kapoor, M.Sc., Ph.D. to 03/27/2012
Joseph Robert Kelly, M.D. 1
Kalpashri Kesavan, M.B.B.S.
Alisa Khan, M.D. 1
Julia Minjung Kim, M.D.
Susan Young Kim, M.D.
Julie Frances King, M.D. 1
Jessica Lea Klein, M.D. 1
Jessica Knight-Perry, M.D. 1
Mark Eric Kohler, M.D. 1
Michael Alexander Koldobskiy, M.S., Ph.D. 1
Jessica Leigh Komlos, M.D. 1
Emily Claire Krennerich, M.D. 1
Thomas Patrick Krupica, Jr., M.D. to 06/15/2012 1
Melissa Kwan, M.D. 1
Eboni Ife Lance, M.D.
Jamie Laubisch, M.D. 1
Joohoe Lee, M.D. from 01/01/2012 to 02/29/2012
Lana Lee, M.D.
Ryan Wai Yan Lee, M.D.
Seakwoo Lee, M.S., Ph.D. from 09/08/2011
Stephanie A. Lee, Psy.D. to 08/31/2011
Matthew William LeGray, M.A., Ph.D. from 09/01/2011
Julie A. Leis, Ph.D. to 03/27/2012
Hanna Beth Lemenman, M.D., M.P.H. 1
Tamorah R. Lewis, M.D.
Yuan Yuan Li, Ph.D.
Yuejin Li, Ph.D. from 09/19/2011
Jean Lindstrom Limpert, M.D. 1
Jenny Hanching Lin, M.D.
Tiffany Wen-Ting Lin, Psy.D. from 09/01/2011
Sarah Renee Lindstrom Johnson, Ph.D. to 08/31/2011
Lauren Ferrari Loeffler, M.D.
Melissa Long, M.D. 1
Santino Vincent LoVullo, M.A., Ph.D. from 09/01/2011
Kim Lu, M.D.
Eric M. Ly, M.D. from 10/20/2011 to 11/16/2011
Erin Elisabeth Mack, M.D. 1
POSTDOCTORAL FELLOWS

Crystal Mercia Malvoisin, M.D. 1
Courtney Wheeler Mangus, M.D. 1
Shivarajan Manickavasagam Amudhavalli, M.B.B.S. 1
Steven Campbell Marek, M.D. 1
Teresa Rose-Marie Mark, M.D. 1
Lauren Kimberly Marocco, M.S., Psy.D. from 09/01/2011
Nicole Briggs Marsh, M.D. 1
Ravi Maruvada, Ph.D.
Amanda King Mason, M.D., Ph.D.
Shunichi Matsumoto, M.D., Ph.D.
Bradley Donald McCammack, M.D. 1
Eric McCollum, M.D. from 01/09/2012
Courtney Stritar McGuire, M.D. 1
Ashley Metcalf, D.O. 1
Anna Minta, M.D., M.P.H. 1
Sumita Mishra, M.S., Ph.D. from 12/05/2011
Kamila Bajwa Mistry, M.P.H., Ph.D. to 06/27/2012
Douglas Mogul, M.D., M.P.H.
Jana Lynn Mohassel, M.D. 1
Prosenjit Mondal, Ph.D. to 04/30/2012
Courtney Stritar McGuire, M.D. 1
Eva Michele Moore, M.D.
Jonathan Mullin, M.D. 1
David Eric Myles, M.D. 1
Osama Naga, M.B.B.Ch. to 08/01/2011
Tina Darya Navidi, M.D. 1
Aikaterini Nella, M.D. from 11/28/2011 to 12/31/2011
Melanie Kandt Nies, M.D.
Eva Olofsson, M.D. from 01/01/2012 to 02/24/2012
Emes O'Donnell, M.Sc., Ph.D.
Alvaro Ordonez, M.D. from 01/17/2012
Valerie Ann Paasch, Ph.D.
Anne Marie Palaia, Ph.D. from 10/01/2011 to 05/27/2012
Jennifer Lynn Perera, M.D.
John Joseph Persampiere, M.A., Ph.D. from 09/01/2011
Andrzej Prus, M.D.
Amy A. Polonsky, M.D., M.P.H.
Cozumel Southern Pruette, M.D., M.S.
Robin Andria Punsalan, M.D., M.H.S. 1
Prabakaran Ravichandran, Ph.D. from 09/26/2011
Arpana S. Rayannavar, M.D. 1
Sarah R. Risen, M.D. to 08/31/2011
Tessa Taylor Rivel, M.A., Ph.D. to 08/28/2011
Karen Anne Robbins, M.D.
Griffin Wesley Rooker, Ph.D. to 01/29/2012
Tamar Beth Rubinstein, M.D. 1
Amanda Kate Rudman Spergel, M.D. from 08/31/2011 to 09/30/2011
Sara Christina Sadreameli, M.D.
Sonal Saha, M.D.
Sara Patricia Salter, Ph.D. to 08/31/2011
Jane Park Sando, M.D. 1
Jonathan Dean Schmidt, Ph.D.
Wesley Jacob Sheelley, Ph.D. from 09/01/2011
Seon Hee Shin, Ph.D. from 12/01/2011 to 03/03/2012
Nakiya Naomi Showell, M.D.
Michelle Rita Sicard, M.D.
Laura Joan Sigman, Ph.D. to 08/22/2011 1
Ciaran Martin Skerry, Ph.D. to 03/31/2012
Sara Ruth Slovin, M.D.
Tyler Kimberly Smith, M.D. to 07/22/2011
Katherine Simpson Spencer, M.A., Psy.D. to 08/31/2011
Siddharth Srivastava, M.D. 1
Bridget Danielle Stuart, M.D.
Paul Kyungwon Sue, M.D.C.M.
Agnes Swetlina Hepsibah Sundaresan, M.B.B.S. from 11/07/2011 to 11/18/2011
Pranita D. Tamma, M.D. to 12/31/2011
Emily Young Thomas, M.D. 1
Eric Tibesar, M.D.
Veronica Grace Tilden, M.S., Psy.D.
Erika Torjusen, M.D.
Alison Christine Tribble, M.D. to 06/15/2012 1
Megan Marie Tschudy, M.D.
Elizabeth Winans Tucker, M.D. 1
Erlanger A. Turner, Ph.D. to 08/31/2011
Christina Garcia Ulen, M.D. 1
Burcin Uygungil, M.D., M.P.H.
Cixin Wang, Ph.D. from 09/01/2011
Caleb Edwin Ward, M.B.B.Ch. 1
Darcy Kate Weidemann, M.D. 1
Ingrid Maria Wentzensen, M.D. 1
Hao Yu, Ph.D.
Karen Leigha Zimowski, M.D. 1
Alison Rebecca Zisser, Ph.D.

PHARMACOLOGY AND MOLECULAR SCIENCES
Young-Hoon Ahn, Ph.D.
Loraine Campanati Araujo Andrade, Ph.D. from 10/01/2011 to 02/29/2012
Adriana Bora, Ph.D.
Manisha Das, Ph.D.
Peter Dedecker, Ph.D. to 10/14/2011
Zufeng Guo, Ph.D.
Qing Li He, Ph.D.
Shao Hui Hu, Ph.D.
Jun Seop Jeong, Ph.D. from 12/01/2011
Yan Jia, Ph.D. to 10/10/2011
MD. Rezaul Karim, Ph.D. from 01/03/2012
Suel-Kee Kim, Ph.D. from 10/01/2011
We Lin, Ph.D.
So Hum Mehta, Ph.D.
Shonoi Andrea Ming, Ph.D.
Chia Hao Mo, Ph.D.
Chandrani Mukherjee, Ph.D. to 01/31/2012
Robert Howard Newman, Ph.D.
Veronica Tiffany Pinnick, Ph.D. to 10/02/2011
Hew Sool Rho, Ph.D.
Meng Meng Rowland, Ph.D. from 09/08/2011
Wei Shi, Ph.D.
Joong Sup Shim, M.S., Ph.D. to 08/20/2011
Qifeng Song, Ph.D. from 12/20/2011
Mary Katherine Tarrant, Ph.D. from 10/01/2011
Stefani Nicole Thomas, Ph.D. from 01/03/2012
Jennifer Anne Tullman, Ph.D. from 12/20/2011
Di Wang, Ph.D. from 09/12/2011
Jing Xin Wang, Ph.D. from 08/30/2011
Yun Wang, Ph.D. (on leave of absence from 08/17/2011 to 09/29/2011)
Zhi Hong Wang, Ph.D. to 03/10/2012
Yadong Wei, Ph.D. from 10/26/2011
Amit Singh Yadav, M.Sc., Ph.D.
Yu Ye, Ph.D.
Seung-Wan Yoo, Ph.D.
Hui Feng Yu, Ph.D. from 11/01/2011
Xin Zhou, Ph.D.

PHYSICAL MEDICINE AND REHABILITATION
Anna V. Agranovich, M.A., Ph.D. to 08/31/2011
Mark Bilezikjian, M.D. 1
Philippines Garcia Cabahug, M.D. 1
Regina Campbell-Malone, Ph.D.
Bryt Alan Christensen, M.D. 1

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Asare B. Christian, M.D. 1
Michelle Cintron, D.O. to 07/15/2011 1
Ethan Dailey, M.D. 1
Kelly Loraine Dauer, M.D. 1
Kenneth William DeFontes, III, M.D. from 01/09/2012 to 02/05/2012
Peng Ding, M.D., Ph.D.
Tambrea Toylett Ellison, M.D. 1
Andrew Harris Gordon, M.D., M.S., Ph.D. 1
Andrew Hall, M.D. 1
Mamia Maira Hameed, M.B.B.S. 1
Takashi Hiraoka, M.D., Ph.D. to 03/31/2012
Arif Hussain, D.O. 1
Haruhi Inokuchi, M.D.
Phong Nguyen Kieu, M.D. 1
Nathan Jon Neufeld, D.O. 1
Jess Nordin, D.O. 1
Michelle Poliak, M.D. 1
John Edward Schlerf, Ph.D.
Vishal Thakral, D.O. 1
Jing Wang, M.D. 1
Jessica H. Wolfman, M.S., Ph.D. to 08/31/2011
Mitsumasa Yoda, M.D., Ph.D.
Morvarid Yousefi, M.D. to 10/31/2011 1
Pediatric Rehabilitation Medicine
Marykatharine Nutini, D.O. to 07/31/2011
Tobias Jung Ming Tsai, M.D.
Rehabilitation Psychology and Neuropsychology
Jacob Alan Bentley, M.A., Ph.D. from 09/01/2011
Lindsey Elizabeth Kirsch Darrow, M.S., Ph.D.
Michelle Karen Kramer, Psy.D.
Connie E. Myerson, M.S., Ph.D. from 09/01/2011
Spinal Cord Injury Medicine Program
Marissa A. Olegario-Nebel, M.D.
PHYSIOLOGY
Amanda Nell Barry, M.S., Ph.D. to 09/28/2011
Ashima Bhattacharjee, Ph.D.
Mardi Susanna Byerly, Ph.D.
Jinming Cui, Ph.D. from 09/16/2011
Arnab Gupta, Ph.D.
Yuta Hatori, Ph.D.
Samuel Jayakanthan, M.Sc., Ph.D. from 10/21/2011
Chandra Mohan Khantwal, Ph.D. to 06/28/2012
Kalyan Chakravarthy Kondapalli, M.S., Ph.D.
Paramjeet Kumar, Ph.D. from 11/16/2011
Xia Lei, Ph.D. from 08/01/2011
Huqing Li, Ph.D.
Ghenadie Nicolae Mardari, Ph.D.
Jonathan Michael Peterson, M.S., Ph.D. to 01/03/2012
Blythe Shepard, Ph.D. from 08/01/2011
Zhikui Wei, Ph.D. from 12/01/2011
Owen Maxwell Woodward, Ph.D. to 04/02/2012
Meifang Xiao, Ph.D.
Annan Yang, Ph.D. to 12/31/2011
Nan Yang, Ph.D. from 11/09/2011
Yongqiang Zhang, Ph.D. to 04/20/2012
PLASTIC AND RECONSTRUCTIVE SURGERY
Demetrio Juan Aguila, III, M.D. 1
Malachy Eneye Asuku, M.B.B.S.
Emile N. Brown, M.D. 1
Justin Michael Broyles, M.D. 1
Rebecca M. Dodson, M.D. from 12/19/2011 to 01/15/2012
Jeffrey Michael Feiner, M.D. 1
Keith E. Follmar, M.D. 1
Jonathan Allen Gant, M.D. from 08/01/2011
Dominic Frank Heffel, M.D.
Lori Kathryn Howell, M.D. 1
Helen Gloria Hui-Chou, M.D. 1
Zuhaib Ibrahim, M.B.B.S.
Anuradha Reema Kar, M.D.
Joseph Alexander Kelamis, M.D. 1
Justin Klaft, M.D.
Steven Jordan Kleinman, D.O. from 08/01/2011 to 08/31/2011
Qi Mao, M.D.
Raja Mohan, M.D. 1
Gerhard Salomo Mundinger, M.D. 1
Arthur Jung Nam, M.D., Sc.M. 1
Devin O'Brien, M.D. 1
Rika Okhuma, M.D.
Erik Mariel Rada, M.D. 1
Tiffani Ream, D.O. from 09/01/2011 to 09/30/2011
Sashank Reddy, M.D., Ph.D. 1
Minerva Angelica Romero Arenas, M.D., M.P.H. from 01/16/2012 to 02/12/2012
Sachin M. Shridharani, M.D. 1
Matthew Gokey Stanwix, M.D. 1
Catherine N. Tchanque-Fossou, M.D.
Peter Ronald Thomas, M.D., M.S. from 08/01/2011
Sami Tuffaha, M.D. 1
Andrew Robert Tyser, M.D. from 08/01/2011
Yuan-Sheng Tzeng, M.D.
Eric Geoffrey Wimmers, M.D. 1
Lehao Wu, M.D.
Michiyoshi Yamazaki, M.H.S., Ph.D. from 09/01/2011 to 11/18/2011
Jonathan A. Zelken, M.D. 1
Craniofacial Surgery
Daniel Evan Borsuk, M.D.
PSYCHIATRY AND BEHAVIORAL SCIENCES
Bogat Abazyan, M.D.
Sofya Abazyan, Pharm.D. to 03/31/2012
Shauna Prendergast Acquavita, Ph.D. to 08/31/2011
Sergey Sergeyeyevich Akimov, Ph.D.
Joseph Thomas Andrews, M.D.
Yasue Araki Horiuchi, Ph.D.
Nicolas Arbez, Ph.D.
Charles Ralph Arthur, III, M.D. 1
Yuval Asner, M.D. 1
Claire Barbier De La Serre, Ph.D.
Helen M. Bellete, M.D. 1
Rebecca Birnbaum, M.D. 1
Gretha Johanna Boersma, Ph.D.
Natalie Rose Bruner, Ph.D. to 03/31/2012
Shin-Bey Chang, M.D. 1
Virginia Tai Coryell, Ph.D. from 08/29/2011
Caitlin Rose Costello, M.D.
Jennifer Marie Coughlin, M.D.
John Michael de Vera Cruz, M.D. 1
Megan Jeanne Dailey, Ph.D.
Catherine Marie Davis, Ph.D.
Kelly Elaine Dunn, Ph.D. to 05/15/2012
Laura Lynn Ebner, M.D. 1
Daniel Patrick Evatt, Ph.D.
Teresa Mary Foley, M.D. 1
Leslie Giesselc Frank, Ph.D.
Jinrong Fu, Ph.D. to 12/31/2011
Meghan Elizabeth Gaare, M.D. 1
Patricia Gasso-Astorga, Ph.D. to 08/24/2011
Gwendolyn Justis Gerber, Psy.D.
Laura J. Goldstein, Ph.D. 1
Ryan Michael Greytak, M.D. 1
Zhihong Guo, M.D.
Sean Philip Heffernan, M.D. 1
Gwendolyn Justis Gerner, Psy.D.
Laura J. Goldstein, Psy.D.
Ryan Michael Greytak, M.D. 1
Zhihong Guo, M.D.
Sean Philip Heffernan, M.D. 1
Meghann Maureen Hennelly, M.D. 1
Porche Kirkland Henry, Ph.D.
Jamie Alyson Hom, M.D. 1
Yong Huang, Ph.D. to 09/30/2011
Rachna Hundal, M.D.
Christopher Steven Immel, M.S., Ph.D. from
09/01/2011
Mali Jiang, M.D., Ph.D.
Jing Jin, Ph.D.
Diana Jochai, Ph.D. to 09/30/2011
Mihai Koffarnus, Ph.D. to 08/15/2011
Minori Koga, Ph.D.
Mari Kondo, Ph.D.
Melissa Anne Landek-Salgado, Ph.D. from
08/15/2011
Nu-Chu Liang, M.S., Ph.D.
Katherine Anne MacLean, Ph.D.
Mohammad Umar Malik, M.B.B.S. from
10/01/2011
Geneva Marie Masiello, M.D. 1
Erin Ann McClure, Ph.D. to 06/15/2012
Jessica Veronica Merko-Keller, M.D. 1
Rachel Rose Morano, M.D. 1
Harvey Melton Morris, Ph.D. to 10/31/2011
Paul Sasha Nestadt, M.D. 1
Minae Niwa, Ph.D.
Jun Nomura, Ph.D. to 09/30/2011
Milap Anil Nowrang, M.D., M.S. to 01/11/2012
Renata M. Okonkwo, M.A., Ph.D. to 09/02/2011
Mohammad Omair Malik, M.B.B.S. from
09/01/2011
Chinedu Ireyinwa Onyedike, M.D., M.P.H. 1
Yoshikazu Otani, Ph.D.
Christopher Justin Pagnani, M.D. 1
Minkyung Park, M.A., M.D. 1
Smitha Vinubhai Patel, M.D., M.P.H. 1
Joanna Kristine Pearson, M.A., M.D., M.F.A. 1
Matthew Eugene Peters, M.D.
Sotiris Posporelis, M.D. from 02/13/2012
Savitha Puttaiah, M.B.B.S. 1
Olga Alexandrovna Rafaelian, M.D. 1
Kristen Ann Rahn, Ph.D.
Sarah Roxana Ramsay, M.D.
Jennifer Barsky Reese, M.S., Ph.D.
Erica Martin Richards, M.D., Ph.D. 1
Rebecca Rios, M.A., Ph.D. to 09/23/2011
Elaine Ann Roby, D.N.Sc.
Anne Elizabeth Ruble, M.D., M.P.H.
Daniel Francis Rutheven, M.D. 1
atsushi Saito, Ph.D. to 08/01/2011
Saurav Rao Seshadri, Ph.D. from 10/24/2011
Xi Sheng, M.Phil., Ph.D.
Kelly Anne Shepard Riolio, Ph.D. from 09/01/2011
Michael Baran Silverberg, M.D. 1
Alma M. Spaniardi, M.D. 1
Traci Jeneille Speed, M.D., Ph.D.
Lee Samuel Spencer, M.D.
Ryan Edward Stagg, M.D. 1
Xin Sun, Ph.D. from 07/25/2011
Grace Thammasuvimol, M.D. 1
Sarah Kathryn Tighe, M.D.
Yada Treesukosol, Ph.D.
Paul Gerson Unschuld, M.D. to 02/29/2012
Lan Xiao, Ph.D. from 09/16/2011
Yuma Yoshikazu, M.D.
Cassie Kwi Yun Yu, M.D. 1
Wang Zheng, Ph.D. from 03/20/2012
Shanshan Zhu, Ph.D.

Behavioral Biology
Rebecca Lynn Schacht, Ph.D. from 08/15/2011
Fenping Zheng, Ph.D.

Child Psychiatry
Allan Michael Andersen, M.D. 1
Matthew David Burkey, M.D., M.P.H. 1
Steven Kai Chao, M.D., Ph.D. 1
Mary L. Cutler, M.D. 1
Renee Lynn DeBoard-Lucas, Ph.D. from
09/01/2011
Arline T. Gordon-Hollingsworth, Ph.D. from
08/15/2011
Hon Lung Ho, M.D., M.P.H. 1
Ronald H. Lee, M.D. 1
Prem N. Pathak, M.B.B.S. 1
Sean David Pustilnik, M.D. 1
Elizabeth Reynolds, Ph.D. from 07/18/2011
Susan Solimine, M.D. 1
Justin Kuhns Spooner, M.D. to 07/15/2011 1
Shiva Prakash Srinivasan, M.B.B.S. 1
S. Ksavere Simone Yzer, M.D. 1

Geriatric Psychiatry
Thomas Philip Jacob, M.B.B.S. from 09/01/2011

Kennedy Krieger Institute
Cynthia Anne Austin, Ph.D. from 09/01/2011
Lori Ann Day, Ph.D.
Shannon Erklin, Ph.D. from 09/01/2011
Anne Pradella Inge, Ph.D. to 09/07/2011
Megan Elizabeth Kramer, Ph.D. to 08/31/2011
Klaus Libertus, Ph.D.
Aimilia Papazoglou, Ph.D.
Darcy Raches, Ph.D. to 08/31/2011
Jennifer Lynn Rosenberg, Ph.D. from 09/01/2011
Saima Tek, Ph.D.
Jennifer A. Ulbricht, M.Phil., Ph.D. to 08/31/2011
Tiffany Kia Washington, Ph.D.

Medical Psychology
Gila Reckess, M.Sc., Ph.D. from 09/12/2011
Anna Campbell Sullivan, Psy.D. from 09/01/2011
J. Jason van Steenburgh, Ph.D. from 09/12/2011

RADIATION ONCOLOGY AND MOLECULAR RADIATION SCIENCES
Todd C. Adams, M.D. 1
Harold C. Agbahwe, M.D. 1
Sara Rachel Alcorn, M.D., M.P.H. 1
Baoyan Bai, Ph.D.
Jon Hua Chung, M.Sc., Ph.D.
Laureen Castillo Colis, Ph.D.
Lana Maria de Souza, M.D. 1
Dennis Raymond Harris, Jr., Ph.D. to 01/20/2012

468 POSTDOCTORAL FELLOWS
Kendra Marie Harris, M.D., M.Sc. ¹
Timothy James Harris, M.D., Ph.D. ¹
Mohammad Ali Hedayatii, Ph.D.
Rachit Kumar, M.D. ¹
Charles Harrison Matthews, M.D. to 12/31/2011 ¹
Raju Rasik Raval, D.Phil., M.D., Ph.D. ¹
Teboh Forbang Roland, Ph.D. to 09/06/2011
Ivana Rybanska, M.Sc., Ph.D. to 05/31/2012
Andrew Sharabi, M.D., Ph.D. ¹
Min Hwa Shin, Ph.D.
Sivarajan Thiruganasambandam, Ph.D. from 11/01/2011
Owen Clayton Thomas, M.D. ¹
Amanda June Walker, M.D. ¹
Zhiming Yang, Ph.D.
Ming Yuan, Ph.D.
Jing Zeng, M.D. ¹

Medical Physics
Qing He, Ph.D. from 07/18/2011 to 02/03/2012
Anna Monika Micherdzinska, Ph.D. (on leave of absence from 12/05/2011)
Joseph A. Moore, Ph.D. from 11/21/2011
Yidong Yang, M.S., Ph.D.

Molecular Radiation Science
Susannah Gabrielle Batko-Yovino, M.D.
Xinzhi Chen, Ph.D. from 01/19/2012
Rajendra Prasad Gajula, M.D. ¹

RADIOLOGY AND RADIOLOGICAL SCIENCE
Raag Dar Airan, M.D., Ph.D. ¹
Bharath Ambale Venkatesh, Ph.D. to 01/12/2012
Alkesh Ashwinkumar Amin, M.D. ¹
Ezana Muluneh Azene, M.D., M.S., Ph.D. ¹
Lukasz S. Babiarz, M.B.A., M.D. ¹
Paul David Bailey, M.D. ¹
David Aaron Behrmann, M.D. ¹
Linda Chi-Hang Chu, M.D. ¹
Christina McGraw Cinelli, M.D. ¹
Filippo Paolo Del Grande, M.D.
Swati Devendra Deshmukh, M.D. ¹
Anthony Frank Fotenos, M.D. ¹
Jan Fritz, M.D. ¹
Kenneth Leslie Gage, M.D., Ph.D. ¹
Luke James Higgins, M.D., Ph.D. ¹
Jun Hua, Ph.D. to 09/10/2011
Oluwatoyin Rosemary Idowu, M.D. ¹
Mehrbood Javadi, M.D. ¹
Vivek Kalia, M.D., M.P.H., M.S. from 12/06/2011 to 01/02/2012
Paras Khandheria, M.D. ¹
Daniel Philip Seeburg, M.D., Ph.D. ¹
Ney Yoichi Tatizawa Shiga, M.D. to 08/31/2011
Rashmi Savyasachi Thakkar, M.B.B.S.
Gaurav Kumar Thawait, M.B.B.S.
Collin Michael Torok, M.D. ¹
Stacey Ann Trotter, M.D. ¹
Joseph William Villard, M.D. ¹
Ayaj Dilip Wadgaonkar, M.D. ¹
Ryan William Woods, M.D. ¹
Carlos Armando Zamora, M.D. ¹

Body MRI
David Bonekamp, M.D., Ph.D.

Cardiovascular and Interventional Radiology
Sumera Ali, M.B.B.S. from 07/08/2011 to 05/24/2012
Jorge Blasco, M.D. to 12/31/2011
Manon Buijs, M.D.
Richard Lynn Coursey, Jr., M.D.
Paul Allen DiCamillo, M.D., Ph.D.
Joshua Aaron Kallen, M.D.
Rani Kunjithapatham, Ph.D.
Chadd James McMahon, M.D.
Sahar Mirpour, M.D. to 05/31/2012
James Ku Park, M.D., Ph.D.
Olivier Pellerin, M.D.
Pranod Prabhakar Rao, M.B.B.S. to 07/30/2011
Todd Ryan Schlachter, M.D.
Wenbo Shao, M.D. to 12/31/2011
Jason Wayne Sharp, M.D.
Ahsheek Srinivas, M.D.

Diagnostic Radiology
Christopher Matthew Long, M.D., Ph.D. from 11/18/2011 to 12/15/2011
Yubo Lu, M.D.
Abdelkader Mahammedi, M.D.
Charles Murimi Mugera, M.B.B.S. from 01/17/2012

Endovascular Surgical Neuroradiology
Zinovy Michael Katz, M.D.

Magnetic Resonance Research
Alirea Akhbardeh, Ph.D. to 12/31/2011
Amnon Bar-Shir, Ph.D.
Wai Yan Chan, Ph.D.
Zhihang Chen, M.S., Ph.D.
Celia Pamela Corona-Villalobos, M.D.
Seyed Saaid Dianat, M.D. from 02/01/2012
Riham El Khouli, M.B.B.Ch. to 08/31/2011
Yingli Fu, M.S., Ph.D.

Refaat Elsayed Gabr, Ph.D.
Vivek Gowdra Halappa, M.B.B.S.
Ksenija Grgac, Ph.D.
Abhishek Srinivas, M.D.

Nikita Oskolkov, Ph.D. from 11/15/2011
Hsin-You Ou, M.D. to 03/31/2012
Min Jae Park, Ph.D.

Neda Rastegar, M.D. from 01/09/2012
Shashank Sathyanarayana, Ph.D. from 01/09/2012

Kanako Sato, M.D. to 03/14/2012
Krishnamoorthy Sivakumar, Ph.D. to 03/31/2012
Xiaolei Song, Ph.D.
Evrin Bengi Turkbey, M.D.
Silun Wang, Ph.D.
Jannie Petra Wijnen, Ph.D.
Min Xie, Ph.D. from 09/14/2011
Nirbhay Narayan Yadav, Ph.D.
Kun Yan, Ph.D. to 08/31/2011

Medical Imaging Physics
Si Chen, Ph.D. from 09/14/2011 to 10/31/2011
Someesh Srivastava, Ph.D.
Quinlin Tang, M.S., Ph.D.

Neuroradiology
Fatma Mansour Alluwaimi, M.B.B.S. from 09/06/2011
Zeeshan Anwar, M.B.B.S. from 01/05/2011
Babak Behnam Azad, Ph.D. from 02/15/2011
Hyo-eun C. Bhang, Ph.D. to 04/06/2011
Steven Anthony Messina, M.D.

Pediatric Imaging
Johana Diaz, M.D. from 11/03/2011 to 11/16/2011
Mark Douglas Ebert, M.D.
Asim Esenkaya, M.D. to 12/31/2011
Ozlem T. Kalayci, M.D. from 11/15/2011 to 02/15/2012
Evelyn Andrea May, M.D.
Avner Meoded, M.D. from 09/01/2011 to 02/28/2012
Andrea Poretti, M.D.

PET Clinical Fellowship (Nuclear Medicine)
Alin Florin Chirindel, M.D. from 07/13/2011

SURGERY
Fawaz Abdul Raheem, M.B.B.Ch. 1
Adesola Akinkuoto, M.D.
Jeremiah Geoffrey Allen, M.D. 1
George John Arnaoutakis, M.D. 1
K. Dean John Arnaoutakis, M.D. 1
Mathew M. Augustine, M.D. 1

Nuclear Medicine
Jose Alberto Barriocanal, M.D. 1
Wichana Chamroonrat, M.D. to 09/12/2011
Boris A. Frolov, M.D. from 09/15/2011
Noble George, M.B.B.S. from 12/01/2011
Ali Gershon Oppenheimier, M.D.
Arzu Ozturk, M.D.
Neil Vasishta Patel, M.D.
Hassan Mohamed Shalalil, Ph.D. from 08/15/2011
Michael Walden, D.O.
Xin Wang, Ph.D.
Carrington Rice Wendell, Ph.D. from 08/01/2011
Domenico Zaca, Ph.D.

PET Clinical Fellowship (Nuclear Medicine)
Alin Florin Chirindel, M.D. from 07/13/2011
Postdoctoral Fellows

Cardiac Surgery
Keki R. Balsara, M.D. 1  
Besem Beteck, M.D. from 02/01/2012 to 02/29/2012  
Stephen James Huddleston, M.D. 1  
Masahiro Ono, M.D.  
Gregory Duncan Rushing, M.D. 1  
Christopher Michael Scieri, M.D., M.S., Ph.D. 1  
Patricia Lynn Seneo, M.D. from 01/01/2012 to 01/31/2012  
Cheri Tran, M.D. 1

Endocrine Surgery
Konstantinos I. Makris, M.D.

General Thoracic Surgery
Zhenzong Du, M.D.

Halsted/Trauma/Critical Care
Sira Duson, M.D. from 09/19/2011 to 10/16/2011  
Sara Elizabeth Hargreaves, M.D. from 07/25/2011 to 08/21/2011

International Fellowship in Pediatric Surgery
Chiara Croce, M.D. from 01/09/2012

Pediatric Surgery
Mariano Arosemena, M.D. from 01/01/2012 to 01/31/2012  
Shani Belgrave, M.D. from 12/01/2011 to 12/31/2011  
Maria C. Escano, M.D. to 08/31/2011  
Matthew Foltstein, M.D. from 10/01/2011 to 10/31/2011  
Deidra Garrett, M.D., Ph.D. 1  
Adriana Lasser, M.D. from 11/01/2011 to 11/30/2011  
Kimberly Marie Lumpkins, M.D. 1  
Dominic Joseph Papandria, M.D.  
Maria Grazia Sacco Casamassima, M.D. from 09/01/2011 to 09/30/2011  
Joseph R. Scalea, M.D. from 02/01/2012 to 02/29/2012  
Hamid Zahiri, D.O. from 09/01/2011 to 09/30/2011

Pediatric Trauma Surgery
Jamir Arlikar, M.B.B.S. from 10/17/2011

Surgical Critical Care
Luis J. Garcia, M.D. from 07/11/2011  
Emily A. Rogers, M.D. from 07/11/2011 to 07/11/2011  
Jay G. Shake, M.D., M.S. to 07/11/2011  
Jon D. Simmons, M.D. to 07/11/2011

Surgical Oncology and Endocrinology
Janivette Alsina, M.D., Ph.D.

Transplant Surgery
Rebecca M. Dodson, M.D. from 02/13/2012 to 03/11/2012  
Sira Duson, M.D. from 12/12/2011 to 01/08/2012  
Yingxin Fu, M.D. to 05/31/2012  
Erie Carlyle Hall, M.D.  
Sara Elizabeth Hargreaves, M.D. from 11/14/2011 to 12/11/2011  
Qing Lin, M.D. from 11/14/2011 to 12/11/2011  
Hiroishii Maeda, M.D.  
Abimereki Dhatemwa Muzaale, M.B.B.Ch., M.P.H.  
Yoshihiro Ota, M.D.

Vascular Surgery
Brandon William Propper, M.D.

Urology
Ifianyichukwu Ifeyinwa Anusionwu, M.D. 1  
Mark Wayne Ball, M.D. 1  
Marcelo Rodriguez Cabrini, M.D. from 08/01/2011 to 08/01/2011  
Shuangling Chen, M.D. from 09/01/2011 to 09/01/2011  
Christiunnea Soundararajan Christudass, M.Sc., Ph.D.

Jennifer Renee Cohen, Ph.D. to 03/29/2012  
John Bernard Eifler, Jr., M.D. 1  
Weijun Fu, Ph.D. from 01/12/2012 to 01/12/2012  
Dong Gao, Ph.D. from 08/01/2011 to 08/01/2011  
Angela Devi Gupta, M.D. 1  
Johanna Lucy Hannan, Ph.D.  
Zhenhua Huang, Ph.D.  
Deborah Kaye, M.D. 1  
Adam Jacob Mathias Kern, M.D. 1  
Binod Kumar, Ph.D. to 05/31/2012  
Omer Kutlu, M.D. to 08/08/2011
Zhi Liu, Ph.D.
Changxue Lu, Ph.D. to 01/31/2012
Rong Ma, M.D.
Steven Michael Mooney, Ph.D. to 01/31/2012
Amar Nath Mukherjee, Ph.D.
Jeffrey Kyle Mullins, M.D.¹
Xiaohua Ni, Ph.D.
Phillip Martin Pierorazio, M.D.¹
Janae Prece, M.D.
Fatema Hoge Rafiqi, Ph.D.
Nathanial Thomas Readal, M.D.¹
Ashley Evan Ross, M.D., Ph.D.¹
Anthony John Schaeffer, M.D. to 12/31/2011¹
Robert Lawrence Segal, M.D.C.M.
Pengfei Shao, M.D. to 01/31/2012
Tao-ping Shi, M.D., Ph.D. from 09/29/2011
Takumi Shiraishi, M.D., Ph.D.

Ninghong Song, M.B.B.S. to 10/10/2011
Debasish Sundi, M.D.¹
Sayuri Takahashi, M.D., Ph.D. from 09/01/2011
Naoki Terada, M.D. to 03/31/2012
Jun Qiang Tian, Ph.D. from 08/08/2011
Kenneth Sheinje Tseng, M.D., M.P.H.¹
Ping Wu, Dr.Med.Sc., M.D.

Pediatric Urology
Nima Baradaran, M.D. (on leave of absence to 07/31/2011)
Eric Zoltan Massanyi, M.D.
Kathleen Ashford Sterling, M.D. from 01/01/2012
Kristina Dawn Suson, M.D.

¹ House Staff, Johns Hopkins Hospital
### Students 2011-2012

**CANDIDATES FOR THE DEGREE OF DOCTOR OF MEDICINE**

**FOURTH YEAR**

<table>
<thead>
<tr>
<th>Name</th>
<th>City</th>
<th>State</th>
<th>University/College</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sameer Ahmed</td>
<td>Edison</td>
<td>NJ</td>
<td>B.S., Cornell University</td>
<td>2007</td>
</tr>
<tr>
<td>Hamid R. Alai</td>
<td>Tampa</td>
<td>FL</td>
<td>B.A., University of South Florida</td>
<td>2008</td>
</tr>
<tr>
<td>Fethina Sultana Ali</td>
<td>Staten Island</td>
<td>NY</td>
<td>B.S., University of Rochester</td>
<td>2007</td>
</tr>
<tr>
<td>M.P.H., Johns Hopkins Bloomberg School of Public Health</td>
<td>2011</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Martha Obeng Amoako</td>
<td>Triangle</td>
<td>VA</td>
<td>B.S., Brown University</td>
<td>2007</td>
</tr>
<tr>
<td>Ashley Kandanatt Antony</td>
<td>Roanoke Rapids</td>
<td>NC</td>
<td>B.S., Harvard University</td>
<td>2006</td>
</tr>
<tr>
<td>Kanna Singh Balhara</td>
<td>Sugar Land</td>
<td>TX</td>
<td>B.A., Rice University</td>
<td>2007</td>
</tr>
<tr>
<td>Jathin Bandari</td>
<td>Westborough</td>
<td>MA</td>
<td>B.S., University of Rochester</td>
<td>2008</td>
</tr>
<tr>
<td>Bradley Powers Barnett</td>
<td>Clifton</td>
<td>VA</td>
<td>B.A., University of Virginia</td>
<td>2001</td>
</tr>
<tr>
<td>Ph.D., Johns Hopkins University School of Medicine</td>
<td>2010</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noy Bassik</td>
<td>Fair Lawn</td>
<td>NJ</td>
<td>B.S., Rutgers University</td>
<td>2003</td>
</tr>
<tr>
<td>John Patrick Begly</td>
<td>Geneva</td>
<td>NY</td>
<td>B.S., McGill University</td>
<td>2008</td>
</tr>
<tr>
<td>Matthew Travis Bender</td>
<td>Chicago</td>
<td>IL</td>
<td>B.A., Yale University</td>
<td>2006</td>
</tr>
<tr>
<td>Catherine Stebbins Bennet</td>
<td>Chester</td>
<td>CT</td>
<td>B.S., Georgetown University</td>
<td>2006</td>
</tr>
<tr>
<td>Leah Blank</td>
<td>Westmount</td>
<td>Quebec, Canada</td>
<td>D.E.C., Marianopolis College</td>
<td>2003</td>
</tr>
<tr>
<td>B.A., Harvard University</td>
<td>2007</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.P.H., Johns Hopkins Bloomberg School of Public Health</td>
<td>2011</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eike Blohm</td>
<td>Missoula</td>
<td>MT</td>
<td>B.A., University of Montana (Missoula)</td>
<td>2007</td>
</tr>
<tr>
<td>Morgan Michelle Bonds</td>
<td>Hutchinson</td>
<td>KS</td>
<td>B.S., Kansas State University</td>
<td>2008</td>
</tr>
<tr>
<td>Curtis William Bone</td>
<td>Baltimore</td>
<td>MD</td>
<td>B.S., Louisiana State University (Baton Rouge)</td>
<td>2004</td>
</tr>
<tr>
<td>Agodi Nicholson Boto</td>
<td>Baltimore</td>
<td>MD</td>
<td>B.S., California Institute of Technology</td>
<td>2002</td>
</tr>
<tr>
<td>Kevin Broderick</td>
<td>Columbia</td>
<td>MD</td>
<td>B.S., United States Military Academy</td>
<td>2008</td>
</tr>
<tr>
<td>Alejandro Jose Candelario</td>
<td>Plano</td>
<td>TX</td>
<td>B.A., Yale University</td>
<td>2003</td>
</tr>
<tr>
<td>Kevin Zou Chang</td>
<td>Arcadia</td>
<td>CA</td>
<td>B.A., Johns Hopkins University</td>
<td>2008</td>
</tr>
<tr>
<td>James Xiao Chen</td>
<td>Boyds</td>
<td>MD</td>
<td>B.S., University of Connecticut</td>
<td>2007</td>
</tr>
<tr>
<td>Lisa Yinhua Chen</td>
<td>Edina</td>
<td>MN</td>
<td>B.S., Duke University</td>
<td>2007</td>
</tr>
</tbody>
</table>

Nancy Cheng, Wichita, KS
B.A., Harvard University, 2007
Christine Cary Cheston, Baltimore, MD
B.A., University of Virginia, 2008
Alyssa Yoony Choi, Issaquah, WA
B.A., Johns Hopkins University, 2008
Sabrinah Ariane-Alberta Christie, Evergreen, CO
B.A., Hendrix College, 2007
Julia Dawn Colchamiro-Smart, Annapolis, MD
B.A., New York University, 2006
Kate Hannah Cole, Owings Mills, MD
B.A., Dartmouth College, 2002
Joshua Adam Denney, Birmingham, AL
B.S., University of Georgia, 2007
Robert Jamal Drummond, Jacksonville, FL
B.S., Morehouse College, 2002
Jeffrey Tevebaugh Ehmsen, Goleta, CA
B.S., University of California (Irvine), 2001
M.S., University of Oxford, 2003
Mahmood El-Gasim, Phoenix, AZ
B.S., Duke University, 2008
Katherine Anne Fallano, Parkton, MD
B.A., Johns Hopkins University, 2007
Tom Shi Feng, Madison, MS
B.A., Princeton University, 2008
Timothy Theodore Flerlage, Reisterstown, MD
B.S., Vanderbilt University, 2007
Edmond Nketti Fonunung, Athens, GA
B.S., University of Georgia, 2008
Sarah J. Hahn, Lutherville, MD
B.A., Johns Hopkins University, 2008
Catherine Elizabeth Handy, Westbury, NY
B.A., Harvard University, 2006
M.P.H., Johns Hopkins Bloomberg School of Public Health, 2011
Aisha Harun, Madison, WI
B.S., University of Wisconsin (Madison), 2007
Nigel Naichieh Hsu, Edison, NJ
A.B., Dartmouth College, 2008
Omar Farooq Ishaq, Panama City, FL
B.S., University of Florida, 2007
Amit Jain, Portland, OR
B.S., University of California (Berkeley), 2008
Sarah Elizabeth Johnstone, Cambridge, MA
B.A., University of Chicago, 2001
Ph.D., Massachusetts Institute of Technology, 2008
Arun Jose, Commack, NY
B.S., Johns Hopkins University, 2007
Allison June Kaeding, Fargo, ND
B.S., University of Michigan (Ann Arbor), 2007
Elizabeth Ann Ketner, Columbia, MD
B.A., University of Colorado (Boulder), 2004
M.H.S., Johns Hopkins Bloomberg School of Public Health, 2007
Grace Yoonhee Kim, Arlington, TX
B.A., Johns Hopkins University, 2007
STUDENTS

Helen Irene Kinsman, Baltimore, MD
B.S., Haverford College, 2007
M.P.H., Johns Hopkins Bloomberg School of Public Health, 2011

Amanda Kumar, Beaver Creek, OH
B.A., Case Western Reserve University, 2008
B.S., Case Western Reserve University, 2008

Karan Kumar, Mississauga, Canada
B.S., Cornell University, 2007

Marian Grace Lacy, Flagstaff, AZ
B.S., University of Arizona, 2007

Spencer Truman Lake, Saint James, MD
B.S., Stanford University, 2003

Thomas Adam Lardaro, Wakefield, RI
B.S., University of Connecticut, 2005
M.P.H., Johns Hopkins Bloomberg School of Public Health, 2011

Lisa Danielle Lareau, Westborough, MA
B.A., Harvard University, 2006

Cecilia Alejandra Larocca, Bronx, NY
B.S., Cornell University, 2006

Katherine Latimer, Bethesda, MD
B.S., Georgetown University, 2008

HeeWon Lee, Denver, CO
B.A., Harvard University, 2006

Kathleen Anne Lee, Weston, MA
B.A., Harvard University, 2006

Kathleen C. Lee, Sudbury, Ontario, Canada
B.S.E., Princeton University, 2007

Nicole Leistikow, Baltimore, MD
B.A., Yale University, 1996
M.Phil., University of Oxford, 2001

Xuan Thanh Le-Nguyen, Forest Park, GA
B.S., Yale University, 2008

Brian Min-hann Lin, Oakland, MI
B.A., Johns Hopkins University, 2007

Jimmy Cheng Ho Lin, New Haven, CT
B.A., Yale University, 2001
Ph.D., Johns Hopkins University School of Medicine, 2011

Tiffany Link, Placentia, CA
B.S., California State University (Long Beach), 2004

Lia Ilona Losonczy, Yonkers, NY
B.A., Columbia University, 2006
M.P.H., Johns Hopkins Bloomberg School of Public Health, 2011

Jonathan Trent Magruder, Washington, DC
B.A., Princeton University, 2008

Marisa Kristeen Matthys, Farmington Hills, MI
B.S., University of Michigan (Ann Arbor), 2008

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Brandon Michael Metcalf, Catonsville, MD
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Amanda Jane Morris, N. Potomac, MD
B.S., Massachusetts Institute of Technology, 2008

Di Mu, Philadelphia, PA
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B.S., University of Virginia, 2007

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B.A., University of British Columbia, 2008
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Khalda Ibrahim, Alexandria, VA
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<tr>
<th>Name</th>
<th>Location</th>
<th>Education Details</th>
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<tbody>
<tr>
<td>Jennifer Sun Im</td>
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<td>B.A., Yale University, 2010</td>
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B.S., University of West Georgia, 2001  
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Linnan Tang, Medford, MA  
B.S., Peking University, 1998  
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B.S., Johns Hopkins University, 2006  
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M.S., Georgetown University, 2010  

James Daniel Beckett, Mount Vernon, OH  
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Tatyana Lyapustina, Rockville, MD  
B.A., University of Maryland (College Park), 2011

Taylor Tonia DesRosiers, Fairport, NY  
B.S., University of Maryland (College Park), 2011
<table>
<thead>
<tr>
<th>Name</th>
<th>City, State, Country</th>
<th>Year of Graduation</th>
<th>Institution and Degree Information</th>
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<tbody>
<tr>
<td>John Benjamin Marshall</td>
<td>Statesboro, GA</td>
<td>2011</td>
<td>B.S., University of Georgia</td>
</tr>
<tr>
<td>Dannielle Adora McBride</td>
<td>Sacramento, CA</td>
<td>2009</td>
<td>B.S., University of California</td>
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<tr>
<td>Emma Coleen McDonnell</td>
<td>Los Angeles, CA</td>
<td>2011</td>
<td>B.A., University of Southern California</td>
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<tr>
<td>Stephanie Eileen McLaurr</td>
<td>San Francisco, CA</td>
<td>2006</td>
<td>B.S., Humboldt State University</td>
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<tr>
<td>Arielle Janine Medford</td>
<td>Sandy Springs, GA</td>
<td>2010</td>
<td>B.A., Emory University</td>
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<td>Nicky Jayna Mehtani</td>
<td>Carmichael, CA</td>
<td>2011</td>
<td>B.A., Rice University</td>
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<td>Samuel Jacob Michel</td>
<td>Waban, MA</td>
<td>2010</td>
<td>B.A., Harvard University</td>
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<tr>
<td>Kathryn Lynn Miele</td>
<td>Freeport, NY</td>
<td>2001</td>
<td>College of William and Mary</td>
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<tr>
<td>Emily Kristine Miller</td>
<td>Salt Lake City, UT</td>
<td>2011</td>
<td>B.A., Georgetown University</td>
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<td>Yuliya Yefimovna Mints</td>
<td>Brookline, MA</td>
<td>2011</td>
<td>B.S., Brandeis University</td>
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<tr>
<td>Kara T. Mirski</td>
<td>Severna Park, MD</td>
<td>2011</td>
<td>B.A., Johns Hopkins University</td>
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<td>Andrew Zhan Mo</td>
<td>Burlington, MA</td>
<td>2010</td>
<td>B.S., Johns Hopkins University</td>
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<td>Huzefa Juzer Mogri</td>
<td>Fremont, CA</td>
<td>2010</td>
<td>B.S., University of California (Davis)</td>
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<td>Philipp Charles Mote</td>
<td>Athens, GA</td>
<td>2011</td>
<td>B.A., University of Georgia</td>
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<td>Carolyn Leigh Mulvey</td>
<td>Westfield, NJ</td>
<td>2011</td>
<td>B.S., University of Virginia</td>
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<td>Matthew Tyge Murrill</td>
<td>Knoxville, TN1</td>
<td>2008</td>
<td>B.A., Maryville College</td>
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<td>Carter Jacob Neugarten</td>
<td>Hannacroix, NY</td>
<td>2010</td>
<td>B.A., New York University</td>
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<td>Joseph Daemyung Oh</td>
<td>Anaheim, CA</td>
<td>2009</td>
<td>B.S., Yale University</td>
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<td>Mira Ashok Patel</td>
<td>Webster, NY</td>
<td>2011</td>
<td>B.A., Cornell University</td>
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<td>Brent Clifford Potterenger</td>
<td>Fair Oaks, CA</td>
<td>2007</td>
<td>B.S., University of California (Davis)</td>
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<td>Lydia Calhoun Powell</td>
<td>Richmond, VA</td>
<td>2010</td>
<td>B.A., University of Virginia</td>
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<tr>
<td>Sidharth Puri</td>
<td>New Orleans, LA</td>
<td>2011</td>
<td>B.A., Cornell University</td>
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<tr>
<td>Varun Puvanasarajah</td>
<td>Chapel Hill, NC</td>
<td>2011</td>
<td>B.S., University of North Carolina (Chapel Hill)</td>
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<tr>
<td>Ji Qi</td>
<td>Fairfax, VA</td>
<td>2011</td>
<td>B.A., Princeton University</td>
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<tr>
<td>Karthik Takkellapati Rao</td>
<td>Port Saint Lucie, FL</td>
<td>2011</td>
<td>B.A., Johns Hopkins University</td>
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<tr>
<td>Lauren Danielle Reader</td>
<td>Schaumburg, IL</td>
<td>2011</td>
<td>B.S., University of Illinois (Urbana-Champaign)</td>
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<tr>
<td>Eric Weston Sankey</td>
<td>Oak Glen, CA</td>
<td>2009</td>
<td>B.S., University of California (Santa Barbara)</td>
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<tr>
<td>Samuel Louis Scharff</td>
<td>Edmond, OK</td>
<td>2011</td>
<td>B.S., University of Oklahoma</td>
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<tr>
<td>Harita Shah</td>
<td>Peoria, IL</td>
<td>2011</td>
<td>B.S., Washington University in St. Louis</td>
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<tr>
<td>April N. Sharp</td>
<td>Washington, DC</td>
<td>2007</td>
<td>B.A., St. John's College (Maryland)</td>
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<tr>
<td>Ryan Yoshimura Shields</td>
<td>Bloomfield Hills, MI</td>
<td>2008</td>
<td>B.A., Amherst College</td>
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<tr>
<td>Pooja Singal</td>
<td>Severna Park, MD</td>
<td>2009</td>
<td>Johns Hopkins Bloomberg School of Public Health</td>
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<td>Emma Steinberg</td>
<td>Chevy Chase, MD</td>
<td>2009</td>
<td>B.A., Barnard College</td>
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<td>Jean Hee Suh</td>
<td>Alexandria, VA</td>
<td>2010</td>
<td>Johns Hopkins University</td>
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<td>Amanda Yuan Sun</td>
<td>Issaquah, WA</td>
<td>2011</td>
<td>B.S., Duke University</td>
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<td>Sunita Chitra Suresh</td>
<td>Maywood, IL</td>
<td>2011</td>
<td>B.S., Northwestern University</td>
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<td>Jeremy Adam Tanner</td>
<td>Houston, TX</td>
<td>2011</td>
<td>B.A., University of Southern California</td>
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<td>Lauren Maria Thomaier</td>
<td>Marlboro, NJ</td>
<td>2011</td>
<td>Johns Hopkins University</td>
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<tr>
<td>Wuroh Timbo</td>
<td>Columbia, MD</td>
<td>2011</td>
<td>University of Delaware</td>
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<tr>
<td>Kevin Vu Tran</td>
<td>Laguna Beach, CA</td>
<td>2010</td>
<td>B.S., Stanford University</td>
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<tr>
<td>Chiedozie Chukwuka Uwandu</td>
<td>Roslindale, MA</td>
<td>2010</td>
<td>B.S., University of Massachusetts (Boston)</td>
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<tr>
<td>Aditi Vasan</td>
<td>Berlin, MA</td>
<td>2010</td>
<td>Princeton University</td>
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<tr>
<td>Shannon Lydia Walker</td>
<td>Purcellville, VA</td>
<td>2011</td>
<td>Princeton University</td>
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<td>Heather Marie Walls</td>
<td>Loveland, OH</td>
<td>2011</td>
<td>B.S., Centre College</td>
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<tr>
<td>Joanna Yi Wang</td>
<td>McLean, VA</td>
<td>2011</td>
<td>Columbia University</td>
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<tr>
<td>Kevin Yuqi Wang</td>
<td>Irvine, CA</td>
<td>2011</td>
<td>B.S., University of California (Los Angeles)</td>
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<td>Vinson Matthew Wang</td>
<td>Lagrangeville, NY</td>
<td>2010</td>
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<tr>
<td>Yu Tung Wang</td>
<td>Diamond Bar, CA</td>
<td>2011</td>
<td>B.S., University of California (Los Angeles)</td>
</tr>
<tr>
<td>Joshua Andrew Watson</td>
<td>Columbia, MD</td>
<td>2004</td>
<td>B.S., Georgetown University</td>
</tr>
<tr>
<td>J.Corey Andrew Williams</td>
<td>Belle Mead, NJ</td>
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<tr>
<td>Claire Price Zachik</td>
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<td>2011</td>
<td>B.S., University of Maryland (College Park)</td>
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<tr>
<td>Xi Zhou</td>
<td>Ellicott City, MD</td>
<td>2009</td>
<td>Johns Hopkins University</td>
</tr>
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<td>Bundy</td>
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</tbody>
</table>

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1 In combined M.D.-Ph.D program
M.D. CANDIDATES IN SPECIAL PROGRAMS

Ishrat Ahmed, Chesterfield, MO
B.S., Johns Hopkins University, 2009
M.S., Johns Hopkins University, 2009; Ph.D. candidate, Pharmacology

Anubhav Gautam Amin, Hasbrouck Heights, NJ
B.S., New York University, 2008; Student in Residence: Research in Neurosurgery

Ifeanyi Ugochukwu Anidi, Hyde Park, MA
B.S., Yale University, 2006; Ph.D. candidate, Bloomberg School of Public Health

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B.S., University of Pittsburgh, 2004; Ph.D. candidate, Cellular and Molecular Medicine

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Shin Rong Lee, Sugar Land, TX  
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Worawan Limpitikul, Songkhla, Thailand  
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B.A., Yale University, 2001  
Ph.D., Johns Hopkins University School of Medicine, 2011; Student in Residence: National Institutes of Health

S. Julie-Ann Lloyd, Boston, MA  
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S.M., Massachusetts Institute of Technology, 2005; Ph.D. candidate, Cellular and Molecular Medicine

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Annemarie McMillan McCartney, Baltimore, MD  
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B.S., Johns Hopkins University, 2008; M.P.H. candidate, Bloomberg School of Public Health

Laurel Dineen Pellegrino, Lambertville, NJ
B.A., Bryn Mawr College, 2008; Student in Residence: Research in Psychiatry

James Christopher Pendleton, Visalia, CA
B.S., Morehouse College, 2005; Ph.D. candidate, Pathobiology

Karlo Perica, Montgomery, MD
B.S., Yale University, 2007; Ph.D. candidate, Biomedical Engineering

James Paul Pirruccello, Reno, NV
B.S., Yale University, 2006; Leave of Absence

Elisabet Pujadas, Chicago, IL
B.A., University of Chicago, 2009; Ph.D. candidate Biomedical Engineering

Sarah Brown Puryear, Athens, GA
B.S., University of Georgia, 2007; Student in Residence: Doris Duke Fellowship

Seyed Alireza Rabi, Rosedale, MD
B.A.S., University of Toronto, 2006; Ph.D. candidate, Immunology

Anne-Marie Rick, Cypress, TX
B.S., University of Notre Dame, 2007; M.P.H. candidate, Bloomberg School of Public Health

Raymond E. Robinson, Davis, CA
B.S., University of California (Davis), 2004; M.P.H. candidate, Bloomberg School of Public Health

Marianeli Rodriguez, Tulsa, OK
B.S., University of Tulsa, 2005; Ph.D. candidate, Neuroscience

Evan Andrew Russell, Pawtucket, RI
B.S., Brown University, 2006; Ph.D. candidate, Bloomberg School of Public Health

Jacob James Ruzevick, Coronado, CA
B.S., Massachusetts Institute of Technology, 2009; Student in Residence: Doris Duke Fellowship

Paul Christopher Scherer, Media, PA
B.A., University of Pennsylvania, 2008; Ph.D. candidate, Neuroscience

Sarah Jeane Scotland, Brigantine, NJ
B.A., University of Pennsylvania, 2011; Student in Residence: INSERM Cancer Research Center, Toulouse, France

Yevgeniy R. Semenov, Owings Mills, MD
B.S., Johns Hopkins University, 2007
M.A., Johns Hopkins University, 2009; Student in Residence: Research in Otolaryngology

Amy Nicole Sexauer, Wadmalaw Island, SC
B.A., University of Georgia, 2005
B.S., University of Georgia, 2005; Ph.D. candidate, Cellular and Molecular Medicine

Eliah Ruth Shamir, Vienna, VA
B.S., University of Virginia, 2008; Ph.D. candidate, Biochemistry, Cellular and Molecular Biology

Kerry Lee Shannon, Belle Mead, NJ
B.A., Kenyon College, 2004
M.P.H., Johns Hopkins Bloomberg School of Public Health, 2007; Ph.D. candidate, Bloomberg School of Public Health

Leilani Marie Sharpe, Olympia, WA
B.S., University of Washington, 2004; Ph.D. candidate, Biochemistry, Cellular and Molecular Biology

Anna Christina Sick, Baltimore, MD
B.S., University of Maryland (College Park), 2008; Ph.D. candidate, Bloomberg School of Public Health

Kelly Lauren Sloane, Gladwyne, PA
B.A., University of Pennsylvania, 2006; Student in Residence: Research in Psychiatry

Michael Charles Smith Jr., Waco, TX
B.A., University of Texas (Austin), 2005
M.P.H., Yale University, 2007; Student in Residence: Research in Anesthesiology

Justin Alexander Sobrino, Wichita, KS
B.S., University of Tulsa, 2006; Student in Residence: Baylor Health Care System, Dallas, TX

Susan Edith Stanley, Saint Louis, MO
B.S., Brandeis University, 2007; Ph.D. candidate, Cellular and Molecular Medicine

Daniel Stevens, Potsdam, NY
B.S., Clarkson University, 2009
B.S., Clarkson University, 2009; Ph.D. candidate, Neuroscience

Miriam Tamar Stewart, Baltimore, MD
B.A., Yale University, 2002; Student in Residence: Research at Children's Memorial Hospital, Chicago, IL

Joel Chaim Sunshine, Potomac, MD
B.S., Brandeis University, 2007
M.S., Brandeis University, 2007; Ph.D. candidate, Biomedical Engineering

Sarah Brem Sunshine, Owings Mills, MD
B.S., Brandeis University, 2008; Student in Residence: Howard Hughes Fellowship

Sonya Chin Tang, Great Neck, NY
B.S., Massachusetts Institute of Technology, 2004; Ph.D. candidate, Biochemistry, Cellular and Molecular Biology

Martin Samuel Taylor, Baltimore, MD
B.S.E., Princeton University, 2005; Ph.D. candidate, Pharmacology

William Tsao, East Hanover, NJ
B.S., Johns Hopkins University, 2006; Ph.D. candidate, Cellular and Molecular Medicine

Amy Ruth Unterman, Pacific Palisades, CA
B.A., Princeton University, 2008; Ph.D. candidate, Cellular and Molecular Medicine

Suzanne Westbrook van Landingham, Great Falls, VA
B.A., Princeton University, 2008; Student in Residence: Research in Ophthalmology

Matthew Scott Vandler, Johnson City, TN
B.S., Furman University, 2006; Ph.D. candidate, Pharmacology

Pavan Anil Vaswani, Vancouver, WA
B.S., University of Washington, 2009; Ph.D. candidate, Neuroscience
Vadim Andre Villarroel, Belmont, MA
B.A., Dartmouth College, 2004; Student in Residence: National Institutes of Health

Brian Wilson Waldersen, Mesa, AZ
B.A., University of California (Berkeley), 2005
B.S., University of California (Berkeley), 2005; Student in Residence: Maryland State Director of Doctors for America

Sarah Katherine Wallace, Virginia Beach, VA
B.A., Duke University, 2008; Student in Residence: Doris Duke Fellowship

Lee Le Wang, Plano, TX1
B.S., Stanford University, 2007; Student in Residence: Research in Radiology

Rudi Wang, Houston, TX
B.S., Stanford University, 2008; Student in Residence: Research at University of California, Los Angeles

Yuxuan Wang, Austin, TX1
B.A., University of Texas (Austin), 2009
B.S., University of Texas (Austin), 2009; Ph.D. candidate, Cellular and Molecular Medicine

Paul Logan Weygandt, Johnstown, PA
B.A., Jefferson College of Health Sciences, 2007; M.P.H. candidate, Bloomberg School of Public Health

Aaron Tyler Wild, Quaker Hill, CT
B.A., Yale University, 2008; Student in Residence: Research in Radiation Oncology

Emily Turner Wood, Anacortes, WA1
AH, Skagit Valley College, 1999
B.S., University of Washington, 2006; Ph.D. candidate, Neuroscience

Luke Allister Wylie, Baltimore, MD
B.A., University of California (San Diego), 2007
B.S., University of California (San Diego), 2007; Ph.D. candidate, University of Cambridge

Risheng Xu, League City, TX1
A.B., Harvard University, 2007; Ph.D. candidate, Pharmacology

Andrew Rong Song Tzeng Yang, Baltimore, MD
B.A., Johns Hopkins University, 2006; Student in Residence: Howard University

Eunice Yang, Mendota Heights, MN
B.A., Harvard University, 2008; Student in Residence: NIH Clinical Research Training Program

Wan Jou Yang, Redmond, WA1
B.S., University of Washington, 2007; Ph.D. candidate, Pathobiology

Jithin Yohannan, Nanuet, NY
B.A., New York University, 2008; M.P.H. candidate, Bloomberg School of Public Health

Nance L. Yuan, San Francisco, CA
B.A., University of California (Berkeley), 2007; Student in Residence: Research in Plastic and Reconstructive Surgery

Daniel James Zabransky, Manassas, VA1
B.S., College of William and Mary, 2009; Ph.D. candidate, Cellular and Molecular Medicine

Patricia Leigh Zadnik, Furlong, PA
A.B., Harvard University, 2008; Student in Residence: Research in Neurosurgery

John George Zampella IV, Glenville, NY
B.A., Siena College, 2008
B.S., Siena College, 2008; Student in Residence: Howard Hughes Fellowship

Timothy Alfred Zeffiro, Columbia, MD
B.S., Georgetown University, 2003; Student in Residence: University of Maryland

Lauren Rachel Zeitels, Warren, NJ1
B.A., University of Pennsylvania, 2006; Ph.D. candidate, Pharmacology

122

1 In combined M.D.-Ph.D program

2 Counted in the 4th year M.D. class
Summary

M.D. Candidates:
First Year 120
Second Year 120
Third Year 107
Fourth Year 118
Students in Special Programs 122
Total 587

GEOGRAPHICAL DISTRIBUTION OF STUDENTS

Alabama ................................................... 1
Arizona .................................................... 6
Arkansas .................................................... 1
California ................................................ 74
Colorado .................................................. 7
Connecticut ............................................. 9
Delaware .................................................. 1
District of Columbia .................................. 4
Florida ........................................................ 29
Georgia .................................................... 16
Illinois ...................................................... 22
Indiana ..................................................... 9
Iowa ........................................................... 4
Kansas ...................................................... 6
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Louisiana ................................................... 9
Maine ........................................................ 1
Maryland .................................................. 96
Massachusetts ......................................... 31
Michigan .................................................. 16
Minnesota ............................................... 9
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Texas ....................................................... 23
Utah ........................................................ 3
Virginia ................................................... 32
Washington .............................................. 9
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Wisconsin ............................................... 6
Foreign
Canada ................................................... 12
China ..................................................... 1
India ........................................................ 1
Korea ...................................................... 1
Taiwan .................................................... 1

486 STUDENTS
### CANDIDATES FOR THE DEGREE OF DOCTOR OF MEDICINE

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<td>University of Minnesota (Twin Cities)</td>
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University of Mississippi ........................................ 1
University of Missouri (Columbia) ............................ 2
University of Missouri (Rolla) ................................. 1
University of Montana (Missoula) .............................. 1
University of North Carolina (Chapel Hill) ................... 4
University of Notre Dame ....................................... 8
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University of Oregon (Eugene) ................................. 1
University of Oxford * ............................................. 6
University of Pennsylvania ....................................... 7
University of Pittsburgh .......................................... 4
University of Richmond ........................................... 1
University of Rochester .......................................... 3
University of South Florida ....................................... 1
University of Southern California ............................... 5
University of Sydney * ............................................. 1
University of Texas (Austin) ....................................... 7
University of Toronto ............................................. 4
University of Tulsa ................................................ 2
University of Virginia ............................................. 10
University of Washington ......................................... 5
University of West Georgia ....................................... 1
University of Wisconsin (Madison) ............................ 6
Ursinus College .................................................... 1
Vanderbilt University ............................................. 7
Wake Forest University .......................................... 3
Washington College .............................................. 2
Washington University in St. Louis ......................... 6
West Virginia University ........................................ 2
Williams College ................................................... 1
Xavier University .................................................... 1
Xavier University of Louisiana ................................. 2
Yale University ...................................................... 32
York University * ................................................... 1

* Designates foreign schools.

Inasmuch as a student’s preparation may have been received at more than one institution, this will not check with the total number enrolled. Colleges attended include all students who are M.D. candidates irrespective of current enrollment status.
CANDIDATES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF BIOCHEMISTRY, CELLULAR AND MOLECULAR BIOLOGY

John William Bullen Jr., Boston, MA  
A.B., Dartmouth College, 2001  
Danfeng Cai, Shanghai, China  
B.S., Peking University, 2009  
José Rogelio Carcamo, Northridge, CA  
B.S., California State University (Northridge), 2006  
Emily McKenzi Clay, Provo, UT  
B.S., Brigham Young University, 2010  
April Clayton, Neeses, SC  
B.S., Erskine College, 2008  
Erica Christine Dresselhaus, Lanesville, IN  
B.A., Boston University, 2008  
Hana Leah Goldschmidt, Berkeley, CA  
B.A., Occidental College, 2007  
Leonardo N. Hagmann, Minneapolis, MN  
B.S., University of Minnesota (Twin Cities), 2008  
Rakhi Jattani, Florak Park, NY  
B.S., Carnegie Mellon University, 2004  
Deepak Kalra, Brookline, MA  
M.B.B.S., University of Delhi, 2003  
P.H., Harvard University School of Public Health, 2004  
Sang Hoon Kim, Seoul, Korea  
B.S., Yonsei University, 2006  
Elizabeth Anne Kolar, Baltimore, MD  
B.S., Salisbury University, 2007  
Juliane Claudia Lessard, Providence, RI  
B.S., Brown University, 2006  
Jingchuan Luo, Zhanjiang, Guangdong, China  
B.S., Sun Yat-sen University, 2010  
Teresa Romeo Luperchio, Gibbstown, NJ  
B.S., Johns Hopkins University, 2008  
Meaghan O’Malley Morris, Springfield, VA  
B.S., Boston College, 2006  
Susana Rodriguez, Brookline, MA  
B.A., California State University (Dominquez Hills), 2004  
Yijie Li, Shanghai, China  
B.S., Peking University, 2009  
Kim-Vy Nguyen-Ngoc, Hochiminh, Vietnam  
B.S., Vietnam National University, 2005  
Yali Zhang, Palo Alto, CA  
B.S., University of Michigan, 2008

DEPARTMENT OF CELL BIOLOGY

Jason Michael Berk, Storrs Mansfield, CT  
B.S., University of Connecticut, 2005  
Stacey Marie Cremers Berman, Columbia, MD  
B.S., Lafayette College, 2005  
Kim Ling Cheng, New York, NY  
B.S., William Smith College, 2007  
Sara Jean Clasen, Scottsdale, AZ  
B.S., University of Arizona, 2010  
Caitlin Hanlon, Huntington, PA  
B.S., Ursinus College, 2007  
Phyllis Heite, Baltimore, MD  
B.S., Masters College, 2005  
Troy Allen Horn, Owings Mills, MD  
B.S., Kings College, 1998  
M.A., University of Scranton, 2003  
Robert Joseph Huebner, Frederick, MD  
B.S., University of Maryland (Baltimore County), 2006  
Melanie Issigonis, Charlottesville, VA  
B.S., University of Virginia, 2003  
Dorothy Mae Dillon Johnson, Laurel, MD  
B.S., University of Maryland (College Park), 2010  
Chih-Yung Sean Lee, Baltimore, MD  
B.S., National Taiwan University, 2001  
Yijie Li, Shanghai, China  
B.S., Peking University, 2009  
Qing Ma, Beijing, China  
B.S., Peking University, 2009  
B.S.Econ., Peking University, 2009  
Matthew Joseph Maurer, Rochester, NY  
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<th>Name</th>
<th>Location</th>
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<td>Laura Bess Kapa</td>
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Hyung-Joon Kim, Seongnam, Korea  
B.S., Korea University (Seoul), 2009

Ruo Jing Li, Beijing, China  
B.S., Peking University, 2009  
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Ying-Chun Lo, Kaohsiung City, Taiwan  
M.D., National Yang-Ming University, 2007

Yan Hui Lu, Columbus, OH  
B.S., Shandong University, 2002

M.S., Shanghai Institute for Biological Sciences, Chinese Academy of Sciences, 2005

Michael Lee Manning, Blacksburg, VA  
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Maria Isabel Martinez Ferrando, Madrid, Spain  
M.Sc., Universidad Politecnica de Madrid, 2003

Kirsten Joy Meyer, New York, NY  
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B.S., Geneva College, 2007

Romeo Papazyan, Burbank, CA  
B.S., University of California (Los Angeles), 2007

Polina Prusevich, Durham, NH  
B.S., University of New Hampshire, 2009

Vedangi S. Sample, Katy, TX  
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John Joseph Skoko, Pittsburgh, PA  
B.S., University of Pittsburgh, 2001
Ashley Elizabeth Sponaugle, Tampa, FL
B.A., University of South Florida, 2007
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Martin Samuel Taylor, Baltimore, MD
B.S.E., Princeton University, 2005

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Elaine Elizabeth To, North Hollywood, CA
B.S., California Institute of Technology, 2010

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B.A., University of Florida, 2007
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Marie Ruth Webster, Washington, DC
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Jessica R. Yang, Irvine, CA
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Cellular and Molecular Physiology

Sean T. Byrne, Washington, DC
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Nesrin Mehmed Hasan, Baltimore, MD
B.S., Middle East Technical University, 2006

Akkuna M. Iheanacho, Baltimore, MD
B.S., Oakwood College, 2000
M.S., University of Virginia, 2006

Esi Iyalomhe, Miramar, FL
B.S., Florida Memorial University, 2003

Hao Jia, Baotou, China
B.S., Nankai University, 2011

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B.S., Seoul National University, 2010

Ha Won Lee, Seoul, Korea
B.S., Pohang University of Science and Technology, 2003

Yunjong Lee, Seoul, Korea
B.S., Seoul National University, 2004

Niranjana Natarajan, Chennai, India
B.Tech., Shanmuga Arts, Science, Technology & Research Academy, 2011

M.Tech., Shanmuga Arts, Science, Technology & Research Academy, 2011

Marcus Seldin, Huntington Beach, CA
B.S., University of California (Irvine), 2008

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B.S., National University of Singapore, 2005
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Deepali Nivas Tukaye, Bangalore Karnataka, India
M.B.B.S., Rajiv Ghandi University of Health Sciences, 2002

Zhihui Wei, Xining, Qinghai, China
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Candidates for the Degree of Masters of Arts

Medical and Biological Illustration

Hannah Ahn, Melville, NY
B.F.A., Maryland Institute College of Art, 2008

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B.F.A., Louisiana State University (Baton Rouge), 2008

Anastasia Vlassopoulos Demson, Oakton, VA
B.F.A., Virginia Commonwealth Univ School of Dentistry, 2011

Amy Lynn Dixon, Adel, IA
B.A., Iowa State University, 2010

Kyoungran Eun, Busan, Korea
D.V.M., Kyungpook National University, 2004

Natalie Kay Koscal, Tillson, NY
B.S., Cornell University, 2010

Kaitlin Lindsay, Kearney, NE
B.A., Iowa State University, 2010

Courtney Arden McKenna, North Wales, PA
B.F.A., Rhode Island School of Design, 2006

Elyssa Lynn Siegel, Reisterstown, MD
B.A., Arcadia University, 2010

Heidi Sinsel, Minden, NE
B.A., Iowa State University, 2011

Eo Van Bemmel Trueblood, Philadelphia, PA
B.F.A., University of North Carolina (Asheville), 2001

Wenjing Wu, Guangzhou, China
B.S., Sun Yat-sen University, 2009

506 Students
CANDIDATES FOR THE DEGREE OF MASTERS OF SCIENCE

HEALTH SCIENCES INFORMATICS
Danning He, Nanjing, China
  B.S., Fudan University, 2011
Henry Li, Suwanee, GA
  B.S., Georgia Institute of Technology, 2009
Shuangchao Ma, Temp, AZ
  B.S., Arizona State University, 2011
Yair G. Rajwan, Burke, VA
  B.Sc., University of Bridgeport, 1991
  M.Sc., George Washington University, 1995
  Dr. Sc., George Washington University, 2000
Ankit Sura, Piscataway, NJ
  M.B.B.S., Maharashtra University of Health Sciences, 2007
Michael Trevor Tien, South Pasadena, CA
  M.P.H., University of Southern California, 2008
Xiaoli Wu, Shanghai, China
  B.S., Fudan University, 2011
Wuyang Yang, Beijing, China
  M. Med, Captital Medical University, 2010

HEALTH SCIENCES INFORMATICS
Ida Ginette Ganao, Takoma Park, MD
  B.A., University of the District of Columbia, 1993
  M.S., Southern New Hampshire University, 1996
Heather Ann Halvorson, Seattle, WA
  B.S., University of Washington, 1999
  M.D., Johns Hopkins University School of Medicine, 2003
  M.P.H., Uniformed Services University of the Health Sciences - Bethesda, 2005
Brendan Hayden Kroepsch, Kansas City, MO
  B.S., University of Colorado (Boulder), 2004
Olusesan Ayodeji Makinde, Ibadan, Oyo State, Nigeria
  M.B.B.S., University of Ibadan, 2002
  M.S., University of Ibadan, 2006
Olawande Oladapo Ogunsanya, Chicago, IL
  M.B.B.S., University of Ibadan, 2005
David Ikhide Onime, Abuja, Nigeria
  M.B.B.S., University of Lagos - College of Medicine - Lagos - Nigeria, 2002
Gloria Abena Appiah Opoku-Boateng, Laurel, MD
  B.S., Valley View University, 2011
Divya Ravi, Chennai, India
  B.Tech., Vellore Institute of Technology University, 2011
Lisa Ann Hanako Richard, Baltimore, MD
  Amer Mohammad Mokhles Saati, Marietta, GA
  M.D., Damascus University, 2008
Alvin Dale Vaughn, Hagerstown, MD
  B.A., Drury University, 2005
Hanjie Wang, Gaithersburg, MD
  B.S., Shandong Medical University, 2005
Fay Wong, Beijing, China
  B.Eng., Beijing University of Technology, 2006

1 Combined Degree Program M.D.-Ph.D. or other
2 On Leave of Absence
CANDIDATES FOR THE DEGREES OF DOCTOR OF PHILOSOPHY, MASTERS OF ARTS, AND MASTERS OF SCIENCE

COLLEGES ATTENDED

Aga Khan Medical College - Aga Khan University - Karachi - Pakistan ............................................ 2
Albany State University ........................................... 1
Albert-Ludwigs-Universitat Freiburg ......................... 1
American University .................................................... 3
Amherst College ....................................................... 5
Amirkabir University of Technology ............................. 1
Andrews University ..................................................... 1
Anna University ......................................................... 1
Arcadia University ...................................................... 1
Arizona State University ............................................ 4
Bangalore University * .................................................. 2
Barnard College ........................................................... 2
Bates College .............................................................. 3
Beijing Normal University * ........................................... 1
Beijing University of Aeronautics and Astronautics - Beijing * ........................................................ 1
Berea College ............................................................. 1
Bharathiar University * .................................................. 1
Bilkent University ........................................................ 1
Bombay College of Pharmacy (Mumbai) * ...................... 1
Boston College ............................................................ 3
Boston University ........................................................ 7
Bowdoin College ......................................................... 2
Brandeis University ...................................................... 3
Bridgewater College ..................................................... 1
Brigham Young University ........................................... 3
Brooklyn College of the City University of New York ........ 1
Brown University ........................................................ 7
Bryn Mawr College ...................................................... 2
Bucknell University ....................................................... 2
California Institute of Technology .................................. 4
California State Polytechnic University (Pomona) .......... 1
California State University (Dominquez Hills) ............... 2
California State University (East Bay) .......................... 1
California State University (Fresno) ............................ 2
California State University (Fullerton) ......................... 2
California State University (Long Beach) ...................... 1
California State University (Northridge) ....................... 3
Cameron University ...................................................... 1
Capital University of Medical Sciences ......................... 1
Capital Medical University .......................................... 1
Carleton College ......................................................... 2
Carleton University - Ontario ....................................... 1
Carnegie Mellon University ......................................... 3
Case Western Reserve University ................................. 6
Catholic University of America ..................................... 1
Cedar Crest College ..................................................... 2
Central Washington University .................................... 1
Chang Gung University College of Medicine ................... 3
Chapman University .................................................... 1
China Medical University ............................................. 2
Chulalongkorn University ........................................... 3
City College of New York, The ................................. 1
Claremont McKenna College ....................................... 1
Clarkson University .................................................... 2
Clemson University ..................................................... 2
Colby College ............................................................ 1
Colgate University ....................................................... 1
College of Notre Dame ................................................. 2
College of the Holy Cross .......................................... 2
College of William and Mary ....................................... 3
Colorado College ........................................................ 1
Colorado State University ............................................ 4
Columbia University .................................................... 2
Cornell College ......................................................... 1
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Damascus University ................................................... 1
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Davidson College ....................................................... 2
Denison University ...................................................... 1
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Eckerd College .......................................................... 1
Emory University ....................................................... 3
Erskine College ........................................................ 1
Evergreen State College .............................................. 2
Ewha Women’s University - College of Medicine - Seoul - S Korea .................................................. 1
Florida Atlantic University ......................................... 1
Florida Memorial University ........................................ 1
Florida State University .............................................. 3
Franklin and Marshall College ..................................... 1
Fudan University ....................................................... 8
Fujen Catholic University .......................................... 1
Furman University ..................................................... 1
Geneva College ........................................................ 1
George Mason University .......................................... 2
George Washington University ..................................... 4
Georgetown University ............................................... 3
Georgia Institute of Technology .................................... 5
Gettysburg College ..................................................... 1
Goteborgs Universitet .................................................. 2
Goucher College ........................................................ 1
Grand Canyon University .......................................... 1
Grinnell College ......................................................... 1
Hampton University ..................................................... 2
Harvard University ...................................................... 6
Harvard University School of Public Health ..................... 1
Harvey Mudd College .................................................. 2
Haverford College ....................................................... 1
Hong Kong University of Science and Technology .......... 1
Hope College ............................................................ 1
Idaho State University ............................................... 1
Imperial College of Science, Technology and Medicine .... 1
Imperial College of Science, Technology and Medicine - London ...................................................... 1
Indian Institute of Technology (Bombay) ....................... 3
Indian Institute of Technology (Delhi) ......................... 1
Indian Institute of Technology (Kanpur) ........................ 1
Indian Institute of Technology (Kharagpur) .................... 3
Indian Institute of Technology (Madras) ........................ 1
Indiana University (Bloomington) ............................... 2
Iowa State University .................................................. 3
Iowa State University of Science and Technology .......... 1
Iran University of Science and Technology - Tehran ....... 1
Isfahan University of Technology ................................ 1
Ithaca College .......................................................... 1
James Madison University .......................................... 1
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* Designates foreign schools.

1 Inasmuch as a student's preparation may have been received at more than one institution, this will not check with the total number enrolled. Colleges attended include all students who are Ph.D. or Masters candidates irrespective of current enrollment status.
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** 1st and 2nd Postgraduate Year of Training
† 3rd & 4th Postgraduate Year of Training
Appendix

The original endowment which made possible the opening of the School of Medicine in 1893 was raised largely through the efforts of a group of women who were interested in seeing that adequate facilities should be made available for the instruction of women in medicine. The circumstances attending the acceptance of this fund were as follows:

At a meeting of the Board of Trustees of the University, October 28, 1890, the following letter was presented:

“The committee formed for the purpose of raising a fund to procure the most advanced medical education for women can now place at your disposal the sum of one hundred thousand dollars for the use of your Medical School, if you will, by resolution, agree that women whose previous training has been equivalent to your preliminary medical course, shall be admitted to the school, when it shall open, upon the same terms which may be prescribed for men. There can be no doubt that women ought to be trained to act as nurses for sick women. There is as little doubt that a sufficient number of women ought to be educated and trained in such manner as to be fully able to care for sick women who may wish or ought to be treated by women. We have devoted ourselves to the furtherance of this object. We have reason to hope that a university which proposes to found a medical school intended to teach advanced methods in the treatment of those diseases which affect mankind, will not refuse to women the opportunity of learning such methods. There is now a general interest in our movement. In order that this interest may be sustained, we ask you to consider our offer at the earliest possible period.”

NANCY MORRIS DAVIS,
“Chairman of the Baltimore Committee.”

The following minute was adopted by the Trustees:

The President and Board of Trustees of the Johns Hopkins University have received from Mrs. Nancy Morris Davis, chairman of one of the committees formed for the purpose of raising a fund to procure the most advanced medical education for women, the gratifying intelligence that $100,000 has been raised for the use of their intended Medical School, and is at their disposal, if they will, by resolution, agree to the terms upon which the money was contributed by its donors.”

“The terms are that this Board, if it accepts the funds thus raised, shall agree, by resolution, that, when its Medical School shall be opened, women whose training has been equivalent to the preliminary medical course prescribed for men, shall be admitted in such school upon the same terms as may be prescribed for men.”

“The offer to this University of the particular fund is the free, voluntary act of women residing in this State and in other States, made without the suggestion or solicitation of this Board, and we accept it under and subject to the terms which are made a part of the gift, with the understanding and declaration, however, that such preliminary training in all its parts be obtained in some other institution of learning devoted, in whole or in part, to the education of women, or by private tuition.”

“The fund so contributed shall be invested and known as ‘The Women’s Medical School Fund,’ and that fund, and all interest to accrue thereon and all additions made thereto for the same purpose, shall remain invested for the purpose of increase only until, with its aid as a foundation, a general fund has been accumulated amounting to not less than $500,000, and sufficient for the establishment and maintenance of a Medical School worthy of the reputation of this University, and fully sufficient as a means of complete medical education. Then, and not until then, will a Medical School be opened by this University, and then, and not until then, will the gift now offered be used by this University; and then, and not until then, will the terms attached thereto be operative.”

“The utility of a training school for women nurses has been demonstrated by the experience and practice of the Johns Hopkins Hospital, and by the necessities of home life among our people.”

“This Board is satisfied that in hospital practice among women, in penal institutions in which women are prisoners, in charitable institutions in which women are cared for, and in private life, when women are to be attended, there are a need and place for learned and capable women physicians; and that it is the business and duty of this Board, when it is supplied with the necessary means for opening its proposed Medical School, to make provision for the training and full qualification of such women for the abundant work which awaits them in these wide fields of usefulness.”

“Nothing contained in this minute shall be construed as abridging, in any manner, the right of the Board of Trustees of the Johns Hopkins University to make such rules and regulations as they may deem necessary for the government of the School of Medicine, when it is organized; and in making such rules and regulations the terms of this minute shall always be respected and observed.”
Miss Mary Elizabeth Garrett, in order to make up the sum of $500,000, which the Board of Trustees required should be secured as an endowment before the Medical School of the University was opened, contributed to that fund the sum of $306,977, upon the following terms, which were agreed to by the Board of Trustees:

1. That women shall enjoy all the advantages of the Medical School of the Johns Hopkins University on the same terms as men to all the prizes, dignities or honors that are awarded by competition, examination, or regarded as rewards of merit.

2. That not more than $50,000 of the original endowment of $500,000 shall be expended on a building or buildings; and that in memory of the contributions of the Committees of the Women's Medical School Fund, this building, if there be but one, or the chief building, if there be more than one, shall be known as the Women's Fund Memorial Building.

3. That the Medical School of the University shall be exclusively a graduate school as hereinafter explained, that is to say: That the Medical School of the Johns Hopkins University shall form an integral part of the Johns Hopkins University, and like other departments of the University, shall be under the management and control of the Trustees of the said University, that it shall provide a four years' course, leading to the degree of Doctor of Medicine; that there shall be admitted to the School those students only who, by examination or by other tests equally satisfactory to the Faculty of the Medical School (no distinction being made in these tests or examinations between men and women), have proved that they have completed the studies included in the Preliminary Medical Course (Group Three, Chemical-Biological Course), as laid down in the University Register (but this condition is not meant to restrict the Trustees from receiving as hearers, but not as candidates for the degree of Doctor of Medicine, those who have received the degree of Doctor of Medicine, or its equivalent, in some school of good repute); and that the degree of Doctor of Medicine of the Johns Hopkins University shall be given to no Doctor of Medicine who has not proved by examination or by other tests equally satisfactory to the Faculty of the Medical School that he has completed the studies included in the Preliminary Courses, besides completing the course of instruction of the Medical School of the Johns Hopkins University.

The foregoing provision shall not be construed as restricting the liberty of the University to make such changes in the requirements for the admission to the Medical School of the Johns Hopkins University or to accept such equivalents for the studies required for admission to the school as shall not lower the standard of admission specified in this clause; provided that the requirements in modern languages other than English shall not be diminished, and provided also that the requirements in non-medical scientific studies shall include at least as much knowledge of natural science as is imparted in the three minor courses in science now laid down in its University Register, the subjects and arrangements of these scientific studies being subject to such modifications as may from time to time seem wise to its Board and to the Faculty of the Medical School, but being at all times the same for all candidates for admission. (For such requirements always see University Register.)

4. That the terms of this gift and the resolution of October 28, 1890, by which the Trustees accepted the gift of the Women's Medical School Fund, shall be printed each year in whatever annual calendars may be issued announcing the courses of the Medical School. (See appended resolutions.)

5. That there shall be created a committee of six women to whom the women studying in the Medical School may apply for advice concerning lodging and other practical matters, and that all questions concerning the personal character of women applying for admission to the School and all non-academic questions of discipline affecting the women studying in the Medical School shall be referred to this committee, and by them be in writing reported for action to the authorities of the University; that the members of this committee shall be members for life; that the committee, when once formed, shall be self-nominating, its nominations of new members to fill such vacancies as may occur being subject always to the approval of the Board of Trustees of the University.

6. That in the event of any violation of any or all of the aforesaid stipulations, the said sum of $306,977 shall revert to her, or such person or persons, institution or institutions, as she by testament or otherwise may hereafter appoint.

It will be observed that by the tenor of the foregoing terms no university course will be in any way modified by any conditions attached to her gift. These conditions relate exclusively to preparation for the Medical School, and have received, in the shape in which they are now presented, the unanimous approval of the Medical Faculty of the University.

The terms of admission to the Medical School of the University, as formulated and interpreted by the Medical Faculty of the University, February 4, 1893, and here subjoined, are therefore in entire accordance with the terms of her gift.

(Signed) MARY E. GARRETT
A course of four years' instruction will be provided leading to the degree of Doctor of Medicine.
To this course there will be admitted as candidates for the degree:

1. Those who have satisfactorily completed the Chemical-Biological course which leads to the A.B. degree in the University.

2. Graduates of approved colleges or scientific schools who can furnish evidence: (a) That they have a good reading knowledge of French and German; (b) That they have such knowledge of physics, chemistry and biology as is imparted by the regular minor courses given in these subjects in this University.

3. Those who give evidence by examination that they possess the general education implied by a degree in arts or in science from an approved college or scientific school, and the knowledge of French, German, physics, chemistry and biology already indicated.

By approved colleges and scientific schools are meant those whose standard for graduation shall be considered by this University as essentially equivalent to its standard for graduation in the undergraduate department.

It is to be understood that at least one year's study in the Chemical and Biological Sciences in their intermediate relation to medicine shall be required from students after their entrance to the Medical School.

* * *

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Mrs. Benjamin M. Baker, Jr.
Dr. Anne B. McKusick

Dr. Laura M. Mumford
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