

**Johns Hopkins**  
Plastic and  
Reconstructive  
Surgery

# Faculty of the Department of Plastic and Reconstructive Surgery



*Front row, from left:*

Gedge Rosson, Scott Lifchez, Anthony Tufaro, W. P. Andrew Lee, Richard Redett, Michele Manahan, Gerald Brandacher

*Back row, from left:*

Julie Caffrey, Chad Gordon, Anand Kumar, Justin Sacks, Amir Dorafshar, Jaimie Shores, Carisa Cooney, Giorgio Raimondi, Alex Rottgers, Damon Cooney

*Not pictured:*

Kristen Parker Broderick, Paul Manson, Stephen Milner, Nijaguna Prasad

*The Department of Plastic and Reconstructive Surgery at Johns Hopkins has been molded by more than a century of history and stands poised to contribute to medicine's next major advances.*

# From the Director

**S**INCE ITS LAUNCH FIVE YEARS AGO, the Department of Plastic and Reconstructive Surgery has been flourishing in size and scope. Our faculty numbers have more than doubled, our laboratories and clinical programs are impacting the field, and we continue to develop groundbreaking approaches and solutions by building on our interdisciplinary collaborations and forging new ones.

Five years ago, our team set out under a banner of “Teamwork, Collaboration, Mentorship and Innovation,” a motto that continues to guide our approaches today in patient care, resident and fellow training, and cutting-edge research.

Our 13 new clinical faculty members hail from 13 different residency programs, bringing with them complementary sets of skills and perspectives. In a spirit of lifelong curiosity and advancement, we learn from one another and offer our residents a wide array of professional styles and career pathway models.

*“We continue to develop groundbreaking approaches and solutions by building on our interdisciplinary collaborations and forging new ones.”*

Intentionally seeking synergy by building bridges with overlapping disciplines, we have developed clinical and/or research collaborations with dozens of departments. Our work alongside colleagues in ENT, Orthopaedics, Dermatology, Immunology, Transplant, Neurosciences, Psychiatry, Biomedical Engineering, Genetics, Rehabilitation, Hematology, Urology and Bioethics is changing the role of reconstruction and plastic surgery in the clinic, and contributing to scientific advancement in a variety of fields.

Our new Vascularized Composite Allotransplantation (VCA) Research Laboratory brings together investigations into transplant immunology, nerve regeneration and stem cell biology, supermicrosurgery, and regenerative medicine. The lab’s work made possible the first clinical protocol in VCA using minimal immunosuppression and shares its results worldwide in the new *VCA Journal*, which debuted in October 2014.

New clinical VCA programs in face, genitourinary system and abdominal wall are being established. Our team’s 2012 double-arm transplant represented a culmination of efforts by faculty surgeons, collaborators and researchers. This milestone, now immortalized in the illustrated 126-year history of The Johns Hopkins Hospital lining a main corridor of the hospital, formally put plastic surgery on the map of Johns Hopkins.

We are proud of our young department’s accomplishments and look forward to continuing to uphold our role in the institution’s venerable tradition for generations to come.



W. P. Andrew Lee, M.D.

*The Milton T. Edgerton, M.D., Director and Professor of Plastic and Reconstructive Surgery*



W. P. Andrew Lee

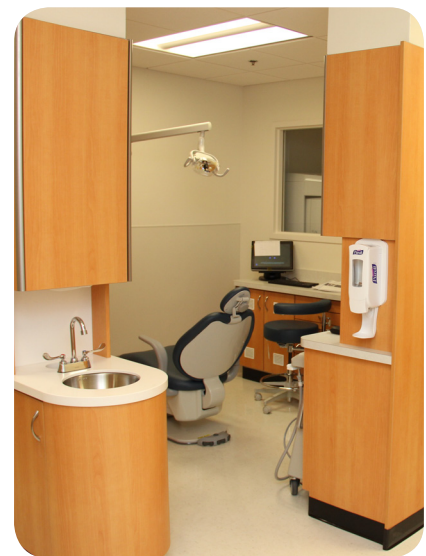
ANNIVERSARY

# Department of Plastic and Reconstructive Surgery: Looking Back on the Last Five Years

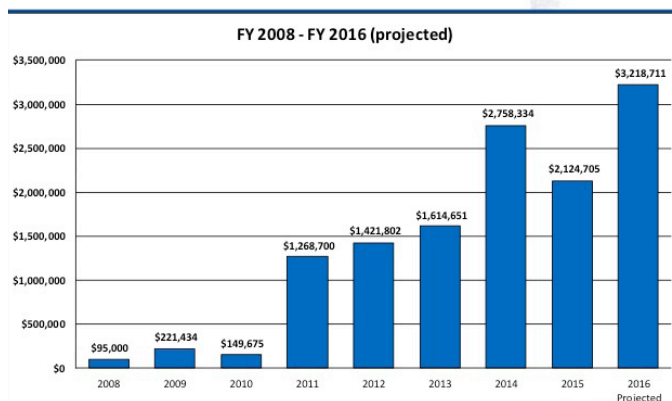
**I**N FIVE SHORT YEARS, the Department of Plastic and Reconstructive Surgery has grown from a modest-sized division to an independent, flourishing department that is second to none for scientific discovery and clinical advances. It has quickly developed a global reputation for its cutting-edge techniques, groundbreaking research and surgeons who are deeply driven to deliver the best possible care to their patients. **Highlights of those five years include:**



**A 2010 gift from Milton Edgerton**, the first full-time plastic surgery chief at Johns Hopkins, and the blue moon fund established the Milton T. Edgerton, M.D., Professorship and Directorship of Plastic and Reconstructive Surgery, held since then by department director W. P. Andrew Lee.



## Sponsored Research Funding

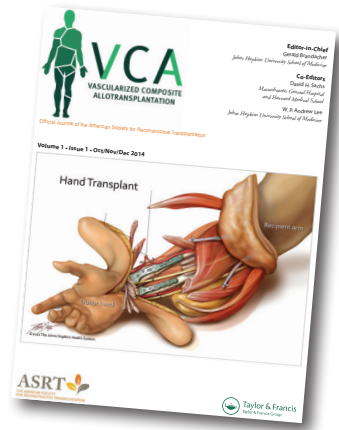


**A comprehensive research laboratory has been established** conducting scientific investigation in transplant immunology, regenerative medicine, cutaneous cancer biology and nerve research and stem cell biology. Laboratory personnel now include three full-time research faculty members and about 20 pre- and postdoctoral fellows and technicians. Departmental sponsored research funding has increased some 20-fold on an annual basis (see graph). This research support comes from a variety of government, foundation, industry and institutional sources. Department of Defense funds make up approximately 80 percent of the total, with NIH, multiple foundation and industry grants making up the balance.

In spring 2015, **the department opened a state-of-the-art craniofacial center and high-tech dental lab** to support the pediatric cleft and craniofacial program. The center will be capable of full digital imaging, planning and support of three-dimensional modeling.

**Over the past five years, the department has added one full professor, three associate professors and 10 assistant professors**, including the department's first faculty member at Johns Hopkins All Children's Hospital in St. Petersburg, FL.

In 2014, the **VCA Journal** was launched with **Gerald Brandacher**, scientific director of the reconstructive transplantation program, serving as editor-in-chief. The publication is the official journal of The American Society for Reconstructive Transplantation and chronicles advances in the field of vascularized composite allotransplantation.



Department faculty members **Chad Gordon, Damon Cooney and Amir Dorafshar** have been named recipients of the prestigious American Association of Plastic Surgeons Academic Scholarship Awards for three years in a row. The annual awards recognize young investigators deemed most likely to advance knowledge in their field. Award funds help them establish and support their own research laboratories.



The department has an expanded presence in clinical activities including Johns Hopkins Bayview Medical Center, Johns Hopkins Green Spring Station, Johns Hopkins White Marsh, Greater Baltimore Medical Center, Johns Hopkins Odenton, and All Children's Hospital (St. Petersburg, FL), in addition to its home base of The Johns Hopkins Hospital.

The past five years have seen the launch of several new department programs. These include Hand/Arm Transplant, Face Transplant, Non-breast Oncologic Reconstruction, Lymphedema and Penile Transplant. The penile transplant program was established after years of research and development of novel surgical techniques to better perfuse the graft and enhance nerve regeneration. It aims to restore genitourinary function in servicemen and civilians who have suffered devastating injuries to the pelvic region.



The reconstructive transplant team performed the nation's most extensive and complicated bilateral arm transplant in 2012 in a quadruple amputee soldier. That success laid the foundation for another above-elbow transplant, in 2015. The department's hand transplant surgeons have performed three of the four above-elbow transplants in the U.S. to date.

The ranks of residents in the combined Johns Hopkins/University of Maryland program have grown from 18 in 2010 to 30 in 2016 and will continue to grow. The shift from divisional to departmental status led to an expansion of services, programs and faculty, which provided more surgeries and clinical learning opportunities for residents. New postgraduate fellowships have been added in hand surgery and microsurgery to the existing craniofacial and burn programs, training a total of six fellows every year.



LYMPHOVENOUS BYPASS

# Improving Surgical Management of Lymphedema

**W**HEN PATIENTS EXPERIENCE LYMPHEDEMA, the most common treatment approach is the conservative route, reducing the swelling and discomfort with compression and massage therapy and/or diet modification. But some patients find greater relief with surgical management, which may include tissue removal, liposuction, lymph node transfer or the lesser-known lymphovenous bypass.

Five years ago, few were performing lymphovenous bypasses. Although the concept had existed for decades, the technology had not yet caught up to the procedure, which involves super-microscopic techniques and equipment. The procedure is now an outpatient one that reroutes the lymphatic system directly to the venous system, bypassing the damaged nodes and connecting the lymphatic channels directly into tiny, almost microscopic veins.

It can significantly reduce the swelling and, in some cases, return the limb to normal function.

“We’re excited about this technique because it can have the potential to help a lot of people with not a lot of downside for the patient,” says Damon Cooney, assistant professor of plastic and reconstructive surgery.

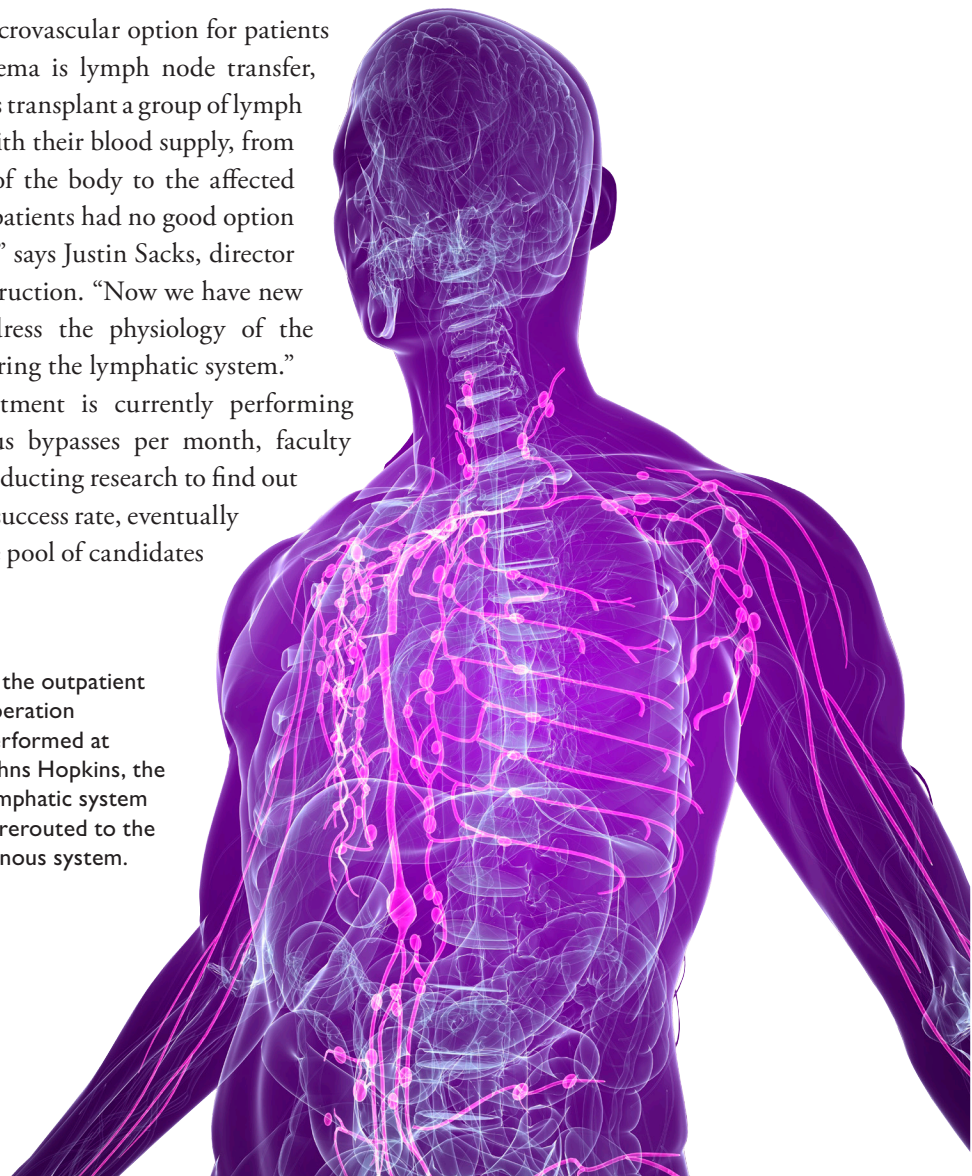
Another microvascular option for patients with lymphedema is lymph node transfer, where surgeons transplant a group of lymph nodes, along with their blood supply, from a healthy part of the body to the affected area. “For years, patients had no good option other than therapy,” says Justin Sacks, director of oncological reconstruction. “Now we have new techniques that address the physiology of the patient, literally rewiring the lymphatic system.”

While the department is currently performing several lymphovenous bypasses per month, faculty members are also conducting research to find out how to maximize its success rate, eventually hoping to expand the pool of candidates who could benefit.

In the outpatient operation performed at Johns Hopkins, the lymphatic system is rerouted to the venous system.



*“We’re excited about this technique because it can have the potential to help a lot of people with not a lot of downside for the patient.”*



## ONCOLOGIC RECONSTRUCTION

# Restoring Wholeness Through Reconstructive Surgery

## On the Forefront of Breast Reconstruction

The department's breast reconstruction program has taken on multiple initiatives. There's patient safety, where groups of nurses, physicians, allied health professionals, epidemiology and infection specialists, patient safety specialists, and administrators make up a CUSP team (Comprehensive Unit-based Safety Program) to generate ideas to improve patient care and bring down patient infection rates and lengths of stay. There's clinical research into the effects of radiation treatment on various breast reconstruction procedures and its impact on patient quality of life at various points along the process. There are advanced and technically demanding procedures like DIEP (deep inferior epigastric perforators) flap and fat grafting, also known as lipo-filling and fat-transfer, which help to rebuild the breast and surrounding areas following mastectomy and which are available widely only in select institutions.

"It's important for us to be leaders in making the patient experience and patient care world-class," says Gedge Rosson, director of breast reconstruction and the microsurgery fellowship program.

Amid all this innovation, what remains perhaps most unique is the department's ongoing commitment to personalizing the experience for patients. It's not just about the ability to provide the most advanced techniques, but about getting to know every patient and matching each with the reconstruction that best fits his or her own life circumstances and recovery expectations, says Michele Manahan, the department's director of patient safety.

"Our role is to rebuild to what a patient wants to be," Manahan says. "It's like fashion: what one person thinks is pretty, another doesn't. We find out a patient's wants and goals and apply our technology and skills to that."

## Restoring Form and Function: Oncologic Reconstruction

Oncologic reconstruction is the epitome of a team effort. Plastic surgeons collaborate with a multitude of other specialists, supporting the most appropriate oncologic treatment with cutting-edge reconstructive techniques. The goal is patient outcomes that maximize both form and function.

*"You're getting the most sophisticated cancer surgery known to man."*

As any surgeon knows, when resecting a tumor, it's often impossible to avoid nerves, bone and muscle. In some cases, the tumor could not be removed unless surgical oncologists can count on reconstructive surgeons to rebuild what they must destroy.

So with plastic surgeons at the table from the start, each procedure is planned and executed to ensure that patients with cancer leave not just free of the disease, but also at their highest possible level of physical functioning.

Plastic surgery team members at Johns Hopkins attend regular tumor board and multidisciplinary clinic meetings to discuss cases with their interdepartmental colleagues. For example, when a patient presents with a sarcoma that's invading the spinal cord, the physicians plan the resection that will best address removal of the tumor and simultaneously devise the reconstruction of the affected bone, muscle, tissue and blood vessels. The reconstructive team regularly collaborates with colleagues in urology, vascular surgery, surgical oncology, orthopaedic oncology, neurology, radiation oncology, gynecology, and physical medicine and rehabilitation, combining the highest level of cancer treatment with the most advanced surgical and microsurgical techniques.

This approach treats the disease while preserving, or even enhancing, the patient's wholeness, says oncological reconstruction director Justin Sacks.

The department has made interdepartmental collaboration a centerpiece of its oncologic reconstruction efforts, and some faculty members consider it the essence of their work.

"You're getting the most sophisticated cancer surgery known to man," Sacks says.



RECONSTRUCTIVE TRANSPLANT

# Exploring the Vanguard of Transplantation: Hand, Face and Urogenital

IN A SPAN OF JUST FIVE YEARS, the department has protocols approved and in place for hand, face and penile transplants—an indication of just how quickly its transplant portfolio has grown, and how the entire field has evolved.

“Transplant is now accepted as a bona fide tool to restore both form and function in patients with devastating damage and tissue loss,” says Gerald Brandacher, scientific director of the reconstructive transplantation program.

## Hand Transplant

Two patients in particular illustrate the dramatic effect reconstructive transplantation can have. Brendan Marrocco, severely injured in a 2009 roadside bomb attack in Iraq, was the first American soldier to survive losing all four limbs on the battlefield. In 2012, department surgeons led one of the nation’s most extensive and complicated bilateral arm transplants to give Marrocco two new arms. Today, he drives a truck, performs all activities of daily living and is preparing to move into his own home.

“That represents independence, freedom and quality of life,” says Jaimie Shores, clinical director of the arm/hand transplant program. “He’s given us great hope for what people are capable of accomplishing after these transplants.”

Marrocco’s progress laid the foundation for the department to complete another above-elbow transplant in June 2015. The patient was a man who’d fallen from a hotel balcony; during the fall, his arm tore off near the shoulder. The team expects substantial return of elbow strength and motion and meaningful return of hand function, Shores says.

Along with the painstaking skills and techniques required to prepare tissue, bone, muscle, blood vessels and nerves to support a transplant, what has allowed the program to move forward so dramatically is the minimal immunosuppression protocol its faculty members have been developing over the last two decades. Shifting between Brandacher’s lab and the clinic for innovations and adjustments, the protocol uses donor bone marrow to shrink the typical three-medication immunosuppressive protocol down to just one drug. Ongoing preclinical large animal models suggest it may be possible to remove the remaining medication after one month of treatment, eliminating the need for a lifelong regimen altogether.

“We’ve been pioneers in the field in regard to decreasing the burden of immunosuppression in patients getting transplants. We’re making excellent progress with the protocol,” Shores says.

Besides representing a significant leap for the field, the protocol also has the potential to increase the pool of candidates for hand transplantation. And there is no reason, once fully proven, that it can’t translate to solid organ transplant, opening up brand-new possibilities for kidney, heart and liver patients.



*“Transplant is now accepted as a bona fide tool to restore both form and function in patients with devastating damage.”*



*“It’s like GPS for face transplant.”*



### Face Transplant

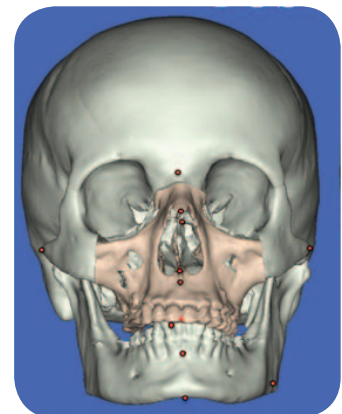
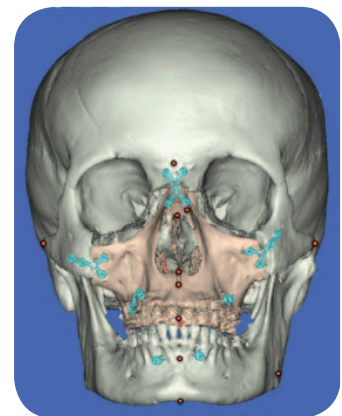
Since the world’s first face transplant in 2005, only nine have been completed in the U.S. and 35 worldwide. Given the complexity of the procedure, facial transplantation has been limited to patients with severe facial deformities. Following the success of the arm/hand transplant program, a multidisciplinary team at Johns Hopkins, including plastic and reconstructive surgeons, ENT surgeons, oculoplastic surgeons, and critical care and anesthesiologists, has been preparing for face transplants.

“A critical aspect of our facial transplant program is the collaborative effort of these different specialties coming together, providing their expertise, and forming the very best that Johns Hopkins Medicine offers for our potential recipients,” says Amir Dorafshar, clinical co-director of the Face Transplant Program.

The multidisciplinary team has identified a potential recipient and recently trained surgeons from various backgrounds to work cohesively in a synchronized fashion to perform one of the largest transplants to date, Dorafshar says. Working in close collaboration with the Johns Hopkins Applied Physics Laboratory and Walter Reed National Military Medical Center, the team will use the latest technology—customized cutting templates with three-dimensional tracking, along with real-time cephalometry—to guide surgeons as they cut and attach face-jaw-teeth segments to ensure optimal positioning and functionality of the transplant, says Chad Gordon, clinical co-director of the Face Transplant Program and Multidisciplinary Adult Cranioplasty Center. This patent-pending technology is designed to minimize the follow-up revision surgeries common in the past, when surgeons had no way of knowing which microscopic bone cuts, measurements and angles would maximize functionality until the surgery was complete.

“It’s like GPS for face transplant,” Gordon says. “If you get into a traffic jam based on unexpected findings and need a detour to get someplace better, quicker and safer, you simply hit adjust. That’s what we have now. You just click to see if you’re doing the right job, or if you need to adjust the plan on the fly.”

The team is looking forward to putting its preparation into action. “Our teams are trained and ready,” Dorafshar says. “We have put into place the necessary infrastructure and team-oriented framework for many other face transplants to come. Using the unique immune modulation protocol with minimal immunosuppression, the team is ready to broaden the pool of candidates who could benefit not only from face transplant, but also eyelid, nose or lip transplants.”



IMAGES REPRODUCED FROM:  
MURPHY RJ, ET AL. *PLAST RECONSTR SURG* 2015

Frontal three-dimensional reconstruction of the human cadaver recipient post-facial transplantation (top) using real-time cephalometry and computer-assisted technology versus the planned outcome (bottom). Of note, the red dots denote the measured landmark positions used for cephalometric analysis and technology development.

RECONSTRUCTIVE TRANSPLANT

# Exploring the Vanguard of Transplantation: Hand, Face and Urogenital

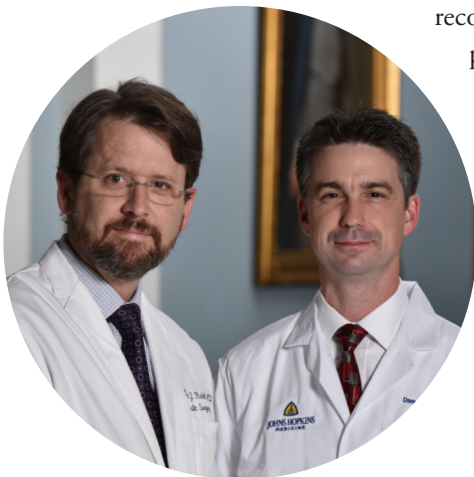
## Urogenital Transplant

Following the success of their upper extremity reconstructive transplants, faculty members began planning to transplant a penis—something that has been attempted only twice in the world. In particular, they were hoping to benefit soldiers injured by roadside bombs, who sometimes experience damage in pelvic areas not covered by traditional body armor, and who often sustain such extensive additional injuries that surgeons are hard-pressed to find the donor sites necessary for conventional penile reconstruction.

But the literature indicated that after a penis is sewn back on following a traumatic cut, the penis generally survives, but the skin dies. Enter resident physician Sami Tuffaha, whose untold hours studying the problem in the lab were rewarded by the discovery of a previously unknown blood vessel leading from the femoral artery to supply the shaft skin. “When there’s so much tissue, you need this vessel to make it work. No one knew this vessel even existed two and a half years ago,” says Richard Redett, director of the Pediatric Plastic and Reconstructive Surgery and Johns Hopkins Cleft Lip and Palate Center.

Armed with this new finding, Redett’s 15 years of experience doing complex urogenital reconstructions on children, the promise of minimal immunosuppression and perhaps the most experienced reconstructive transplant program in the country, faculty members have been practicing all the details of the procedure. With the collaboration of specialties, including urology, psychiatry and psychology, bioethics, and transplant immunology, the team hopes to complete the first penile transplant in the near future.

“You can only imagine the impact a penile amputation would have on a young man in his early 20s, who’s been serving overseas and returns from service to the civilian world and all prospects of a normal social and sexual life have been taken away from him,” says reconstructive surgeon Damon Cooney. “We want to do whatever we can to help him return to manhood and wholeness, and also urinary and sexual function.”



*“We want to do whatever we can to help him return to manhood and wholeness, and also urinary and sexual function.”*

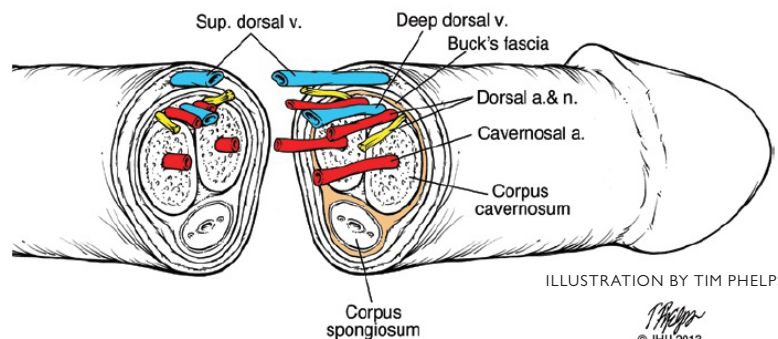


ILLUSTRATION BY TIM PHELPS

© JHU 2013

Illustration depicting penile transplantation

## JOHNS HOPKINS PLASTIC AND RECONSTRUCTIVE SURGERY

## Faculty

**W. P. Andrew Lee, M.D.**

*The Milton T. Edgerton, M.D., Professor and Director Department of Plastic and Reconstructive Surgery*  
**MD:** Johns Hopkins University School of Medicine

**General surgery**

**residency:** The Johns Hopkins Hospital

**Plastic surgery residency:** Massachusetts General Hospital

**Hand surgery fellowship:** Indiana Hand Center

**Expertise:** hand transplant; immune modulation; hand and upper extremity surgery

**Accomplishments:** Distinguished Alumnus Award by Johns Hopkins University (2015); Research Achievement Award for Basic Research from the American Association of Plastic Surgeons (2014); the Andrew J. Weiland Medal for Outstanding Research from the American Society for Surgery of the Hand (2014); led the surgical team that performed the nation's first double-hand transplant in 2009 and the first trans-humeral transplant in 2010; chair of Plastic Surgery Research Council (2001-2); president of the American Society for Surgery of the Hand (2011-12); chair of the American Board of Plastic Surgery (2012-13); president of American Society of Reconstructive Transplantation (2014-16)

**Gerald Brandacher, M.D.**

*Scientific Director, Vascularized Composite Allotransplantation Program Associate Professor of Plastic and Reconstructive Surgery*  
**MD:** School of Medicine, Leopold Franzens University, Innsbruck, Austria

**General and transplant surgery residency:** Innsbruck Medical University, Austria

**Expertise:** vascularized composite allotransplantation (VCA); solid organ transplantation; transplant immunology  
**Accomplishments:** helped design a novel, cell-based immunomodulatory treatment protocol for VCA; member of the team performing the first bilateral hand transplant and first forearm transplant in the U.S.; research on donor-specific immune tolerance and immunomonitoring strategies for hand and face transplant; chair of the American Society of Transplantation VCA Advisory Council, chair of VCA Committee of the European Society of Organ Transplantation, treasurer of American Society of

Reconstructive Transplantation; co-founder and Editor-in-Chief Vascularized Composite Allotransplantation (VCA) journal; selected as a "Fellow of the American Society of Transplantation (FAST)" (2015)

**Kristen Parker Broderick, M.D.**

*Assistant Professor of Plastic and Reconstructive Surgery*  
**MD:** Texas A&M University

**General surgery**

**residency:** University of North Carolina Hospital

**Plastic surgery residency:**

New York Presbyterian Hospital Weill Cornell/Columbia

**Breast reconstruction fellowship:**

Washington University St. Louis

**Expertise:** breast reconstruction, cosmetic breast surgery, microvascular reconstruction, body contouring

**Accomplishments:** numerous clinical and leadership awards and recognitions

**Julie Caffrey, D.O., M.S.**

*Assistant Professor of Plastic and Reconstructive Surgery*  
**DO:** Philadelphia College of Osteopathic Medicine  
**MS:** Philadelphia College of Osteopathic Medicine

**General surgery**

**residency:** Flushing

Hospital Medical Center

**Burn Fellowships:** Westchester Medical Center and The Johns Hopkins University

**Expertise:** adult and pediatric acute burn injury, burn reconstruction, laser therapy for post-burn scar contractures and hypertrophic scarring, surgical management of hidradenitis suppurativa

**Accomplishments:** researching laser therapy for hypertrophic scarring after burn injury, establishing educational curriculum in burn

**Carisa Cooney, M.P.H., C.C.R.P.**

*Assistant Professor of Plastic and Reconstructive Surgery and Clinical Research Manager*

**BA:** Kenyon College; Gambier, OH

**MPH:** University of Illinois; Springfield, IL

**Expertise:** clinical research on abdominal surgery wound therapy, vascularized composite allo-transplantation (VCA), and breast reconstruction outcomes; enhancement of resident physician education

**Accomplishments:** original publications and ongoing research grants on improving patient outcomes after plastic and reconstructive surgery and on enhancing residency training

**Damon S. Cooney, M.D., Ph.D.**

*Assistant Professor of Plastic and Reconstructive Surgery*

**MD:** University of Oklahoma Health Sciences Center

**PhD:** Ohio State University

**Plastic surgery residency:** Southern Illinois University

School of Medicine

**Microsurgery fellowship:** University of Pittsburgh Medical Center

**Expertise:** general plastic surgery; microvascular reconstruction after breast cancer, head and neck cancer and trauma; hand surgery; reconstructive transplantation

**Accomplishments:** research on vascularized composite allo-transplantation (VCA); engineering human tissues for reconstructive purposes and nerve regeneration; microsurgical education; hand, face, and penile transplantation clinical trials

**Amir H. Dorafshar, M.B.Ch.B.**

*Associate Professor of Plastic and Reconstructive Surgery Clinical Co-Director, Face Transplant Program*

**MBChB:** University of Manchester, United Kingdom

**General surgery**

**residency:** University of Chicago Medical Center

**Plastic surgery residency:** University of Chicago Medical Center

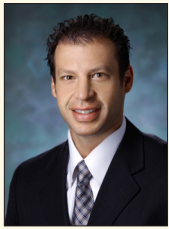
**Vascular surgery research fellowship:** University of California Los Angeles

**Craniofacial surgery and microsurgery fellowship:** The Johns Hopkins Hospital and R Adams Cowley Shock Trauma Center

**Expertise:** microvascular reconstruction; adult and pediatric craniofacial surgery for congenital, oncological and traumatic conditions; facial reanimation; orthognathic surgery; aesthetic facial plastic surgery

**Accomplishments:** House of Delegates and Senate of Maryland recognition for full-face transplant; Best Clinical Paper Award and Best Normal Case Award by the World Society of Reconstructive Microsurgery and the American Society of Reconstructive Transplantation for total face, double jaw and tongue transplantation; Academic Scholar Award from the American Association of Plastic Surgeons

**Chad R. Gordon, D.O.**



*Assistant Professor of Plastic and Reconstructive Surgery and Neurosurgery  
Associate Editor, Journal of Craniofacial Surgery and Annals of Plastic Surgery  
Clinical Co-Director, Face Transplant Program*

*Co-director, Multidisciplinary Adult Cranioplasty Center*

**DO:** Philadelphia College of Osteopathic Medicine

**General surgery residency:** UMDNJ/Robert Wood Johnson Medical School

**Plastic surgery residency:** Cleveland Clinic

**Craniofacial and aesthetic surgery fellowship:** Harvard Medical School/Massachusetts General Hospital

**Expertise:** craniomaxillofacial surgery; cranioplasty; face transplant; computer-assisted craniomaxillofacial surgery; cosmetic facial surgery

**Accomplishments:** research on computer-assisted technologies to improve functional outcomes in facial transplantation and cranioplasty reconstruction; team member and project coordinator for nation's first face transplant (2008); JHU Institute for Clinical and Translational Research (ICTR)/Accelerated Translational Incubator Pilot (ATIP) Program Award; Academic Scholar Award, American Association of Plastic Surgeons; Abell Foundation Award recipient; Maryland Innovation Initiative (MII) TEDCO Research Award

**Anand Kumar, M.D.**



*Associate Professor of Plastic and Reconstructive Surgery and Pediatrics  
Director of Pediatric Craniofacial Surgery  
Director of Craniofacial Surgery Fellowship*

**MD:** Albert Einstein College of Medicine

**General surgery residency:** Mayo Clinic

**Plastic surgery residency:** UCLA

**Pediatric plastic/craniofacial surgery fellowship:** UCLA

**Military:** United States Navy, Commander (ret.), Walter Reed National Military Medical Center

**Expertise:** craniosynostosis, neonatal distraction, pediatric and adult sleep apnea surgery, orthognathic surgery, pediatric and adult craniofacial reconstruction, craniomaxillofacial surgery, pediatric trauma

**Accomplishments:** established the stem cell therapeutics laboratory to develop cellular based treatments for bone and muscle regeneration using muscle derived stem cell (MDSCs); developed the new comprehensive center for pediatric craniofacial anomalies; Vice President of Communications, American

Society of Maxillofacial Surgeon; Member at Large, American Association of Pediatric Plastic Surgeons

**Scott D. Lifchez, M.D.**



*Associate Professor of Plastic and Reconstructive Surgery  
Program Director, Plastic Surgery Residency Program*

**MD:** University of Illinois College of Medicine at Chicago

**Plastic surgery residency:**

Medical College of Wisconsin

**Hand surgery fellowship:** Curtis National Hand Center, Union Memorial Hospital

**Expertise:** hand and upper extremity surgery; peripheral nerve reconstruction; resident education and assessment

**Accomplishments:** co-inventor of the Operative Entrustability Assessment and Mile Marker assessment tools

**Michele A. Manahan, M.D.**



*Assistant Professor of Plastic and Reconstructive Surgery*

**MD:** Johns Hopkins University School of Medicine

**General surgery residency:**

The Johns Hopkins Hospital

**Plastic surgery residency:**

The Johns Hopkins Hospital

**Expertise:** microvascular and other breast reconstruction with oncoplastic techniques and aesthetics; general reconstructive surgery of face, trunk, limbs; comprehensive aesthetic surgery

**Accomplishments:** Harvard University summa cum laude graduate; Phi Beta Kappa Honor Society member; Alpha Omega Medical Honor Society member; Maryland State Medical Association House of Delegates Speaker; American Society of Plastic Surgeons Patient Safety Committee Chair and Breast Reconstruction Performance Measures

Development Taskforce Chair; American Society for Aesthetic Plastic Surgery Women Physicians Section AMA representative, Johns Hopkins Hospital Service Excellence Star, research on clinical outcomes and patient safety

**Paul N. Manson, M.D.**



*Professor of Plastic and Reconstructive Surgery*

**MD:** Northwestern University Medical School

**General surgery**

**residency:** Harvard (Fifth Surgical Service

**Plastic surgery residency:**

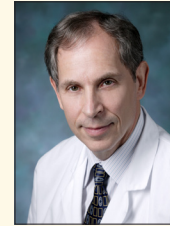
The Johns Hopkins Hospital

**Expertise:** craniomaxillofacial surgery; trauma and cancer reconstruction

**Accomplishments:** developed approaches to open reduction of facial fractures and designed rigid fixation systems for functional

and aesthetic reconstruction of facial defects from trauma and cancer; led the Division of Plastic Surgery during 1990–2010 and educated a generation of students, residents and fellows, awarded Distinguished Service Professor of Surgery by Johns Hopkins University School of Medicine. Past president of AO Foundation, American Association of Plastic Surgeons (Honorary Award, Clinician of the Year), American Association of Program Directors in Plastic Surgery, American Society of Maxillofacial Surgeons (Converse and Kazanjian Lectures)

**Stephen M. Milner, M.D., D.D.S., F.R.C.S. (Ed)**



*Professor of Plastic and Reconstructive Surgery, Dermatology, and Pediatrics.  
Director, Johns Hopkins Burn Center. Professor, Bloomberg School of Public Health.  
Director, Michael D Hendrix Burn Research Center.*

*Adjunct Professor Uniformed Services University of the Health Sciences and formerly Honorary Civilian Consultant Advisor to the British Army in Plastic Surgery and Burns*

**MD and DDS:** Guy's Hospital Medical and Dental Schools, London

**General surgery residency:** Guy's Hospital London, The Royal London Hospital Massachusetts General Hospital

**Plastic surgery residency:** University of Texas Medical Branch at Galveston

**Expertise:** acute and reconstructive burn surgery; major wound reconstruction

**Accomplishments:** Miller-Caulson Academy of Excellence; James R. Jordan Foundation Humanitarian Award; The Sushruta-Guha Lectureship and medal in Plastic Surgery from the Royal College of Surgeons of Edinburgh; authored 120 peer review articles and founding editor of *ePlasty*

**Nijaguna Prasad, M.Sc., Ph.D.**



*Assistant Professor of Plastic and Reconstructive Surgery*

**MSc:** University of Mysore, India

**PhD:** University of Mysore, India

**Postdoctoral training:**

National Human Genome Research Institute, National Institutes of Health

**Expertise:** basic and clinical research related to endocrine cancer (multiple endocrine neoplasia 1, pancreatic cancer and thyroid cancer) and post-transplant malignancies including cutaneous squamous cell carcinoma

**Accomplishments:** authored numerous peer-reviewed publications, including cover-page featured articles; recipient of 2013 Bernard G. Sarnat Award for excellence in grant writing

**Giorgio Raimondi, Ph.D.**

*Assistant Professor of Plastic and Reconstructive Surgery*

**MS:** University of Milano-Bicocca, Milan, Italy and Institute Pasteur, Paris, France

**PhD:** University of Milano-Bicocca, Milan, Italy

**Expertise:** immunology of vascularized composite allotransplantation (VCA) and solid organ transplantation; T cell and regulatory T cell biology; design of strategies for immunomodulation

**Accomplishments:** defined clinically relevant mechanisms of tolerance induction in the adaptive immune system; designed T cell-targeted therapies (cell transfer and bioengineering—nanoparticle based—approaches) to control transplant rejection

**Richard J. Redett, M.D.**

*Associate Professor of Plastic and Reconstructive Surgery and Pediatrics  
Clinical Director, Penile Transplant Program*

**MD:** Dartmouth Medical School

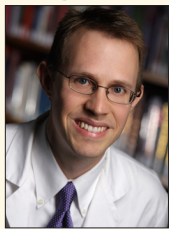
**Plastic surgery residency:**

The Johns Hopkins Hospital

**Pediatric plastic surgery fellowship:** Hospital for Sick Children, Toronto

**Expertise:** pediatric and adult craniofacial reconstruction; craniomaxillofacial surgery; pediatric burns and trauma; facial paralysis; facial reanimation; peripheral nerve injury; complex genital reconstruction

**Accomplishments:** research on nerve regeneration; scientific papers and book chapters on pediatric reconstructive surgery; heads a multidisciplinary team of specialists treating children with cleft lip and palate; member of the Miller Coulson Academy of Clinical Excellence

**Gedge D. Rosson, M.D.**

*Associate Professor of Plastic and Reconstructive Surgery and Oncology  
Director of Breast Reconstruction, Microsurgery Fellowship Program Director  
Johns Hopkins Health Care Special Credentialing*

*Committee chair; co-chair, Johns Hopkins Hospital Risk Management Committee*

**MD:** New York Medical College

**General surgery residency:** The Johns Hopkins Hospital

**Plastic surgery residency:** The Johns Hopkins Hospital

**Peripheral nerve surgery fellowship:** Dellon Institute for Peripheral Nerve Surgery

**Expertise:** microvascular reconstruction after breast cancer; peripheral nerve surgery; reconstruction of the head & neck, breast, abdomen, pelvis and extremities; lymphedema; cosmetic surgery

**Accomplishments:** pioneered preoperative mapping of abdominal perforators using 64-slice multidetector 3-D CT scan angiograms; patient reported outcomes and patient safety research; conducting placebo-controlled, blinded study to decrease pain from mastectomy with tissue expander surgery

**S. Alex Rottgers, M.D.**

*Assistant Professor of Plastic and Reconstructive Surgery*

**MD:** Baylor College of Medicine

**Plastic surgery residency:** University of Pittsburgh Medical Center

**Craniofacial surgery**

**fellowship:** Boston Children's Hospital, Harvard Medical School

**Expertise:** Craniofacial surgery, cleft lip/palate, orthognathic surgery, ear reconstruction, vascular anomalies, microsurgery

**Accomplishments:** Paul Black Junior Investigator Award for research into the mechanisms of craniosynostosis (2011); American Society of Maxillofacial Surgeons (2010) and Plastic Surgery Foundation (2011) research grant recipient

**Justin M. Sacks, M.D.**

*Assistant Professor of Plastic and Reconstructive Surgery  
Director, Oncological Reconstruction*

**MD:** Mount Sinai School of Medicine

**General surgery residency:** Mount Sinai Hospital

**Plastic surgery residency:** Mount Sinai Hospital

**Plastic surgery research fellowship:** University of Pittsburgh Medical Center

**Hand and upper extremity fellowship:** University of Pittsburgh Medical Center

**Microvascular reconstructive surgery fellowship:** University of Texas MD Anderson Cancer Center

**Expertise:** microvascular reconstruction; reconstruction of the face, breast, chest, abdomen, pelvis and extremities; cosmetic surgery; lymphatic surgery

**Accomplishments:** research on modalities to induce tolerance in composite tissue allografts such as the face, hand and abdominal wall; research on near infrared laser angiography to assess vascular and lymphatic perfusion; research on tissue engineering

**Jaimie T. Shores, M.D.**

*Assistant Professor of Plastic and Reconstructive Surgery and Orthopaedic Surgery  
Clinical Director, Hand and Upper Extremity Transplantation*

*Program Director, Hand and Upper Extremity Surgery*

*Fellowship*

**MD:** University of New Mexico School of Medicine

**Plastic surgery residency:** Loma Linda University

**Hand and upper extremity fellowship:** University of Pittsburgh Medical Center

**Expertise:** peripheral nerve surgery including complex reconstruction; hand, wrist and upper extremity surgery; microvascular reconstruction; hand and upper extremity transplantation

**Accomplishments:** one of the largest experiences in hand and arm transplant in the U.S.; founding member of the Johns Hopkins Center for Upper Extremity Restoration (performing transplantation and targeted muscle reinnervation); VCA and peripheral nerve regeneration research; principal investigator of multi-center prospective study on peripheral nerve repair and reconstruction; clinical research in wrist fracture repair and biomechanics utilizing Dynamic (4D) CT

**Anthony P. Tufaro, M.D., D.D.S.**

*Associate Professor of Plastic and Reconstructive Surgery and Oncology*

**MD:** Hahnemann University School of Medicine

**DDS:** New York University College of Dentistry

**Oral and maxillofacial**

**surgery residency:** Nassau County Medical Center

**General surgery residency:** The Johns Hopkins Hospital

**Plastic surgery residency:** The Johns Hopkins Hospital

**Head and neck surgery fellowship:** Memorial Sloan-Kettering Cancer Center

**Expertise:** cutaneous, head and neck, chest wall, and endocrine malignancies; craniomaxillofacial and general reconstruction; oral and maxillofacial surgery.

**Accomplishments:** Alpha Omega Alpha Medical Honor Society member, Recipient of the Resident Teaching award (2013, 2014, 2015), Recipient of the Master Surgeon Award (The Golden Hand), Recipient of the American College of Surgeons Health Policy Scholarship. Established, and PI, Tumor Biology research lab that elucidated a novel gene signature of aggressive squamous cell carcinomas

## RESIDENCY HIGHLIGHTS

# The Evolution and Expansion of Our Residency Program

JUST AS THE DEPARTMENT HAS EXPANDED IN SIZE over its five years of existence, so has its residency program. Now host to 29 physicians—one of the largest plastic surgery residency programs in the country—the program has also expanded in breadth, depth and technological innovation.

By combining forces with several university and local hospitals and community practices, the program gives residents experiences across the state of Maryland and the national capital region to offer them the broadest perspective possible. In addition to placements throughout the Johns Hopkins Health System and University of Maryland Medical System, the program has long offered opportunities at Union Memorial’s Curtis Hand Center, Suburban Hospital and Walter Reed National Medical Center. More recent additions include St. Agnes Hospital and the Dellon Institute, and All Children’s Hospital in St. Petersburg, Florida, will soon join that list.

“One of the things we pride ourselves on is that we’re able to give our residents the full scope of experience in anything interesting in plastic surgery happening statewide,” says Scott Lifchez, director of the residency program.

The program is also one of just a few in the country offering a full spectrum of cutting-edge research opportunities. Physicians in the Integrated Residency Program spend their third year in the lab performing basic science research in areas related to plastic surgery, such as transplantation, tissue engineering, immunology and cancer biology.

At the same time, the residency program is committed to maintaining the coherence and intimacy physicians depend on to develop the professional and personal networks that will follow them throughout their careers. “These are your peers who will be your friends and colleagues going forward. We make sure we ensure cohesion among our large group of residents,” Lifchez says.

## Day-to-Day, Comprehensive Assessment of Our Residents

When the Accreditation Council for Graduate Medical Education established its residency milestone system—a set of accomplishments each trainee must meet along the way—two years ago, the department decided to implement the system with a day-to-day assessment. After every procedure, attending physicians use an evaluation tool that department faculty members designed to rate residents with numerical scores grouped by body area. Residents benefit by receiving immediate feedback on their knowledge and technique. Attendings benefit by having 100 or more data points on each trainee in hand when the time comes to measure the residents against the official milestones every six months, helping them to complete a fair and representative assessment in just 8.25 minutes on average, down from more than an hour per trainee without the system. Residents can also use the database to track their progress over time and compare their performance to their peers’.

Now the department has employed a \$100,000 grant from the Maryland Innovation Initiative to create a user-friendly, cloud-based version of the assessment system so that other institutions that learned about the department’s system during national meetings can apply it with their residents. The database is also adaptable to other specialties.

Lifchez says the system has the potential to help residency programs meet ACGME requirements without distraction from their primary mission. “It allows you to do what your real job as a surgeon is to do—take care of patients and teach residents as you do it,” he says.

## RESIDENCY HIGHLIGHTS

# One Resident's Experience

Joey Lopez shares his perspective on the Integrated Residency Program

**W**HEN JOEY LOPEZ ENTERED THE DEPARTMENT'S Integrated Residency Program after graduating from Harvard Medical School three years ago, he had no idea he'd find craniofacial surgery so captivating that he'd select it as a future area of focus.

It was the program's breadth of surgical experiences that helped him choose. In-depth exposure to pediatric and oncology specialties at The Johns Hopkins Hospital, adult facial trauma at Maryland Shock Trauma, body contouring at the University of Maryland, and hand specialties at Johns Hopkins Bayview Medical Center and Curtis Hand Center gave him experiences with preeminent leaders in the field not typically available to residents, Lopez says.

The experiences represent the department's unparalleled investment in surgical education, he says. This is reinforced by a faculty support system that encourages input into residency issues and concerns, and through attending physicians who walk the exquisite line between autonomy and direct teaching in the OR. "We have the opportunity to learn hands-on very early in our training, but our faculty provide enough supervision that it optimizes both patient safety and our learning," Lopez says.

Drawn to research in transplant immunology and tissue regeneration, Lopez has found mentors who are helping him explore the field and showing him how to unite his academic interests with surgical practice. The opportunity to hone his scientific intellect, he says, is defining his lifelong approach to the field: asking questions, developing hypotheses and testing them, whether in the lab or the OR.

"The program has shaped me into a surgeon who takes a very scientific approach to everything," Lopez says. "By taking our intellectual curiosity and fostering that here, it really improves our ability to ask questions and think outside the norm when approaching problems. What sets this program apart is the way it really encourages us, beyond learning how to operate, to become good scientists and good researchers."

*"We have the opportunity to learn hands-on very early in our training, but our faculty provide enough supervision that it optimizes both patient safety and our learning."*



