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Dear Friends:

The year 2009, has been exciting and filled with many discoveries, clinical advances, and financial challenges. In October 2009, The Department of Neurology celebrated 40 years since its founding by Guy McKhann in 1969, and has adopted this mission statement:

***Johns Hopkins Neurology: Caring to Cure***

For the 19<sup>th</sup> consecutive year the Johns Hopkins Hospital was again ranked first in the country in the *U. S. News and World Report* annual survey. The magazine's annual American Best Hospital's guide also ranked the Johns Hopkins Neurosurgery and Neurology Departments as second best in the nation.

In this letter, I want to highlight some of the many accomplishments in the past year. These endeavors have been contributed to by many people and have been achieved through the outstanding team effort found in the Department of Neurology.

Thank you for your part in this progress. Your support allows us to be clinicians and scientists, and to be able to focus on finding new cures and providing the best care to neurology patients.

I owe a sincere debt of thanks to all of the division directors, to the department's executive leadership group, and to our development and administration team. Their efforts and advice, combined with your philanthropy has brought this remarkable department to where we are today, and will lead us in new and exciting directions. It is an invaluable partnership and one that clearly works superbly well as the following pages bear out.

**FULFILLING OUR MISSION**

**Clinical and Patient Care**

**Our inpatient service** has been rejuvenated by initiating a hospitalist model, staffed by faculty who are particularly adept at providing care in the 'pressure cooker' atmosphere that typifies acute care neurology. Our inpatient units at Johns Hopkins have addressed critical safety initiatives and improved patient satisfaction in several areas—most notably achieving a reduction in the number of falls and medication errors.

The new alliance with **Suburban Hospital** located in Bethesda Maryland will improve access for our patients and expand our research collaborations for the development of clinical neurosciences programs located there.

Clinical services have been re-established at **Greenspring Station** and will be expanding further in the months to come.

With Charlene Gamaldo and investigators of the **Johns Hopkins Sleep Center** Romer Geocadin is studying the patterns of sleep in the **Neurosciences Critical Care Unit (NCCU)** to define the contributions of sleep recovery to brain recovery. The NCCU team is also developing early rehabilitation approaches which will not only hasten recovery but will reduce complications.

## Research Highlights

**Peter Calabresi, M.D.**, was awarded a five year collaborative center grant from the National MS Society to study mechanisms of neurodegeneration and strategies for neuroprotection in Multiple Sclerosis. He has also received funding from the National Institutes of Health and the Wadsworth Foundation.

**Andrew Mammen, M.D., Ph.D.**, and his colleagues at the Myositis Center have discovered a new form of autoimmune muscle disease associated with a novel autoantibody. Interestingly, in many patients, the development of this muscle disease is associated with the use of cholesterol-lowering statin medications. Most patients respond to treatment with steroids and other immunosuppressive medications.

**Hongjun Song, Ph.D.**, received the “Outstanding Young Scientist Award” from the Society for Neuroscience in 2009 and together with investigators from NeuroICE has made very significant advances in developing inducible pluripotential stem cells derived from the skin cells of patients with neurological disorders. These will serve as invaluable tools to explore disease mechanisms and drug discovery.

**The American Recovery and Reinvestment Act:** The entire department, both investigators and administration, rallied around the call for economic stimulus funding, and new research grants totaling nearly \$ 5million were awarded to: **Peter Calabresi, Nathan Crone, Ted Dawson, Valina Dawson, Nicholas Gaiano, Jack Griffin, Ahmet Hoke, Justin McArthur, Jeffrey Rothstein, and Eileen Vining.**

Neurology faculty members were also successful in securing key grants from the Maryland State Stem Cell Commission. **Awardees include Ted Dawson, Ju Young Kim, Woon Ryoung Kim, Guo-Li Ming and Hongjun Song.**

## Clinical and Translational Research Initiatives

This year was a very productive year for physician scientists working across a wide range of neurological disorders. From efforts to slow the effects of ALS to accelerating nerve regeneration in peripheral neuropathies. Johns Hopkins neurologists continue to make important advances in developing new and more effective therapies. Some examples are listed below:

**Gregory Krauss** participated in the discovery and subsequent FDA approval in 2009 of a new anticonvulsant, lacosamide (Vimpat), including its intravenous use and optimal oral dosing. This is the first new anticonvulsant to be released in five years.

**Ned Sacktor** completed the first two trials of the anti-inflammatory antibiotic minocycline, for HIV—associated neurocognitive disorders in the United States and Uganda.

**Rebecca Gottesman** showed that heart failure was associated with significant cognitive impairment. This could lead to changes in the management of heart failure, and also identifies an important and potentially treatable cause of cognitive impairment.

**David Zee** has been studying how patients with cerebellar disease learn new motor behaviors. His results suggest that fast learning is impoverished in cerebellar patients and only slower learning can be accomplished easily. His next project is to utilize transcranial magnetic stimulation (TMS) to promote the learning that can take place in the cerebellum.

**Beth Murinson** has developed a new program to better educate medical students in pain relief. This program began here in the fall and is catalyzing change nationally.

**Ahmet Hoke's** laboratory continues to research how to accelerate nerve regeneration and has developed an innovative nanoscaffold technique. Nerve grafts incorporating longitudinally aligned nanofibers enhance nerve regeneration and are in final stages of pre-clinical testing.

**Jeffrey Rothstein and Vinay Chaudry along with Lora Clawson and the ALS Center** led an innovative initial trial of the anti-epilepsy drug talampanel which showed a positive effect on slowing the loss of activities of daily living in ALS by as much as 30%. It is hoped that a larger follow-up trial will validate this early trial result and offer a new therapy for ALS.

**Michael Polydefkis** and the Johns Hopkins Cutaneous Nerve laboratory helped develop a promising new therapy for diabetic neuropathy. The agent, SB-509, is still in trials but showed a direct effect on nerve regeneration using skin biopsies.

**Harvey Singer, Andy Zimmerman, and Carlos Pardo** have identified that there may be an immunological trigger for autism. Knowledge of the immune trigger, underlying biological mechanism, and behavioral effects might ultimately lead to the development of diagnostic screening tests and therapeutic interventions.

**Barry Gordon** has developed an outstanding and unique neurobiologically based training program for developing speech and language functions in individuals with autism. This research has potential benefits not only for these and other patients with problems of speech and language function, but for our understanding of how normal language develops.

Finally, the establishment of a **Neurotherapeutics Unit** within the Brain Science Institute led by Jeff Rothstein and Barbara Slusher will assist in the development of new pharmaceuticals, cure of diseases, to providing insights on learning and enhancing of neuropsychiatric disorders.

### Recent Promotions

The professorial promotion of a faculty member at Hopkins is much more than an individual honor—it reflects the lifework of that person. It also reflects the wonderful environment here in that the collegiality, citizenship, innovation and drive of our faculty are recognized not only from within but worldwide. The quality of the investigators here at Johns Hopkins is simply outstanding. Our senior faculty includes some of the most productive and frequently cited neuroscientists in the world, and I am delighted to add these new professors to their ranks. They represent the next generation of leaders in our field.

In November 2008, **Peter Calabresi, M.D.**, was promoted to Professor of Neurology. Dr. Calabresi is Director of the Multiple Sclerosis Center, focusing on the diagnosis and management of (MS). He oversees research projects seeking to create new therapies for MS.

In November 2009, **Ahmet Hoke, M.D.**, was promoted to Professor of Neurology and Neuroscience. He is Director of the Daniel B. Drachman Division of Neuromuscular Diseases at Johns Hopkins. Dr. Hoke focuses on neuromuscular diseases with a particular interest in peripheral nerve regeneration.

In October 2009, **Gregory Krauss, M.D.**, was promoted to Professor of Neurology. Dr. Krauss has a particular interest in treating medically-resistant epilepsy, and developing new drug therapies.

In May 2009, **Ned Sacktor, M.D.**, was promoted to Professor of Neurology. Dr. Sacktor has interest in dementia and behavioral neurology. His research focuses primarily on the cognitive manifestations of HIV infection. His investigations include clinical trials, and both epidemiological and neuroimaging studies.

## Residency and Training

**Our residency programs** (both adult and pediatric) have remained very strong under the excellent leadership from Argye Hillis, Raf Llinas, Eric Kossoff, and Lori Jordan. We have interviewed truly outstanding applicants in 2009, and the program now has a new fully integrated research component funded by the National Institutes of Health (NIH) to better support physician-scientists.

Adult Residents of the Class of 2012 are:

**Shyian Jen, M.D.** (Rosalind Franklin University Chicago Medical School)

**Madhavi Jinka, M.B.B.S.** (Deccan College of Medical Sciences)

**Kwan Ng, M.D., Ph.D.** (University of California, Irvine)

**John Probasco, M.D.** (University of California, San Francisco)

**Abid Qureshi, M.D.** (University of Missouri-Kansas City School of Medicine)

**Bogachan Sahin, M.D., Ph.D.** (University of Texas, Southwestern) and

**Angela Wabulya, M.B.B.S.** (Makerere University, Uganda)

Pediatric Residents of the Class of 2012 are:

**Ryan Felling, M.D., Ph.D.** (Pennsylvania State University) and

**Christopher Oakley, M.D.** (Eastern Virginia Medical School)

**Our Fellowship programs** have seen expansion and/or accreditation in stroke, neurophysiology, movement disorders, neuroimmunology, neurocritical care, and neuromuscular medicine. This program expansion provides a critical training opportunity to young physician scientists seeking to focus in a particular area of neurology:

- **Cerebrovascular Fellowships**, Robert Wityk, Director: Richard Leigh and Steven Zeiler.
- **Clinical Neurophysiology Fellowships**, Ronald Lesser, Director: Mackenzie Cervenka, Deivasumathy Muthugovinda, and Tung Tran.
- **Movement Disorders Fellowships**, Joseph Savitt, Director: Shawn Smyth, and Rainer von Coelin.
- **Neuroimmunology Fellowships**, Avindra Nath, Director: Christopher Eckstein, Daniel Harrison, Ik Lin Tan, and Shiv Saidha.
- **Neurocritical Care Fellowships**, J. Ricardo Carhuapoma, Director: Josh Duckworth, Holly Hinson, Navaz Karanjia, Manjunath Markandaya, Katherine Thomas, and Wei Xiong.
- **Neuromuscular Medicine Fellowships**, Ahmet Hoke, Director: Lyle Ostrow and Ricardo Roda.

## A Look Ahead

As we embark on 2010 and look to the future, we have identified those programmatic enhancements that will allow Johns Hopkins Neurology to continue to improve the way we care for our patients and their families, pursue the answers to the questions of cause and effect of disease to develop better therapies, and develop the best and brightest young minds as the neurologists of tomorrow.

**Translational opportunities** are a major focus in 2010 and beyond. These opportunities will address how to apply new knowledge across many disciplines making it easier for our faculty to move discoveries into clinical care, whether this is a new drug, a novel imaging technique, or a laboratory test that can detect disease at an early stage.

A new **Center for Functional Recovery after Brain Injury** will be led by John Krakauer, M.D., a new recruit from Columbia University. John Krakauer is a stroke expert and will establish an interdisciplinary center with the departments of Biomedical Engineering, Physical Medicine & Rehabilitation, and other disciplines. The principal objectives are to study human motor control, motor learning, and brain plasticity, and to apply these findings to improve recovery after brain injury.

The **Center for Nerve Disorders**, led by Ahmet Hoke and Jack Griffin, will focus on neuropathic pain and nerve regeneration, with the objective of developing new therapies to treat these disorders.

The **Center for Autism studies**, led by Harvey Singer and Carlos Pardo, will focus on the immunological mechanisms underlying autism, and develop strategies to treat this disorder.

The **Neurosciences Critical Care Program at Johns Hopkins** led by Romer Geocadin will continue to enhance clinical care and research in the two neurological intensive care units (NCCU) at Johns Hopkins Hospital and Johns Hopkins Bayview Medical Campus.

Your support has allowed us to take advantage of the tremendous opportunities to advance our research and clinical care, but there is still much work to be done. I look forward to keeping you informed as to how the Health Care Reform Bill will impact our work here at Johns Hopkins and how we can continue to provide the best of care for our patients.

***“What we need is more common sense – and the courage to study whatever needs to be studied—then we can form a science which has its roots in life at large.”***

***Adolf Meyer, founding Director of the Phipps Clinic at Johns Hopkins.***

Yours sincerely,

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