Dear Friends,

We have much exciting news to share with you in this issue of Looking Forward. Emerging from a long and particularly harsh winter, we’re probably all looking forward to lots of summer sunshine. In this issue, Dr. Anne Gocke, one of our faculty members, explains the results of a study recently conducted in her lab that may give us added cause to enjoy the fine weather! Dr. Gocke explains how “the sunshine vitamin”, vitamin D, may have the potential to limit disease activity in patients with multiple sclerosis.

On March 13th, 2014 our faculty and staff hosted a very successful “Lunch and Learn” gathering at our medical campus. This event gave Project RESTORE members a chance to hear about our most recent research findings, tour the science labs and chat with our clinicians and scientists at the bench.

We are very happy to announce that June 9th, 2014 has officially been recognized as Transverse Myelitis Awareness Day in the State of Maryland, thanks to the dedication of our patients in working with their local senators! We’d also like to announce that the 2nd Annual JHTMC Regional Transverse Myelitis Symposium is to be held on June 21st, 2014; visit http://www.hopkinsmedicine.org/jhtmc or email hopkinsTMcenter@jhmi.edu for more information.

The Johns Hopkins Transverse Myelitis Center is continuing to recruit for the first-ever prospective interventional clinical trial in transverse myelitis, which focuses on improving gait with the use of dalfampridine, as indicated through walking speed and other clinical measures. For more information, email hopkinsTMcenter@jhmi.edu. As a reminder, those interested in participating in clinical research should visit our websites. For MS research, please visit: http://www.hopkinsmedicine.org/neurology_neurosurgery/specialty_areas/multiple_sclerosis/research/. For TM and NMO research, please visit: http://www.hopkinsmedicine.org/neurology_neurosurgery/specialty_areas/transverse_myelitis/clinical_trials/.

Finally, we would like to congratulate Kathy Costello on her new position with the National Multiple Sclerosis Society as Associate Vice President for Clinical Care and Advocacy, Services and Research Department. We wish her the very best of luck!

With appreciation for your continued support,
Peter Calabresi, MD and Carlos Pardo, MD
Faculty Spotlight
Research Update - Anne Gocke Ph.D.

While the cause of multiple sclerosis (MS) still remains elusive, much progress has been made in identifying environmental risk factors likely involved in disease development. Recent evidence has suggested that vitamin D, “the sunshine vitamin” plays an essential role in regulating the immune response in both health and disease. Importantly, lower levels of serum vitamin D have been shown to be associated with increased MS disease activity. Animal models of MS have also implicated vitamin D supplementation as having a beneficial role in controlling aberrant immune responses directed against myelin in the brain and spinal cord. However, the specific mechanism of action and the direct targets of vitamin D are still incompletely understood. One of the major goals of our research is to elucidate the mechanism by which vitamin D alters the immune response in MS. To this end we have recently published a study in the Proceedings of the National Academy of Sciences in which we demonstrated that vitamin D affects the ability of pathogenic T cells to enter the central nervous system. The data demonstrate that vitamin D does not affect the development of pathogenic cells, but prevents them from accumulating in the brain and spinal cord of animals, thereby inhibiting the MS-like disease known as EAE. In addition, unlike current FDA approved drugs for MS, such as Tysabri, which impair immune cell migration, we found that the effect of vitamin D is quickly reversed following treatment cessation. This could prove advantageous when immune function needs to be rapidly restored, as in the setting of infection. Current studies are focused on identifying the molecules which are directly regulated by vitamin D in immune cells which, we hope, will allow for the development of combination therapies that may be more efficacious than any current therapy alone.

Transverse Myelitis: A Life Sentence
Laurie Zissimos

December 14, 2005, started out like every other day. I needed to get dressed for work, but decided to fix my coffee first and that is when I realized something was different. I was stirring my coffee and both of my feet began to tingle. I tried stomping them on the floor but the tingling was climbing up my legs. Suddenly I collapsed to the floor and ten minutes later I was on my way to the hospital. I remember screaming at the doctors for hours as the pain and numbness set in. After laying semi-conscious for three days we got the devastating news; a diagnosis of Transverse Myelitis (“TM”). The doctors told my family there was nothing they could do and that I should be transferred to a rehab facility. My family searched for a better solution and five days later, had me transferred to the Johns Hopkins Hospital’s Transverse Myelitis Center (“JHTMC”).

At JHTMC, I endured countless tests and treatments including plasmapheresis and IVIG until my release a month later. Then, in April 2006, I started PT at the Kennedy Krieger Institute for Spinal Cord Rehabilitation (“KKI”). After a year of extensive PT, I had regained enough strength in my core and legs to take a few steps. Unfortunately, though, it was not enough and I had to go on disability. The loss of income, bladder and bowel control and sexual dysfunction have had a devastating effect on my family and me.

These days, however, I am putting all of that aside to help the Transverse Myelitis Association by raising funds and awareness for the Walk-Run-N-Roll Campaign. As one of this year’s event co-chairs, I am thrilled to help spread the word about this disease to doctors, patients, families and other caregivers.
A Message from Development
Melissa Breslin

Project RESTORE was created with a vision to revolutionize the treatment of neuroimmunologic diseases, like multiple sclerosis (MS) and transverse myelitis (TM). It is a comprehensive and collaborative research effort where clinician-scientists are working to develop new diagnostic and therapeutic strategies in the treatment of these disorders.

Project RESTORE has three goals:
1. Recover function from illness and acute attacks
2. Stop progression of disease and disability
3. Regenerate nerve cells and myelin

For the millions of people living with neuroimmunologic disorders, many of them heartbreakingly young, the consequences can be devastating. So far, treatments to halt the immune attack on the nervous system have only been partially effective. Medicine can slow the process, but, for many, the long-term outcome is the same.

It is our patients who were the motivation behind the creation of Project RESTORE as a way to fund innovative, promising, focused projects with investigators and scientists who understand that collaboration is a powerful catalyst in developing therapies for MS, TM and other paralyzing disorders.

We hope you enjoy our newsletter, which was written by our faculty and staff to keep you updated on our research and other activities. If you have questions or would like additional information, please feel free to contact me by phone at 443-287-7875 or by email at mbreslin@jhmi.edu.

If you would like to support our work, simply fill out the bottom portion of this letter and return it in the enclosed envelope.

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FROM THE BENCH
Project RESTORE-Bart McLean Fund for Neuroimmunology Research Fellow
Dr. Maria I. Reyes-Mantilla

UNTANGLING THE DIAGNOSIS OF NEUROINFLAMMATORY DISORDERS: The search for biomarkers for neurosarcoidosis

One of the main challenges we encounter with neuroinflammatory disorders is determining accurate diagnoses to optimize treatment. Sarcoidosis, an inflammatory disease that typically affects the lungs and lymphatic system may also affect the brain or spinal cord (neurosarcoidosis) in 5-10% of the patients and is an important example of this scenario. The clinical complexity of neurosarcoidosis relies on its capability to mimic other neuroinflammatory conditions such as multiple sclerosis, transverse myelitis, optic neuritis or meningitis, among others. Although imaging of the brain or spinal cord with MRI may offer clues about its diagnosis, the differentiation of neurosarcoidosis from other disorders is difficult, and sometimes clinicians may need to use invasive approaches including brain biopsy.

Taking advantage of the cerebrospinal fluid (CSF) repository of the Division of Neuroimmunology at Johns Hopkins Hospital, which over the past 8 years has collected samples from over 2000 patients with varying neuroinflammatory diseases including neurosarcoidosis, Dr. Maria Isabel Reyes-Mantilla, a postdoctoral fellow working in Dr. Carlos Pardo-Villamizar’s neuroimmunology laboratory and supported by Project RESTORE-Bart McLean Fund for Neuroimmunology Research, has been studying a unique spinal fluid protein that could serve as a diagnostic biomarker for neurosarcoidosis. The protein, called Soluble Amyloid A (SAA), is an acute phase reactant protein found to play a major role in the granulomatous inflammation present in sarcoidosis. Dr. Reyes-Mantilla has assessed the diagnostic value of SAA in patients with different neurological disorders such as multiple sclerosis, neuromyelitis optica, meningitis, and normal subjects, as compared with neurosarcoidosis, and found a marked increase of SAA in CSF of patients with neurosarcoidosis. This finding suggests that SAA in the spinal fluid may serve as a novel diagnostic biomarker in neurosarcoidosis and may provide earlier recognition and treatment of the disease. Dr. Reyes-Mantilla is now in the process of further characterizing other biomarkers such as cytokines and chemokines, important mediators of inflammation in the brain, to better understand the natural history of neurosarcoidosis and to find potential therapeutic approaches. The results of Dr. Reyes-Mantilla’s research will be presented in the spring meeting of the American Academy of Neurology in Philadelphia.

HOCKEY FIGHTS MS
Candice Arnold

Hockey Fights MS is a unique organization whose mission is to raise funds for research into multiple sclerosis and to help improve the lives of those living with MS by supporting local rehabilitation centers. To date, the organization has raised over $95,000 for MS research and rehabilitation, including The Johns Hopkins Multiple Sclerosis Center in Baltimore, MD.

Founded in 2005 by Candice Arnold, Hockey Fights MS began as a single event in eastern Pennsylvania but has quickly expanded into Vermont, Maryland, and most recently, Massachusetts. The number of participants, volunteers, and spectators continues to increase each year, reflecting the growing support from the local communities. Since the inaugural tournament the total number of participating teams has increased from 7 to over 100. Players have traveled from 26 states and Canada to participate in these three-day tournaments.

The 3rd annual Maryland Tournament will take place May 30 to June 1, 2014 at The Gardens Ice House in Laurel, MD. The tournament is open to adult men and women players of varying ages and abilities. Proceeds from this tournament will benefit The Johns Hopkins Multiple Sclerosis Center. If you are interested in playing in the tournament, volunteering, or sponsoring the event, please contact info@hockeyfightsms.org. Additional information can also be found on their website www.HockeyFightsMS.org.
Yoga Therapy for MS

Véronique Gauthier, PhD
Yoga Therapy Certificate & Adaptive Yoga Certificate
Member of the Spanish Association of Yoga Therapy

Although people with MS report high perceived benefits of practicing yoga [1], clear scientific evidence of these benefits is still lacking. Why? It seems that researchers face two key challenges when analyzing the impact of yoga on MS. The first one is due to the nature of MS, with symptoms often coming and going. How can one thus ascertain that change is due to yoga? Which criteria can be used given that patients experience a wide array of symptoms? Moreover, participants cannot be blinded. How to avoid high risk of bias scores? Another common issue is the high rate of dropout. As noted by Angela Senders’ team in their systematic review of published evidence, more rigorous designed trials are needed [2].

The second obstacle is due to the nature of yoga. Research studies usually include yoga among “Mind-Body Medicine” or “Complementary/Alternative Medicine”, i.e. therapies that “integrate the brain, mind, body, and behavior, with the intent to use the mind to affect physical functioning and promote health”[3]. However, I would like to argue that yoga should be researched as a separate discipline because it is an integrated system of techniques. But most importantly, research projects need to define more clearly the yoga program being tested. What postures or asanas are being used and for how long? Which breathing techniques or pranayama? Is meditation included?

I started practicing yoga in 2000, just before being diagnosed with MS. I was so convinced of the many benefits of yoga that I decided to become a yoga teacher and share my observations. Personal experience has taught me that by selecting specific sequences, one can relieve some targeted issues, such as fatigue, spasticity or balance. The body can be strengthened, the mind quieted and stress-related symptoms alleviated. In short, yoga can be used as a therapy for MS but the individual needs have to be taken into account and sequences designed to meet these needs. I believe, in order to enhance our understanding of the clinical effects of yoga on MS, research has to focus on carefully selected sequences and their impact on given symptoms.

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