Exciting Team Additions!

The Johns Hopkins Parkinson’s Disease and Movement Disorders Center is pleased to welcome two movement disorder fellowship trained faculty members, Emile Moukheiber, M.D. and Ankur Butala, M.D., and a new registered nurse, Kori Ribb, B.S.N., R.N., C.N.R.N. to our center! Below, please find information about them and their roles on our team.

Dr. Emile Moukheiber joined the Johns Hopkins University School of Medicine in July 2016 as a movement disorder fellow after attending medical school at the American University of Beirut and completed his residency in Neurology at Tufts Medical University in Boston. He now joins our center as a faculty member, seeing patients with all varieties of movement disorders and participating in several clinical research projects.

Dr. Moukheiber has experience in research on social phobias, has completed public health work with non-governmental organizations, and is the founder of his own organization that provides home health care in the form of advanced nursing, occupational and physical therapy to underserved communities in third world countries - with particular emphasis on those with neurodegenerative disease.

He also has clinical interest in teleneurology to help bridge the gap between the tertiary care available in well-funded facilities and those with geographic boundaries impeding their access to care. He is also interested in the integration between music and medicine, specifically in the treatment of musician’s dystonia.

He has assisted in protocol development and is a co-investigator in the Guitar-PD research study at Johns Hopkins. He will also join the Parkinson’s Progression Markers Initiative (PPMI) study team, under the sponsorship of the Michael J. Fox Foundation.

Dr. Moukheiber is currently accepting new patients. To schedule an appointment, please call (410) 502-0133, option 2.

Dr. Ankur Butala joined the Johns Hopkins University School of Medicine in July of 2015 for his fellowship at the Parkinson’s Disease and Movement Disorders Center. He is a graduate of a combined BS-MD Physician Scientist Accelerated Program through the Rensselaer Polytechnic Institute and Albany Medical College. Dr. Butala practiced as a physician at Albany Medical College from 2004 to 2008. He then completed residencies in both Psychiatry and Neurology at UMass Memorial Medical Center from 2008 to 2014. Dr. Butala has a variety of other medical experiences which include a movement disorders rotation with world-renowned Dr. Michael Okun of University of Florida at Gainesville; a functional neuroimaging rotation at King’s College in London; and working as a neurohospitalist and addiction psychiatrist. Dr. Butala has published several peer-reviewed papers and abstracts, as well as presented at numerous international, national, and local meetings.

His primary research interests are utilizing invasive and non-invasive neuromodulation techniques to better understand and treat otherwise refractory neuropsychiatric conditions including non-motor aspects of Parkinson disease, dementia, psychosis and traumatic brain injury. In addition, he has a parallel interest in the biology and modulation of endogenous cannabinoids and how it might impact these neuropsychiatric conditions.

Dr. Butala is currently accepting new patients. To schedule an appointment, please call (410) 502-0133, option 2.

Kori Ribb joined our center as a Research Nurse in February 2018. Kori started her nursing career at Johns Hopkins Hospital in 2009 as a bedside nurse in the Neurosciences department, where she also received her designation of a Certified Neurosciences Registered Nurse (CNRN). She continues to be interested in Neurology and was intrigued to expand her knowledge in clinical research and the care of those with neurodegenerative disease in an outpatient setting.

Kori is excited to use her knowledge and clinical skills to care for individuals with Parkinson’s disease and other movement disorders. She looks forward to participating in several research studies and being a part of each patient’s individual journey. She also joins out Dystonia Center as a neurotoxin nurse and enjoys the combination of clinical care with research coordination.

In her spare time, Kori enjoys spending time with her family. Her favorite activities include weekend trips to the beach, swimming, and fishing. Kori and her family are anxiously awaiting the arrival of their third child in September.

Kori would like to thank center staff and patients for such a warm welcome and is honored to be a part of the Parkinson’s Disease and Movement Disorders Center.
RESEARCH HIGHLIGHT

Dr. Ankur Butala
MD, Neurology, Johns Hopkins
University School of Medicine

Dr.Entering the field of Parkinson's
Disease and Movement Disorders
as a movement disorder fellow
at the Johns Hopkins Parkinson's
Disease and Movement Disorders
Center has been a privilege and
an honor for me. After completing
my fellowship, I hope to continue
my work in the field of Parkinson's
Disease and Movement Disorders
with a focus on advancing our
understanding of the disease and
providing the best care possible
for those affected.

Kori Ribb, B.S.N., R.N., C.N.R.N.
Neurosciences Registered Nurse

Kori joined the Johns Hopkins
Parkinson's Disease and Movement
Disorders Center as a Research
Neurosciences Registered Nurse
when I was completing my
fellowship. I have had the
opportunity to work with
researchers, patients, and
other healthcare providers to
better understand the disease
and provide the best care possible.

The opportunity to work with
researchers and patients has
been incredibly rewarding. I
have learned so much about the
disease and how it affects
people's lives. I am grateful for
the chance to be a part of this
important work.

RESEARCH STUDIES

<table>
<thead>
<tr>
<th>Condition</th>
<th>Title</th>
<th>Objective</th>
<th>Eligibility</th>
<th>PI</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parkinson's Disease</td>
<td>Parkinson's Progressors Initiative Cohort</td>
<td>Identify genetic links to PD and learn how the LRRK2 mutation affects certain populations of people (Part of the Michael J. Fox Foundation Parkinson's Progressors Markers Initiative)</td>
<td>1. Individuals diagnosed with PD who are of Ashkenazi Jewish descent 2. Individuals without PD who are of Ashkenazi Jewish descent AND have a first-degree relative with PD</td>
<td>Lisa Rosenthal, MD (NA_00039235)</td>
<td>Kori Ribb 410-614-2216</td>
</tr>
<tr>
<td>Parkinson's Disease</td>
<td>APL-130277 for the Acute Treatment of OFF Episodes</td>
<td>Evaluate APL-130277 (sublingual version of Apokin medication) in treatment of sudden &quot;off-time&quot; in PD</td>
<td>Individuals with PD, taking levodopa and having at least 2 hours of &quot;off-time&quot; daily</td>
<td>George Riccardi, MD (NA_00086295)</td>
<td>Kori Ribb 445-287-7850</td>
</tr>
<tr>
<td>Parkinson's Disease</td>
<td>Anxiety in Parkinson's</td>
<td>One day visit to assess anxiety symptoms in PD</td>
<td>All individuals diagnosed with PD</td>
<td>Gregory Pomone, MD (NA_00097051)</td>
<td>Kori Ribb 410-614-1243</td>
</tr>
<tr>
<td>Parkinson's Disease</td>
<td>Rorsigtole for Anxiety in PD</td>
<td>8 week study of Rorsigtole for the treatment of anxiety disorders in PD</td>
<td>Individuals diagnosed with PD experiencing anxiety</td>
<td>Gregory Pomone, MD (NA_00097051)</td>
<td>Kori Ribb 410-614-1243</td>
</tr>
<tr>
<td>Progressive Supranuclear Palsy</td>
<td>PASSPORT</td>
<td>To determine if an investigational medication (BMS 991618) may potentially treat human tauopathies, such as PSP</td>
<td>Individuals diagnosed with PSP (possible or probable) &lt;3 years</td>
<td>Alex Pantelis, MD (IRB0027218)</td>
<td>Emily Carman 410-955-8099</td>
</tr>
<tr>
<td>Parkinson's Disease and related disorders</td>
<td>Udal Center Longitudinal Study</td>
<td>Examine the relationship between the clinical-symptoms of PD and the disease process in brain tissue (participation includes eventual brain donation)</td>
<td>Individuals diagnosed with PD or atypical PD and those without a neurological diagnosis</td>
<td>Lisa Rosenthal, MD (NA_00032761)</td>
<td>Catherine Bakker 410-616-2014</td>
</tr>
<tr>
<td>Parkinson's Disease and related disorders</td>
<td>Udal Center Brain Donation Program</td>
<td>Examine the pathological changes in the brain tissue of individuals diagnosed with PD or related disorders as compared to controls</td>
<td>Individuals diagnosed with PD or atypical PD and those without a neurological diagnosis</td>
<td>Lisa Rosenthal, MD (NA_00032761)</td>
<td>Catherine Bakker 410-616-2014</td>
</tr>
<tr>
<td>Movement Disorders</td>
<td>Genetic Characterization</td>
<td>To study the genetic risk factors involved in movement disorders</td>
<td>Individuals with PD, atypical parkinsonism, dystonia, ataxia, and Lewy body dementia</td>
<td>Jeffrey Rothstein, MD, PhD (NA_000554)</td>
<td>Kecia Garrett 410-902-0135</td>
</tr>
<tr>
<td>Parkinson's Disease</td>
<td>Establishment of a Clinical Neuropsychological Database on Parkinson's Disease and Other Movement Disorders</td>
<td>To assemble cognitive, mood and other psychological test results for use in future studies</td>
<td>All PD and ET patients seen for clinical assessment in the Division of Medical Psychology</td>
<td>Jason Brandt, PhD (NA_0001573)</td>
<td>Barnett Strpitze 410-955-1469</td>
</tr>
<tr>
<td>Parkinson's Disease</td>
<td>Effects of Subthalamic Nucleus Deep Brain Stimulation on Decision-Making in Parkinson's Disease</td>
<td>To determine whether treatment with DBS changes the perceived value of prizes and rewards, attitudes toward risk-taking, and other aspects of decision-making</td>
<td>Individuals with PD who are about to receive surgery for bilateral STN DBS, neurologically healthy individuals</td>
<td>Jason Brandt, PhD (IRB00078439)</td>
<td>Barnett Strpitze 410-955-1469</td>
</tr>
</tbody>
</table>

EDUCATION

Why movement disorders specialists vs. other neurological subspecialties?

By Kelly Mills MD

We manifest our passions, pursue social interactions, and even perform daily chores through movement, which is the ultimate consequence of thought and intention. Whether playing golf, strumming a guitar, or even turning the pages of a book, we require smooth, reliable movement control to keep a comfortable pace with the world around us. As such, how could I not be motivated to treat disorders of movement speed, size, and accuracy and empathize with people who have disorders affecting these symptoms?

A close relationship with my paraplegic uncle showed me that personal resilience and fortitude can allow individuals to achieve personal and professional satisfaction despite impairments in movement control. This, and other experiences with persons with neurologic disabilities, made me wonder how I could help people in a similar position gain the knowledge and symptom control such that they felt empowered to overcome barriers preventing them from leading a normal social, family, and work lives. I found that I could pursue this as a neurologist and the practice of Movement Disorders includes several diseases that are progressive over time. I was drawn to the opportunity to form long-term relationships with patients and provided advice and education as their disease changes over time. Also, the actual practice of treating movement disorders is largely based on speaking with and examining patients in person, not just on the interpretation of lab tests or imaging studies. Furthermore, treatment changes largely depend on these two pieces of information: what the patient says, and how he/she is performing on our physical exam. This creates a unique doctor-patient interaction that is unlikely to be replaced by automation anytime soon.

While it is unfortunate that we do not have disease-modifying pharmacological agents to slow or stop Parkinson’s disease, spinocerebellar, cerebellar ataxia, or most other movement disorders right now, it is very motivating for me as a researcher to be in a subspecialty where there is so much potential for breakthrough discoveries on the horizon. I have always been drawn to the mechanism of “how things work” and one of the most well-understood brain systems is that of motor control, though we are still just scratching the surface in this knowledge. Doing research on movement disorders like Parkinson’s disease allows me to combine my interest in understanding mechanisms with the need to improve the lives of people suffering from these diseases.

Working with movement disorders patients over time and researching their diseases is intellectually and personally gratifying. It is a chance to form meaningful relationships with patients that will last for years, and to learn new insights from these patients that we can translate into breakthrough treatments for many others in the future. I could not imagine being happier in another subspecialty of neurology.
Neuropsychological Effects of Deep Brain Stimulation for Parkinson’s Disease

By Jason Brandl, PhD

As most readers of this newsletter will know, Parkinson’s disease (PD) is characterized by its movement disorder, but also has a significant psychological component. Patients with PD frequently have mood symptoms (with depression, anxiety, and apraxia being the most common), and some proportion have significant impairments in cognition (thinking and memory). Research by my colleagues and me in the Johns Hopkins Movement Disorders Center has focused on specifying the nature of these psychological changes and how best to treat and/or manage them.

The discovery of levodopa as a treatment for PD in the 1960s had been among the most significant medical advances of the 20th century. While dopamine replacement medications and dopamine agonists (drugs that enhance and sustain the activity of dopamine at the synapse) can be remarkably effective in reducing symptoms of PD, they can have side effects and additional effects when taken at high doses. Much recent research has focused on these medications at the level of fundamental drive states. Some patients taking large amounts of these medications develop “behavioral addictions” (e.g., excessive shopping, hyposexuality) and engage in risky behaviors (excessive gambling, shopping, speeding while driving). These behaviors appear to reflect a selective “overloading” of brain circuits with dopamine of that regulatory reward processing.

What about treatment with deep brain stimulation (STN)? Does it too have the potential to increase risk-taking or otherwise lead to bad decisions? A few years ago, my colleagues and I addressed this question in a study (published in Neurology, 2015, Vol 79, 622-631) comparing PD patients who were receiving DBS in the subthalamic nucleus (STN) to those who were treated with medication only and to neuropsychologically healthy people (as control subjects). We found that, on risky decision-making tasks, patients with DBS implants took more risks than did healthy participants, but those who had been trained in a novel cognitive task showed this trend even more so. In both groups, PD patients had a tendency to be more aggressive and have a greater sense of control over their lives than did healthy participants, and this tendency was greater with stimulation. In other words, we found little evidence that DBS of the STN resulted in the problems risk-taking.

We are currently conducting a more definitive study of this phenomenon. PD patients who are about to undergo surgery for implantation of DBS electrodes in the STN are being studied three times: 1) prior to surgery, 2) after surgery with the stimulator turned on, and 3) after surgery with the stimulator turned off. In each session, patients are engaged in a variety of financial choice and decision tasks. For example, if you won a prize, would you rather receive $1,000 today, or $1,300 a year from today? When rolling a die, would you rather bet $1 on one side coming up to win $30, or any of 4 sides coming up to win $27? There are no absolute right or wrong answers to these questions. Rather, we wish to discover whether the way people evaluate probabilities and rewards changes when the STN is being stimulated. If you are a PD patient and are scheduled to receive DBS of the STN, please consider volunteering for this study. You can find out more about it by contacting Barnett Shpritz at (410) 955-1460. You can also email me at jbrandl@jhmi.edu.

Sense of Smell in Parkinson’s Disease

By Satg Rajan, MD

A reduced sense of smell called anosmia (hypos–reduced, osme– to smell) or a complete loss of it, called anosmia, is a common complaint among many patients with brain diseases. This phenomenon has been noted in Parkinson’s disease (PD), Alzheimer’s disease, and disorders thought to be “coustics” of Parkinson’s disease such as multiple systems atrophy (MSA), and progressive supranuclear palsy (PSP).

Hyposmia and anosmia in PD have been a focus of research for a long time because 50-90% of PD patients with motor symptoms already have some level of smell impairment. The abnormal proteins called alpha synuclein (a form of which is “Lewy neurites” and clumps of “Lewy bodies” in the nerves of PD patients) tend to affect the nerves of smell (the “olfactory bulb”) early on, for reasons yet unknown. Studies that tracked large groups of people for a long time, looking at what diseases they developed down the road have shown that people who have hyposmia or anosmia have a high risk of developing PD in the future. This finding has led researchers to develop smell tests with scratch-and-sniff cards or sniffing-sticks. In the Honolulu-Asia Aging Study (HAAS), for instance, men had a 5.2-fold increased risk of developing PD within 4 years if they fell in the lowest quartile of ability to smell. This study had its participants identify 12 odors from a scratch-and-sniff test with 4 choices for each answer.

Although we do not know how to treat hyposmia currently, this knowledge is important to research. We already know that PD has a very early phase where we call prodromal phase, where hyposmia, constipation and dream-enactment in sleep (REM behavior disorder) can be strong indicators of future development of full-blown Parkinsonism. Blocking the build-up of Lewy bodies in this phase of the disease might prevent the progression into the motor phase of the disease. Another avenue of research into smell looks at whether the nerves of smell get “infected” by proteins from outside and spread into the brain like a virus. A similar idea of an infection in the gut spreading through the vagus nerve and into the brain has also been floated. Even if these ideas may be disproved in the future, people with smell-deficits, when identified early, can be recruited to future studies looking at “preventive therapies” for PD.

Pets and Parkinson’s

By Bonnie Kaas, MD

Although more rigorous research is needed, many small studies have suggested that animals may have a healing presence. Spending time with a dog can act as a buffer against stress, and interaction with therapy animals has been shown to decrease loneliness and improve quality of life among elderly people. Companion animals have been associated with improved cardiovascular measures (heart rate and blood pressure), and may even be tied to better outcomes after a heart attack. These benefits don’t only apply with dogs but also to cats, birds, fish…some studies even used robotic dogs! See this article for an overview of the research: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5573436/

However, there are some specific considerations for pet ownership when it comes to those with Parkinson’s disease. While walking your pet on a leash is excellent exercise, it is very important to make sure the animal does not pull, as this could lead to falls in people with impaired balance. A training class (available at major pet supply stores) is highly recommended to work on leash manners. This will ultimately allow you to spend more quality time with your pet without worrying about injury.

If you are getting a new pet, make sure you spend some time to research the breed and age group that will best fit your lifestyle and level of activity. Specialty-trained service dogs can also help with freezing, balance, and everyday tasks for people with Parkinson’s disease (https://www.assistancedoginformation.org to find an organization).

Finally, pets in the bedroom can significantly disrupt sleep—consider a separate bed for companion animals to everybody can be well-rested!
Pacing for Parkinson’s

By Kaylin Kopcho

Pacing for Parkinson’s (P4P) is one of the largest charity teams in the Baltimore Running Festival. It has evolved into a year-round, volunteer-led campaign that raises awareness of and funds for Parkinson’s disease (PD) research, community outreach, education, and patient care at Johns Hopkins. 2018 marks the 10th year that P4P has participated in the Running Festival. In recognition of this noteworthy anniversary, runners, walkers and virtual fundraisers will strive to pass the $1,000,000 mark for cumulative funds raised!

Over the last year, funds raised through Pacing for Parkinson’s have bolstered programs critical to improving the lives of those living with PD, as well as their care partners and loved ones. One of the areas in which P4P philanthropy has made a significant impact is in community outreach and education. The PDMD Center offers a slate of resources that keep people with PD, their caregivers, and those in the medical community informed and empowered, including monthly support groups and an annual patient-provider symposium. The Center also educates those in the medical community about how to care for people with movement disorders.

The Center is also able to sponsor—exclusively or in partnership with other regional and national organizations—several health and wellness programs, in part thanks to P4P. These include a Rock Steady Boxing Program at Forest Hill Health and Fitness with 4 weekly classes and over 60 participants; the continuation of the Parkinson’s chorale group; and a new Parkinson’s Exercise Program at Brick Bodies in Lutherville-Timonium.

Research is the other area where philanthropy raised through Pacing for Parkinson’s has had a significant impact. Through the generosity of many individuals and corporations, scientific inquiry has been accelerated in several distinct research ventures—Guitar-PD and two aims of the Dystonia Coalition project—and more broadly by protecting the time of a research assistant to coordinate a variety of academic consortia for the PDMD Center.

Guitar-PD, a research protocol by Dr. Alex Pantelyat under the same “music as medicine” banner that yielded the ParkiSonics several years ago, is a controlled, delay-start clinical trial of twice-weekly guitar lessons for people living with Parkinson’s disease. Peabody Institute and Neurology faculty member Dr. Serap Bastepe-Gray, a classically-trained guitarist, is co-leading the trial with Dr. Pantelyat. They will evaluate the impact of guitar instruction on hand dexterity as assessed by standard PD clinical rating scales, typing speed and accuracy, and several other validated tasks. The study will also examine the impact of guitar lessons on mood, cognition and quality of life.

As part of the Dystonia Coalition research project, the PDMD Center in addressing two specific aims that may influence the future of clinical interventions in PD and other movement disorders. P4P philanthropy has assisted in the creation of a database that houses videos of and biological samples from people with cervical, focal, and generalized (idiopathic) dystonia, as inquiry into dystonia of the eye.

Our Center is grateful to all of our patients, patient families, volunteers, and community members for their involvement in Pacing for Parkinson’s. Please consider how you might be able to assist P4P in its 10th Anniversary year and beyond! Runners and walkers of all skill levels are welcome to participate on Saturday, October 20, and you can also be a virtual fundraiser if geography or prior commitments don’t allow you to be present on race day. To learn more or to register for one of the races, please visit http://pacingparkinsons.org or email pacing4parkinsons@gmail.com.

Team 2016

PARKINSON’S PROGRAM CALENDAR

These programs are presented by the Johns Hopkins Parkinson’s Disease and Movement Disorders Center through various community partnerships and funding sources, including our Center’s annual fundraising event, Pacing 4 Parkinson’s. Pre-registration is encouraged for all programs listed below. Please contact our center at 410-955-6602 to learn more about these programs. Visit our website at www.hopkinsmedicine.org/neuro/movement for a full listing.

- Parkinson’s Disease Educational Series
  - 3rd Wednesday of Every Month
  - 7:00 p.m. - 9:00 p.m.
  - St. Thomas Episcopal Church, 1108 Providence Road, Towson, MD 21286

- June 20 - Cynthia Fishel, MD - Anxiety-related Management of Parkinson’s Disease
- July 18 - Emile Moukheiber, MD - Living Day by Day with Parkinson’s Disease
- August 15 - pony Delisi, MT-BC - Music Therapy and Parkinson’s Disease

- September 19 - Amadeo Galleguil, CCC-SLP - Surgical Treatments for Parkinson’s Disease
- October 17 - Lynn Goldhaber - Parkinson’s Disease andamping

- November 21 - Aria McGe - 2018 Update in Parkinson’s Disease

- December 19 - Ray Rows, MD - Q&A

- Surgical Therapies for Parkinson’s:
  - Deep Brain Stimulation & Duopa Information Session
  - Tuesday, November 24th
  - 6:00 p.m. - 8:00 p.m.
  - St. Thomas Episcopal Church, 1108 Providence Road, Towson, MD 21286
  - For more information contact Nikki Montano - 410-955-999

- Apical Parkinsonisms Support Group
  - 4th Thursday of Every Month
  - 2:00 p.m. - 4:00 p.m.
  - St. Thomas Episcopal Church, 1108 Providence Road, Towson, MD 21286
  - Donna Delcaste Novenst - 410-650-2811 or ddelenimj@bfnkinc.net

- Apical Parkinsonisms Support Group - Washington, DC
  - 3rd Saturday of Every Month
  - 2:00 p.m. - 4:00 p.m.
  - Sibley Memorial Hospital - Building A, 2nd Floor, Room 5
  - Katna Wadler, 713-821-3556 or kwadler@hotmail.com

- Dancing with PD
  - Every Tuesday
  - 1:30pm - 3:00pm
  - Greater College, Dorker Sports and Recreation Center
  - Todd Dance Studio
  - 10130 Dulaney Valley Road, Towson, MD

Activity & Exercise Programs

- Parkinson’s Exercise Program - Brick Bodies at Padonia
  - 2430 Broad Avenue, Lutherville Timonium, MD 21093
  - Free Class; members & non-members at Brick Bodies
  - Contact info@marylandparkinsonsersupport.org or 410-470-0729

- ParkinsonSonics Community Chorus
  - Every Wednesday
  - 1:30 p.m. - 3:00 p.m.
  - Govans Presbyterian Church, Sharp Hall
  - 5928 York Road, Towson, MD 21286

- Rock Steady Boxing
  - Forest Hill Health and Fitness
  - 2217 Commerce Road, Forest Hill, MD 21050
  - 410-893-4133 - Call for class times

- Rock Steady Boxing - Lories Health System
  - 12250 Roundwood Road, Timonium, MD 21093
  - Please contact Jon/Ann Presliteration@lorieshealth.com or
  - presliteration@gmail.com or 443-938-3243
  - Call for class times

Sponsored by the Johns Hopkins PDMD Center, Pacing for Parkinson’s and the Maryland Association for Parkinson’s Support
The Johns Hopkins Parkinson’s Disease and Movement Disorders Center

The Johns Hopkins Parkinson’s Disease and Movement Disorders Center is dedicated to the tripartite mission of education, research, and excellent care of those living with movement disorders.

Johns Hopkins Outpatient Center
601 North Caroline Street, Suite 5064, Baltimore, MD 21287
410.955.8795
www.hopkinsmedicine.org/neuro/movement

Please consider supporting our center! The work of the Johns Hopkins Parkinson’s Disease and Movement Disorders Center would not be possible without the generous support from our patients and the community. For more information about supporting the center, please contact the Development Office at 443-287-7877.

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Kelly Mills, MD
Emile Moukheiber, MD
Alex Pantelyat, MD
George Ricaurte, MD, PhD
Liana Rosenthal, MD

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