Dear Readers,

I hope everyone had a great summer and that we are all ready for the Holiday Season. The Center on Aging has been active during the spring and summer, with several community events and conferences. I went to the International meeting for Alzheimer Association in Copenhagen, Denmark, in July, and learned about many new amazing research developments for Alzheimer’s Disease (AD). I also feel honored to be elected to serve on the Alzheimer Association Board for the South Carolina Chapter, and was inaugurated at its August Board meeting in Columbia, SC. Center on Aging staff and faculty participated in two different community education conferences for Alzheimer Association, one in Columbia and one in Charleston. This is a very successful and important organization that does a lot of good for those with AD and their families in our state.

The Annual Aging Research Day will be held at Clemson University, and is hosted by Dr. Cheryl Dye. The conference is scheduled to occur Friday March 13, 2015 and registration as well as abstract submission will open soon (see www.scarn.org for more information). The overall theme for the conference is Stress and Aging and everyone is welcome to submit a presentation and/or register for this conference.

This September was the second year that we have participated in the Walk for Alzheimer in Charleston, and the event occurred September 20th. We are proud to announce that the amount of money we raised was increased with almost 50% from last year, and we had an increased participation as well. You can read more about the Alzheimer walk in this issue of the Newsletter.

Center on Aging and Brain Bank staff, students, and faculty were also fortunate to participate in this year’s Buddy Walk, which occurred October 5th. This fun event is organized by the Down Syndrome Association of the Lowcountry (DSAL) and provides support to organizations involved in Down syndrome research, health care, and support. If you are interested in volunteering for any of these community events, please let us know.

As always, we are deeply thankful for all the wonderful volunteers who make the medical education at MUSC something very special and also for all the help and support we have received during this year from many faculty, students, residents, and staff at MUSC. We are looking forward to another school year focused on healthy aging and age-related diseases.

Warmly,
Lotta Granholm
The SC Chapter of Alzheimer’s Association organized their annual Walk to End Alzheimer’s at Patriots Point in Mount Pleasant on September 20, 2014. Participants of all ages and abilities joined in the 2.5 mile scenic walk. The cool day and the bustling of the crowd added to the enthusiastic mood of everyone there.

The Center on Aging and the MUSC Carroll A. Campbell, Jr. Neuropathology Laboratory (Brain Bank) organized a 24 person strong team, Endow Your Brain, and raised more than $3700 for the cause. Members of the walk included faculty, post docs, staff, and students in several different colleges and departments.

Dr. Lotta Granholm, Director for the Center on Aging and Co-Director for the Brain Bank, was the captain for this fun team. The money raised will be used specifically for research on Alzheimer’s disease and related disorders.

Scientists at the MUSC Brain Bank are part of a national network of researchers and clinicians working on Alzheimer’s disease.

To find out how you can endow your brain or contribute to the Brain Bank, please visit www.musc.edu/brainbank.

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The Barmore Fund

“Fortunately, the progression of the disease is much slower in me than it is in friends and acquaintances of mine who also have PD. Even so, it is a disruption in my life and can become a burden to my family. If the disease is to be conquered, more research on the actual changes in the tissues of healthy and PD affected brains must be conducted. This requires providing scientists with brain tissue to better understand the changes that neurological diseases make in that tissue.

My wife and I have both made the decision to donate our brains, after death, to the Carroll A. Campbell, Jr. Neuropathology Laboratory at the Medical University of South Carolina. We encourage others to not only become organ donors but also brain donors so that further studies can be conducted on neurological diseases through the investigation of brain tissue. We look forward to the day when the diagnosis of PD does not mean living with a disease that is progressive and has no cure.”

-Charles Barmore
Heather Boger, PhD  
Assistant Professor  
Department of Neurosciences, MUSC  

Dr. Boger received a Barmore pilot grant in 2013 to study the effects of vagus nerve stimulation on the release of growth factors, including BDNF and GDNF, in brain regions affected by Parkinson's disease. Vagal nerve stimulation is already FDA approved for treatment in patients with epilepsy. The regions that will be assessed in this pilot study include the locus coeruleus, which contains noradrenergic neurons, and the substantia nigra, which contains dopamine neurons. These neuronal populations are lost with the progression of Parkinson's disease. In collaboration with a research group at University of Texas in Dallas, Dr. Boger and her laboratory group are conducting the vagal nerve stimulation in rats that undergo a double-lesion model for PD, in which the LC-NE and SN-DA neurons are targeted. These studies are ongoing in the laboratory with results to be collected during the winter. Findings from these studies could result in extramural grant funding as well as potential for PD clinical trials. These studies could provide great insight into potential new treatment strategies for this progressive neurodegenerative movement disorder.

Sherine Chan, PhD  
Assistant Professor  
Department of Drug Discovery and Biomedical Sciences, MUSC  

We received a pilot grant to study how mitochondrial dysfunction alters the dopaminergic neurons. Mitochondrial dysfunction is a major cause of Parkinson's disease, but it is not known why the dopaminergic neurons are so selectively sensitive. In order to answer this question we have now made novel zebrafish models of mitochondrial dysfunction and have developed new assays to measure mitochondrial function and dopaminergic neuron development in zebrafish. We have new data that has been used for an R01 application that was submitted in June, and will be presented at the AussieMit conference later this year in Perth, Australia.

Mark S. Kindy, PhD  
Professor and Associate Chair for Research, Department of Regenerative Medicine and Cell Biology; Professor, Department of Neuroscience, MUSC; Senior Research Career Scientist, Deputy Associate Chief of Staff for Research, Ralph H. Johnson VA Medical Center  

Dr. Kindy received a pilot grant in 2014 to study the role of inflammation in Parkinson's disease (PD). We found that release of cathepsin B from the lysosomal compartment exacerbates PD by modulating cell death mechanisms, inducing reactive oxygen species (ROS) production and activation of the inflammasome (NLRP3) pathway. We showed that inhibition of cathepsin B provided protection from PD. We were able to demonstrate that MPTP (MMP+) and a-synuclein increased that expression of the inflammasome complex (cathepsin B, NLRP3, ASC, and caspase-1) and IL-1β in vitro; also that MPTP and a-synuclein increased the expression of the inflammasome complex (cathepsin B, NLRP3, ASC, and caspase-1) and IL-1β in vivo using C57BL/6 mice and transgenic mice expressing the A53T a-synuclein mutant transgene. Understanding the mechanisms associated with PD will allow us to determine the pathways involved in the disease process. The work resulted in collaborations between both basic and clinical scientists at MUSC. In addition, we are working on grant proposals to the NIH as well as the VA. The work is now being summarized for publication.
did you know?

Many of us are organ donors. Our driver’s license conveniently notes this with a small heart symbol in the corner. This small act saves lives. But did you know that this designation does NOT cover all of your organs?

Brain tissue research is a critical component to finding cures for such devastating diseases as Parkinson’s disease, Alzheimer’s disease, and Stroke.

The Carroll A. Campbell, Jr. Neuropathology Laboratory (CCNL) was founded in 2009 at MUSC in order to enhance postmortem diagnostics and research on Healthy Aging and neurological disorders, including Amyotrophic lateral sclerosis, Alzheimer’s disease, Autism, Down’s syndrome, Depression, Epilepsy, Hearing loss, Huntington’s Disease, Parkinson’s Disease, Pick’s disease, and stroke. A brain bank is a centralized collection center for brain tissue, obtained after death for the purpose of research and accurate diagnosis of brain-related diseases.

For more information about brain donation, please contact Laura Columbo: (843) 792-7867 or columbol@musc.edu  
www.musc.edu/brainbank

Gonzalo Revuelta, DO  
Assistant Professor  
Dept. of Neurosciences, MUSC

Dr. Revuelta received a pilot grant in November 2013 to add an imaging arm to the ATM-FOG pilot study. The ATM-FOG study investigated the effects of atomoxetine in freezing of gait. The imaging arm sought to determine structural connectivity of the mesencephalic locomotor region to frontal cortical areas. All eligible ATM-FOG participants have now completed the study. Using the data from these pilots Dr. Revuelta was awarded the SCTR K12 award which will allow him to expand these findings further over the next 2 years. The overarching goal of this work is to develop gait and imaging markers for freezing of gait to be utilized in future clinical trials for this condition.

Supriti Samantaray, PhD  
Research Assistant Professor  
Department of Neuroscience and Neurology, MUSC

Dr. Samantaray, a recipient of the pilot grant has focused on testing SNJ-1945 (a novel calpain inhibitor) in an MPTP-induced model of parkinsonism in collaboration with Senju Pharmaceutical Co. Ltd, Kobe, Japan. The grant enabled the addition of a chronic progressive MPTP/probenecid model in the lab for testing calpain-mediated toxic synuclein aggregation. Thus, a part of the preliminary data was generated for the submission of competing renewal of NIH RO1, where Dr. Samantaray is Co-I with the PI, Dr. Naren Banik. In collaboration with Dr. Christina Vaughan, they have started a study for inflammatory biomarkers in PD patient plasma/serum/CSF. Dr. Samantaray will jointly host a mini symposium on “Calpain Inhibitors in Preclinical Models of Neurodegeneration” at the annual meeting of the American Society of Neurochemistry, Atlanta, in March, 2015; and is an invited speaker in NeuroCon 2015, India. These endeavors may lead to the FDA approval for clinical trials for water-soluble orally administered calpain inhibitors in PD in near future.
THE BUDDY WALK:
A day of celebration for people with Down syndrome in the Lowcountry

The Granholm Lab along with hundreds of enthusiastic people gathered on Oct. 5th at Etiwan Park on Daniel Island to mark the 11th Annual Lowcountry Buddy Walk. Fantastic weather, music, food and friendly folks kept those in attendance in great spirits.

The Buddy Walk is a day long festival celebrating children and community members with Down syndrome. In addition to creating a fun-filled exuberant day, the walk serves as a fundraising and educational venue to increase awareness for people with Down syndrome and to promote acceptance and understanding among people with different abilities. The Walk provided a fantastic opportunity to meet a large number of people that might greatly benefit from scientific studies at MUSC and abroad.

Carrol A. Campbell Neuropathology Lab Brain bank associates, Laura Colombo and Lauren Jutras, handed out information about the ongoing brain donor program, which offers free pathological assessment of brain dementia caused by Alzheimer’s disease, an insidious killer for individuals with Down syndrome. Together, Dr. Granholm, Dr. Sambamurti and Eric Hamlett distributed flyers that detailed the newly formed DSCONNECT online tool developed by the NIH. This online tool attempts to connect individuals with DS to clinical trials that may lead to novel therapies or cognitive enhancement for the community.

The Buddy walk also served as a great venue to invite families and friends in the DS community to the MUSC Down Syndrome Research Open House being held Wednesday, Oct. 29th. At least 50 invitations were distributed around the event to announce this very special event. The Research Open House will be hosted by Dr. Lotta Granholm and Dr. Angela LaRosa and will feature several demonstrations of DS research at MUSC, presentations about cutting edge discoveries in Down syndrome, and detailed information about clinical trials. Food and Drink will be provided for all attendees.

If you are interested in attending please RSVP by October 27 to: mclintoc@musc.edu.

Volunteer Opportunity:
Do you like spending an hour or two with creative, funny, joyful and interesting adults? Then volunteering with Respite Care Charleston is for you. This social day program for adults with Alzheimer’s and memory loss provides caregivers a well-deserved break for a few hours and provides you with the opportunity to spend an hour or more playing games, sharing conversation, listening to music and more with this amazing group of adults. The programs meet at four churches located in West Ashley, Mt. Pleasant, North Charleston and Johns Island. A professional is on site at all times to lead the program, and volunteer training is provided. You may serve as your schedule allows - once a week, a month or a year.

Please visit: www.respitecarecharleston.org/volunteer/
or contact Respite Care Charleston:
info@respitecarecharleston.org
(843) 647-7405
BECOME A SENIOR MENTOR

The Senior Mentor Program is a volunteer program that connects medical students from the Medical University of South Carolina with people aged 65 years and older living in the greater Charleston, SC area. This program aims to encourage medical students to have positive attitudes about caring for older adults. It also focuses on helping reduce stereotypes about aging while striving to improve the way future doctors care for older persons.

Volunteers will serve as a mentor for two MUSC medical students throughout their four years of schooling as the students perform their assigned tasks associated with the program. Volunteers must be willing to meet in their own homes two to three times per year with their designated students and agree to share information about themselves. As a mentor, providing feedback and personal comments are critical so the students can better understand the needs and concerns that seniors have regarding healthcare. The Senior Mentor Program will have no effect on a volunteer’s regular medical care. It is independent of visits with their personal physician and is not intended to provide medical care.

To sign up or to find out more about the Senior Mentor Program please visit http://academicdepartments.musc.edu/senior/index.html or contact, Juanita Brunson, Program Coordinator at (843) 792-0460.

Fall 2014 & Spring 2015 Assignment Schedule

<table>
<thead>
<tr>
<th>Class</th>
<th>Assignment</th>
<th>Due</th>
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<tbody>
<tr>
<td>2018 (1st Year)</td>
<td>Physiology of Aging</td>
<td>December 1, 2014</td>
</tr>
<tr>
<td>2018 (1st Year)</td>
<td>Relationship/Intimacy Review &amp; Medical History</td>
<td>March 27, 2015</td>
</tr>
<tr>
<td>2017 (2nd Year)</td>
<td>Nutrition</td>
<td>November 17, 2014</td>
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<tr>
<td>2017 (2nd Year)</td>
<td>Pharmacology</td>
<td>April 25, 2015</td>
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<tr>
<td>2016 (3rd Year)</td>
<td>Fall Risk Assessment</td>
<td>End of Internal Medicine Rotation*</td>
</tr>
<tr>
<td>2016 (3rd Year)</td>
<td>Life Review</td>
<td>End of Psychiatric Rotation*</td>
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* This date will vary depending on each student’s rotation schedule.
Ms. Cathie Murdaugh

“My husband was a Family Practice Physician and had fallen and broken his neck. He still wanted to be of service to the medical community, so we decided this might be a good fit. Unfortunately, Dr. Murdaugh died before the first meeting, but I decided to go ahead with the commitment. So few physicians understand the aging population health concerns and I continued to want to be a help in making this a part of medical education.

I started with my two wonderful young medical students in November of 2010.”

Thinking back on your first meeting with your students, do you think their ability to handle the geriatric population in their future practice changed?

“Yes, I do. They were so uncertain of what to say to me, examine me, or even how to address me, as I was at least the age of their grandmothers. I gave them my history and what medications I took and my hopes for medical care.

They were allowed to so little other than blood pressure, temperature, history of surgeries and illness that often we just talked about what concerns I had for my future health and possible surgeries. I think when they took the history of what I had experienced they became more aware of me as a person. I hope they also felt that they could have a positive effect on my life by listening and checking back with any questions I might have asked. I thought it might be good if they had been able tested strength levels for a better long term view of the aging process.

My boys were always kind and if not on time, then I was given a call to explain. Even while in school, their time was not always easy to schedule. I watched them mature and find ease in talking with me and asking questions about my health and end of life plans, such as a health power directive. I believe the best part of this experience was the change in how we viewed each other and the respect we had for the life and challenges we three faced.”

Lauren Tucker

“Since my first meeting with my senior mentor, I would say that the thing that has changed the most is my perspective of the geriatric population. I have learned that working with geriatric population one must keep an open mind and take time to learn about the person. Many older patients still lead an active life despite their age. My mentor was a tutor, and he and his wife were apart of several clubs. Also, learning about their life’s journey gave me a greater respect for the person. After his first wife died from cancer, he was able to remarry and still find happiness, a task that may be daunting for some. Keeping these things in mind can ultimately help with patient care.

My personal experience with my mentor was very positive. The initial visit allowed us to establish a good relationship that grew over the years with each subsequent visit. Mr. Beddard and his wife have always been very welcoming and pleasant. They also showed a genuine interest in our lives and our success as future physicians, and we as students developed the same level of interest in them as well.

I think the assignments have added depth to my medical training by allowing me to gain more personal experience with the geriatric population. Each assignment was a gateway to communication, which is an opportunity to bring about change. Working with older patients on a daily basis is helpful, but actually getting to know a person over several years is something totally different. Over the years that I have worked with Mr. Beddard, I learned to respect and genuinely care about him as a person. I rejoiced in his triumphs, and was disheartened by his hardships. The relationship that we have developed has given me a greater appreciation for working with the geriatric population.

I think is a great program and really has benefited my overall experience as a medical student.”

SMP Spotlights