

# CENTER *on* AGING

www.musc.edu/aging

May 2016

Dear Readers,

As you read this, I am packing up my lab to leave for Denver and the new job as Director for the Interdisciplinary Knoebel Institute for Healthy Aging. It is bittersweet to say goodbye to so many successful and happy years at MUSC and the Center on Aging.

Center on Aging.

I am glad to announce that the incoming Interim Director for the Center on Aging is Dr. Heather Boger,

who many of you know very well as the Director of the Senior Mentor Program.

The Center is in very capable hands and is also augmented by the Associate Directors,

Dr. Vanessa Hinson and Dr.

DeAnna Adkins. So please join me in welcoming Dr. Boger to her new position.

In this issue, you will read about the 12th Annual Aging Research Day, which was held in Charleston in February. More than 130 participants learned about Sensory Systems in Aging, and we were

especially happy to have several invited speakers, who presented their data. Keynote speaker was Dr. Nicolas Bazan of University of Louisiana, who presented his data on biological mechanisms for macular degeneration as well as Alzheimer's disease.

The Senior Mentor Program just celebrated the graduating medical students and their mentors at the annual graduation luncheon. Photos are included in the SMP section of this issue. The Senior Mentor Program is now in its 12th year, and we are forever thankful to all the senior mentor volunteers who give their time so generously in order to educate future physicians.

I would also like to take this opportunity to thank everyone in the Center on Aging, especially Kelly Dillon and Susan McLintock, who have organized all of our events, and who take care of the daily activities in the Center, organizing conferences, website announcements and newsletters. Nothing of what you read about or participate in could have been done without these capable, energetic, and organized individuals.

Thank you to everyone for 15 wonderful years at the Center on Aging! I know the Center will go on to thrive under the new leadership, and I will keep a close collaboration with everyone, even after my move to Denver.

With warm appreciation to everyone.

Warm regards,  
Lotta



Lotta Granholm, PhD/DDS  
Director, Center on Aging

## IN THIS EDITION

Aging Research Day

"Of Mind and Music"

Travel Fellowship

Senior Mentor Program



# 12<sup>th</sup> Annual Aging Research Day

“Sensory Systems in Aging” Recap: Friday, February 26th



Dr. Nicolas Bazan discussed his strategy to study early events that might be relevant to prevent and/or slow down onset and early progression of age-related macular degeneration and Alzheimer’s disease.



Attendees ask questions following Dr. Chris Gregory’s presentation, “Beyond the Motor System”



Senior Mentor, Dr. Nelson Durand, learns about different services offered from the many table sponsors present.



Dr. Cheryl Dye (Clemson) introduces speaker, Dr. Renata Leite

**Thank you so much to the brilliant contributors to this year’s Aging Research Day conference. The feedback has been tremendous on the topics covered and outstanding speakers. There was a very diverse array of attendees including faculty, students, healthcare providers, community leaders, Senior Mentors, and senior service providers. Overall, it was a very productive meeting and we look forward to hosting this conference again when it returns to MUSC.**

## Aging Research Day 2016 Program:

Xue Z. Liu, MD, PhD (University of Miami)  
**UNRAVELING THE GENETICS/GENOMICS OF PRESBYCUSIS**  
 Approaches to Identifying Genes for Complex Diseases

Bärbel Rohrer, PhD (MUSC)  
**COMPLEMENT-ACTIVATION AND AGE-RELATED MACULAR DEGENERATION:**  
 Generation of Novel Treatments and Diagnostics

Chris Gregory, PhD, PT (MUSC)  
**BEYOND THE MOTOR SYSTEM:**  
 Contributors to post-stroke walking dysfunction

Ellen Vincent, PhD (Clemson)  
**EFFECTS OF VIEWING NATURE IMAGES ON HEALTH**

Renata Leite, DDS, MS (MUSC)  
**FLOSS – Facilitating Long-term Oral Health Skills**

Victor Hirth, MD, MHA, CMD, FACP, AGSF (Palmetto Health)  
**APPLICATION OF TECHNOLOGY TO ENHANCE COORDINATION AND CARE**

Johnell Brooks, PhD, (Clemson)  
**A DECADE OF DEVELOPMENT: CLINICAL DRIVING SIMULATORS**

Stacey Pierce (PharmRight Corporation)  
**A PROACTIVE SOLUTION TO CARE**

Nicolas Bazan, MD, PhD (Louisiana State University)  
**THE VULNERABILITY OF SIGHT AND COGNITION IN AGING**

# Of Mind + Music Film Screening

February 25, 2016

The Center on Aging hosted a screening of “Of Mind and Music” with 130 friends and colleagues with interests in aging. As mentioned in earlier editions of the Center on Aging newsletter, the film was based on a novel, “Una Vida: A Fable of Music and the Mind” written by Dr. Nicolas Bazan, the keynote speaker at this year’s Aging Research Day Conference. An avid writer, Dr. Bazan has stepped outside his daily research work to further the awareness of the epidemic known as Alzheimer’s disease.



The story follows a fictional neuroscientist as he makes his way through the emotional turmoil of losing his mother to the disease that he has spent his life researching.

During his journey he and his family become intertwined with the life of a New Orleans street performer, as he attempts to help her cope with the struggles of living with Alzheimer’s as well.

The film’s characters, settings, and music all weave together to produce an emotionally captivating tale.

The film was released independently and has accumulated an impressive number of awards including: Best Director at the Albuquerque Film and Media Experience, Audience Award and Best Performance by an Actress at the American Black Film Festival, Festival Prize at the Breckenridge Festival of Film, Audience Award and Jury Award at the Newport Beach Film Festival, Audience Award at the Sedona International Film Festival, and the Vail Film Festival.

It was an exciting honor to be able to offer a screening of this outstanding film to a Charleston audience in coordination with Aging Research Day. Thank you to those who attended!

The donations from moviegoers raised funding that will be used for pilot grants on Alzheimer’s disease.



The Center on Aging bids a fond farewell to Susan McLintock as one of its Administrative Assistants! Susan has been invaluable to the center in managing finances, coordinating speakers, planning events, and working on countless projects over the past four years.

Susan has worked with the Center on Aging for 50% of her time, with the other 50% dedicated to the running of the Neurosciences Institute (NI). She will continue her duties with the NI and has taken on a larger role with the Department of Neuroscience. We look forward to opportunities for continued collaborations with Susan in her new position, but she will surely be missed! Best of luck, Susan!

# 12<sup>th</sup> Annual Aging Research Day

## Travel Fellowship Award Recipients

**Travel Fellowships** were awarded to the top submissions of age-related research that best demonstrated an inter-disciplinary focus.

All students, post-docs, fellows, and residents were invited to enter. Posters were not required to relate to the theme of sensory systems, but work was to be original to this contest and conference. Congratulations to the winners and thank you to the judges for their time and consideration of all 32 entries.

### JUDGES:

**Dr. Steve Carroll**

Chair of the Department of Pathology and Laboratory Medicine, MUSC

**Dr. Cheryl Dye**

Director of the Institute for Engaged Aging, Clemson University

**Dr. Sue Levkoff**

Director of SmartSTATE SeniorSMART Center of Economic Excellence

**Dr. Marianne Schultzberg**

Vice Dean for Doctoral Education, Karolinska Institutet



(L-R) Dr. Carroll, Elizabeth Obert, Dr. Bärbel Rohrer, Dr. Levkoff

### 1st PRIZE:

#### Effects of the $\alpha$ CT1 Peptide on Retinal Pigment Epithelium Cell Integrity In Models Of Age-Related Macular Degeneration

Presented by: Elisabeth Obert  
Department of Ophthalmology  
Medical University of South Carolina

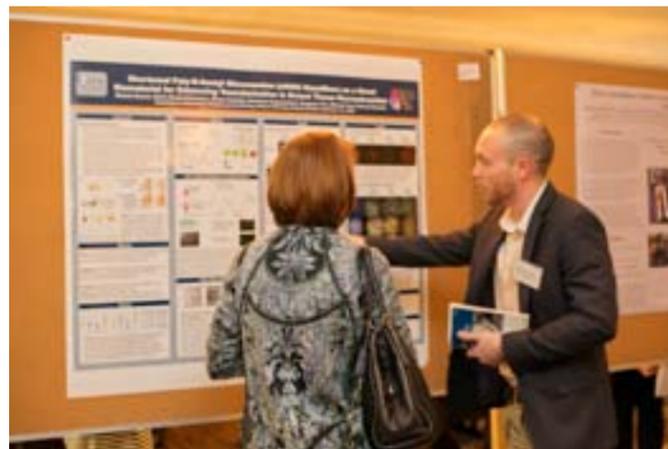
Authors: Robert Gourdie, Christina Grek, Gautam Ghatnekar, and Bärbel Rohrer

**Purpose.** A critical target tissue in age-related macular degeneration (AMD) is the retinal pigment epithelium (RPE), which together with Bruch's membrane forms the outer blood-retina barrier (BRB). RPE-barrier dysfunction in AMD might result from attenuation and disruption of intercellular tight junctions. Zonula occludens-1 (ZO-1) is a major structural protein of intercellular junctions. A connexin-based peptide mimetic,  $\alpha$ CT1 (Alpha Connexin carboxy- Terminal 1), was developed which competitively inhibits ZO-1 interaction with its binding partners.

We hypothesized that targeting ZO-1 signaling using

$\alpha$ CT1 would maintain BRB integrity and reduce RPE pathophysiology by stabilizing gap- and/or tight-junctions. Methods. Choroidal neovascularization (CNV) was induced using laser-photocoagulation; RPE-cell barrier loss was triggered by bright light exposure. Both models lead to VEGF-dependent cell damage.  $\alpha$ CT1 was delivered via eyedrops. CNV size and fluid leakage were determined using optical coherence tomography. RPE flatmounts were stained for ZO-1 and occludin, and tiling patterns analyzed (CellProfiler). ARPE-19 monolayers were used to evaluate  $\alpha$ CT1's mechanism of action in response to VEGF exposure.

**Results.**  $\alpha$ CT1 treatment reduced CNV development and fluid leakage, and damage was correlated with disruption in cellular integrity of the surrounding RPE cells. Light-damage significantly disrupted RPE cell morphology, which was prevented by  $\alpha$ CT1 pre-treatment. In vitro experiments using ARPE-19 cell monolayers suggest that  $\alpha$ CT1 stabilizes intercellular tight junctions. Conclusions. Taken together, stabilization of cellular junctions with  $\alpha$ CT1 was effective in ameliorating RPE dysfunction in AMD models of photocoagulation-induced CNV and bright-light exposure RPE-cell barrier loss. Future research will include additional investigation into the peptide's mechanism of action.



Michael Sarson discusses his poster with Judge, Dr. Cheryl Dye



(L-R) Dr. Carroll, Yifang Li, Subina Saini, Dr. Levkoff

### 2nd PRIZE:

#### Checking in with my friends: results from an in situ deployment of peer-to-peer aging in place technologies

Presented by: Yifang Li  
School of Computing/Human-Centered Computing  
Clemson University

Authors: Yifang Li, Subina Saini, Kay Connelly, Kelly Caine

In this paper, we describe participants' attitudes towards a suite of four, in-home technologies that we designed specifically to address the needs of urban, low socio-economic status (SES) older adults. The technologies – Presence Clock, Check-In Tree, Community Window, and Trip Coordinator – were deployed in participants' homes for eight weeks with the aim of enabling an interactive, peer-to-peer support system within the community.

Older adults' technology-related privacy concerns were explored with a privacy enhancing feature known as DigiSwitch, which allowed participants to control which peers in their peer network could view their information. We conducted weekly surveys that measured perceived burdensomeness, usability of the technologies, loneliness, quality of life, social support, and privacy attitudes to assess participants' perceptions while using the technologies.

The preliminary results suggest that there is no significant difference between the survey responses of participants who had a privacy-enhancing feature (Digiswitch) and participants who did not have this feature (non-Digiswitch.) Further analyses will be conducted to analyze the difference between participants' responses to the above-mentioned surveys before the technologies were installed in their homes and after they had used the technologies for eight weeks.



(L-R) Dr. Carroll, Eric Hamlett, Dr. Levkoff

### 3rd PRIZE:

#### A coerulean focus on memory performance with targeted DREADDs

Presented by: Eric Hamlett  
Department of Neuroscience  
Medical University of South Carolina

Authors: Eric Hamlett, Ashley Fortress, Elena Vazey, Gary Aston-Jones, Wayne Cass, Heather Boger, and Ann-Charlotte Granholm

The locus coeruleus (LC) regulates arousal and has significant effects on sensory processing and memory performance. In a healthy brain, LC activity positively enhances arousal and memory performance. In contrast, during early neuropathology associated with Alzheimer's disease (AD), LC degeneration has significant negative effects on arousal, and memory performance. While LC-enhancing drugs may rescue these deficits, specific LC contributions to memory performance remain entangled with other CNS and peripheral effects from drug treatment. Novel designer receptors exclusively activated by designer drugs (DREADDs) have been developed that allow remote control of select neuronal populations. We utilized DREADDs to control (stimulate or inhibit) LC activities in order to assess isolate specific LC contributions to memory in a mouse.

DREADD receptors exhibited significant control on LC activity with precision. Stimulation of the LC enhanced memory performance and inhibition of the LC decreased memory performance. The result has major implications on neurodegenerative paradigms where LC degeneration is one of the earliest pathologies in Alzheimer's disease (AD). Here we demonstrated the influence of the LC on memory and clearly establish a new tool that allow studies of LC degeneration. We establish that a degenerated LC can be enhanced with positive outcomes on cognition.

# SENIOR MENTOR PROGRAM



Senior Mentors were invited to attend the Aging Research Day conference for a chance to meet research students from all over the state and view the poster presentations on age-related research at a special reception following the presenters.

Dr. Deborah Deas also joined us in welcoming the mentors to the event sharing the concept of the Senior Mentor Program with conference attendees.

Thank you to all who attended the conference and the reception!

CONGRATULATIONS  
to all of the graduating  
Class of 2016 Medical Students and thank you to  
their mentors for their dedicated service!  
We celebrated at the  
Graduation Luncheon on May 11.



Mentors visit with their students and learn about their next endeavors after graduation.



Mr. and Mrs. Whitacre have enjoyed both pairs of their students during this program.



Dr. Heather Boger, Senior Mentor Program Director addresses the mentors and students to recognize their achievements.



Mentors stood in recognition of their four years volunteering to help support the medical students' geriatric education.

## Medical Students Shine: 2016 Putman Geriatric Training Awards



Congratulations to [Michelle Crouse](#) and [Jeffrey Waltz](#), the 2016 recipients of the Putman Geriatric Training Award. Mr. Paul Putman, known to his friends and family members as "Put," was dedicated to the Senior Mentor program. He and his wife, Smiley, had both served as mentors for years when Put passed away, at which time Smiley and their children decided to recognize graduating students with exceptional empathy and compassion with senior patients to be presented in his honor.

Last year Smiley also passed away and the family generously decided to continue with the Putman Geriatric Training Award, extending it to 2 graduating medical

students. The students selected this year have not only demonstrated compassion and empathy while working with their senior mentors, but have extended their generosity out into the community. These students truly embody the MUSC Motto "She (the university) enriches by giving generously."

We can not thank the Putman family enough for their continued support of the Senior Mentor Program and MUSC's medical students!

Top Photo: Michelle Crouse receives her award from Dr. Donna Kern. Bottom Photo: Jeffrey Waltz accepts the Putman Award from Dr. Donna Kern

## Interested in Becoming a Senior Mentor?

We are currently working on our mentor list for the class of 2020, and we are always looking for new mentors! If you, or someone you know is interested in becoming a mentor, please have them contact us now more information and to sign-up!

Phone: (843) 792-0460

Email: [seniormentor@musc.edu](mailto:seniormentor@musc.edu)

## SMP Mentor + Student Spotlight

### Mentor: Norman Wolff

MUSC Senior Mentor since 2013

I grew up in Philadelphia, PA; graduated from Penn State University, and then went on to complete a successful career of 26 years in the U.S. Navy. After my retirement from the Navy, I worked for an Engineering Company contracted to the Navy. I am now truly retired! We have one married daughter with three children and one married son with four children...seven grandchildren who are a total blessing. My major hobby and sometime business: I appraise and deal with all aspects of antique vehicles. I am presently restoring a 1948 Ford.

A speaker from your Senior Mentor Program came to our meeting of the Shepherd Center in Mt. Pleasant to discuss and to recruit new volunteers. My wife and I discussed the program and thought that it would be worthwhile for your students to find out what makes us old people 'tick' and for them to gain some insight into the problems that we seniors face.

The most enjoyable aspect of the program was to meet the up and coming doctors and discuss their program at MUSC. It has been interesting to learn the reasons for their selection of a specialty field to pursue. It was also wonderful to have one on one discussions and learn about these young people and their thoughts about many subjects from the viewpoint of their age group. The most enjoyable assignment was the one concerning our nutrition. We provided our food intake for 3 days and were provided with an analysis of where we stood and what needed correction.

The first meeting was interesting with their taking our vitals, etc. Since then they have become much more knowledgeable about the medical profession. They have also matured as individuals. Lately our dinner discussions revolve around them as we converse with them regarding their days, their semester, and their life goals. They are also very open to our questions about their course of study and the medical field. It is always enjoyable to have our students visit with us. We, my wife and I, believe this program to be hugely valuable for the medical student of today as they come to know the geriatric population which is growing so quickly.

### Student: Samuel Dickey

MUSC Class of 2017

I am from Charlotte, NC and moved to Mount Pleasant, SC in middle school. I went to Wando High, then College of Charleston, now at MUSC. I really enjoy living in SC, especially in Charleston, because it is near the ocean. I enjoy, surfing, fishing, boating, beaching, running, basketball, and pretty much anything outside. My family for the majority still lives in Charlotte, NC and I visit them usually every other month.

Honestly, my grandparents were my favorite people in the world. I loved hearing their stories and spending time with them, especially when my grandmother would cook. Unfortunately, all of my grandparents have passed. I was very happy to hear we would be getting senior mentors in medical school, kind of selfishly, because I was really looking forward to have "grandparents" again. I have found that the program has further strengthened my future goal of working with the geriatric population while I am a physician.

Mr. Norman has taught me that family is one of the most important things one can have. I definitely want to have a family after listening to his stories of his grandchildren and how much he looks forward to being able to see them. He also adores his wife and says, "I hope you are fortunate enough to have a wife like mine." I agree with him.

Don't look at this program like as "something else they want me to do." Look at it like as something you are fortunate enough to be able to do. We are going in these people's homes and lives, so show them the utmost respect as they signed up for this. Be respectful and kind, these are the elders of our society, so gain as much knowledge as possible from them. Also, e-mail them on their birthdays or call them. Lastly, reach out to them other than just to ask to set up a time to meet. For example, over the summers, e-mail them and see how they are doing, just because.

## CENTER *on* AGING STAFF

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## Hearing Research Study Seeking Volunteers

The MUSC Hearing Research Program is seeking volunteers to participate in a research study investigating the connection between hearing and the brain. We are recruiting healthy adults, ages 45 to 89 years.

Payment is provided for participation, and scheduling is flexible. The study involves two to four visits, participants must be able to complete an MRI.

If you would like to participate in this research or learn more about our study, please call 843-792-5916 or e-mail [sorrella@musc.edu](mailto:sorrella@musc.edu).

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fax: 843.792.0679

[www.musc.edu/aging](http://www.musc.edu/aging)



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