11th Annual
Aging Research Day

Stress and Aging

March 13, 2015

Madren Conference Center
Clemson, SC
Welcome to the 11th Annual Aging Research Day

Dear Researchers, Colleagues, Students, and Friends,

It is with great pride and excitement that we present to you the 11th Annual Aging Research Day Conference. Our theme this year is “Stress and Aging” and we thank our presenters for sharing their research findings which range from how stress affects us physically and mentally and what we can do to reduce those effects. We believe that both our podium and poster presenters will provide information that can significantly advance quality of life for older adults.

As we are well aware, quality of life for older adults is a growing concern as it is projected that by 2030, 20% of Americans will be over 65 years of age and in South Carolina that number is projected to be even higher at 22%. Conferences like ours play a key role in building multidisciplinary collaborations across healthcare systems, universities, aging agencies and community businesses which are critical to meeting the needs of our older citizens. We are also proud of the role the conference plays in encouraging students to present their research and to interact with conference attendees as a way of supporting them in their future careers serving older adults.

We are thankful for the teamwork that allowed us to successfully plan and host this conference and we look forward to developing new collaborations in order to better meet the needs of older adults in our state and region.

Sincerely,

Cheryl Dye, PhD
2014-2015 Chair, SC Aging Research Network
Director, CU Institute for Engaged Aging
Professor, Department of Public Health Sciences
Clemson University

Lotta Granholm, PhD. DDS
Professor, Department of Neuroscience
Director, MUSC Center on Aging
Medical University of South Carolina

Victor Hirth, MD, MHA, FACP, AGSF
Professor & Chief, Division of Geriatrics, Geriatric Services Medical Director,
Health Science Center Medical Director, Senior Primary Care Practice
Palmetto Health & USC, School of Medicine
11th Annual Aging Research Day
“Stress and Aging”
March 13, 2015
Madren Conference Center, Clemson University, Clemson, SC

Agenda

8:00 to 8:30 – Registration, set up posters

9:00 to 9:10 -Welcome – Dr. Cheryl Dye, CU Institute for Engaged Aging

9:10 to 9:30 – Opening remarks – Senator Thomas C. Alexander

9:30 to 10:00 – USC - Dr. Mitzi Nagarkatti– “Inflammaging: Role of Nutrition and Epigenomics”

10:00 to 10:30 - Break

10:30 to 11:00 – CU -Dr. James McCubbin, “Stress, Blood Pressure and the Aging Cardiovascular System”

11:00 to 11:15 – Dr. Lotta Granholm, Brain Bank

11:15 to 1:00 – Lunch and viewing of posters

1:00 to 1:30 – CU -Dr. Marieke Von Puymbroeck – "Reducing Stress and Increasing Social Participation Through Yoga.”

1:30 to 2:00 – USC – Dr. Jenay M. Beer, “Reducing the Stress of Age-related Changes Through Assistive Robotics”

2:00 – 2:15 – Break

2:15 to 2:45 – MUSC - David G. Clark, MD – “How Can We Tell When the Cow is Leaving the Barn? Detecting Preclinical Alzheimer’s Disease”

2:45 to 3:15 – MUSC - Dr. Ron Acierno – “Older Adults in Disasters: Factors Associated with Risk and Resiliency”.

3:15 to 3:30 – SeniorSMART update

3:30 to 4:00 – Conclusion and poster awards
Senator Thomas C. Alexander

Senator Thomas C. Alexander was elected to the South Carolina Senate on October 11, 1994, in a special election. Alexander Chairs the Labor, Commerce and Industry Committee; The Public Utility Review Committee, and serves on the Finance Committee (Chair, Health and Human Services Subcommittee, which includes the Lt. Governor’s Office on Aging); Medical Affairs Committee; Banking and Insurance Committee and Joint Bond Review. While serving in the South Carolina House of Representatives he chaired the Labor, Commerce and Industry Committee, one of only six major standing committees of the House.

Alexander is the first South Carolina Legislator to serve as Chairman of the SC House of Representatives – Labor, Commerce and Industry Committee and Chairman of the SC Senate – Labor, Commerce and Industry Committee.

Alexander holds a Bachelor of Science Degree in Economics from Clemson University. A native South Carolinian, who resides in the Town of Walhalla in Oconee County with his wife, Lynda, he is a businessman and owner of Alexander’s Office Supply stores and Cleveland Gospel Supply. He is a member and past president of Walhalla Sertoma Club and Walhalla Lions Club and was named the Walhalla Lion of the Year in 1984-85. Alexander is active in the Walhalla Presbyterian Church where he is a Sunday School teacher. He has served as Deacon, Elder, and as Clerk of Session.

Alexander currently serves on the Board of Appalachian Council of Governments, as well as the Board of Directors of the Blue Ridge Bank in Walhalla. He has previously served on the Anderson College Alumni Board, The Tribble Center Foundation Board, as Chair of the District Friends of Scouting Campaign for 2001, Foothills YMCA Board, Board of Easter Seals (Anderson-Oconee), and he has been recognized by various organizations over his legislative career.
Mitzi Nagarkatti, PhD

Carolina Distinguished Professor
Chair, Dept. of Pathology, Microbiology and Immunology
University of South Carolina School of Medicine
Deputy Director, Basic and Translational Research
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Dr. Mitzi Nagarkatti is Carolina Distinguished Professor and the Chair of the Dept. of Pathology, Microbiology and Immunology at the School of Medicine at the University of South Carolina, Columbia. In 2005, Dr. Nagarkatti moved from the Medical College of Virginia where she directed the Immune Mechanisms Program of the National Cancer Institute (NCI)-funded Massey Cancer Center.

Dr. Nagarkatti’s research is broad-based and encompasses Inflammation, Autoimmunity, Complementary and Alternative Medicine, Cancer Immunology and Immunotherapy, and Biodefense. Dr. Nagarkatti has been the recipient of $40 million in extramural funding to support the research in her lab. She is currently the Principal Investigator (P.I.) on 2 National Institutes of Health (NIH) R01 grants and a Co-P.I. on 1 other NIH R01 grant. She also serves as the Co-P.I. of a 5-year Center Grant for $6 million from National Center for Complementary and Alternative Medicine (NCCAM) on the use of plant products to treat inflammatory and autoimmune diseases which was recently renewed for an additional 5 years for $8 million. In addition, Dr. Nagarkatti is also a Co-P.I. on a 5-year COBRE grant on Dietary Supplements and Inflammation for $10 million, aimed at recruiting and mentoring junior faculty. Dr. Nagarkatti’s research has been continuously funded by agencies including the NIH, US Army, American Cancer Society, NSF/EPA as well as other private foundations.

Dr. Nagarkatti has been the recipient of several awards such as the Pfizer Award for Research, Best Publication of the Year Award from the Society of Toxicology for her work on Immunotoxicology, the Shelton Horsley Research Award which is the highest award from the Virginia Academy of Sciences, as well as the Women in Science, Dentistry and Medicine Professional Development Award for outstanding accomplishments.

Dr. Nagarkatti has trained numerous undergraduate, graduate, medical and veterinary students, postdoctoral fellows and junior faculty, including underrepresented minorities, many of whom have gone on to win numerous awards and nationally competitive fellowships and grants for their research. Her trainees are currently placed at various research institutions including CDC, EPA, NIH, FDA, Los Alamos National Laboratory, Harvard University, Duke University and other universities as well as in pharmaceutical companies.

Dr. Nagarkatti has published >200 scientific papers in prestigious journals such as Proceedings of the National Academy of Sciences, USA (PNAS), Journal of Experimental Medicine (JEM), Journal of Immunology (J.I.), Infection & Immunity, Blood, Journal of Pharmacology and Experimental Therapeutics (J.PET), Cancer Research, Journal of Biological Chemistry (JBC), etc. She has been an invited speaker and chaired scientific sessions at national and international meetings. Dr. Nagarkatti has served as a reviewer for grant proposals for funding agencies such as National Institutes of Health (NIH), American Cancer Society, Swiss Cancer League, Health Research Board of Ireland, Dept. of Defense, National Research Council (NRC), US Army Medical R & D Command, USDA, etc.

As Chair of the Dept. of Pathology, Microbiology and Immunology at USC School of Medicine, for the last 10 years, she has overseen the increase in funding from $600K to $9.2 million annually and her department is currently ranked 15th in the nation among Pathology departments based on NIH funding.
James A. McCubbin, PhD

Professor of Psychology
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James A. McCubbin, PhD, is Professor of Psychology and Public Health Sciences (adjunct) at Clemson University. He also serves as a Faculty Scholar at the Institute for Advancement of Health Care, University of South Carolina School of Medicine-Greenville. He received his PhD in Psychology and Neurobiology at the University of North Carolina-Chapel Hill. He has served on the faculty of the Department of Psychiatry at Duke Medical Center and the Department of Behavioral Science at the College of Medicine, University of Kentucky. He came to Clemson University as department chair and developed one of the nation’s first graduate training programs in Occupational Health Psychology. He is a Founding Member of the Society for Occupational Health Psychology, and a Fellow of the Academy for Behavioral Medicine Research, the Society for Behavioral Medicine, and the American Psychological Association’s Division of Health Psychology and Division of Comparative and Behavioral Neuroscience.

Dr. McCubbin’s research on the role of stress in the origins, treatment and prevention of cardiovascular disease has been funded by the National Institutes of Health (NIH) for over 20 years. He has published extensively on central nervous system control of blood pressure, pain sensitivity, and perception of emotion. He is active in grant proposal review for both NIH and the Centers for Disease Control (CDC), and he served as Chair of NIH’s Behavioral Medicine review committee.
Lotta Granholm, DDS, PhD

Lotta Granholm received her D.D.S/Ph.D. in Neurobiology from the Karolinska Institute in Stockholm, Sweden, in 1985. Thereafter, she proceeded to a postdoctoral position at the University of Colorado in Neuropharmacology 1985-1988. She was appointed Director for the Center on Aging at MUSC in 2001, and is a Professor with tenure in the Department of Neurosciences at MUSC. Dr. Granholm has published more than 125 original articles in peer-reviewed journals and has been funded continuously by the National Institutes on Aging since 1991. Dr. Granholm is the Co-Director for the newly formed Carroll A. Campbell Jr. Neuropathology Laboratory at MUSC. This is the only South Carolina human brain bank, and will allow neurologists to accurately diagnose diseases such as Alzheimer's and Parkinson's disease, and also provide scientists at MUSC and other institutions access to unique tissues from South Carolina residents. She is married and has one son, Lars.

Dr. Granholm is studying animal models of aging, Alzheimer's disease, Down syndrome, and Parkinson's disease. Her laboratory is an applied systems neurobiology lab with its main focus on neurodegeneration and neuroregeneration, utilizing interactive agents, neuroprotection and transplantation as intervention and prevention strategies. During recent years, Dr. Granholm has been working on diet-induced changes in the brain, both in terms of damaging, high-fat diets, and in terms of nutraceuticals such as blueberries. Her teaching area is physiology, histology, and neuroanatomy, with emphasis on age-related degeneration and basic physiology of aging.

The Carroll A. Campbell Jr. Neuropathology Laboratory, CCNL
(www.musc.edu/brainbank). The CCNL Brain Bank is a research and service center dedicated to helping those combating Alzheimer’s disease, Parkinson's disease, stroke and other related neurological disorders. CCNL was founded in the summer of 2009, and currently has banked more than 120 human brains for biochemical and morphological studies. Dr. Kumar Sambamurti (Department of Neurosciences) and Dr. Granholm are co-Directors for the brain bank. The brain bank is one of three entities in the overarching MUSC Centralized Biobank, which features one common software system for cataloging tissue samples (Tissue Metrix 2.0) and collaborates closely with the South Carolina Clinical and Translational Institute (SCTR; see www.sctr.musc.edu). The other two collections included in the MUSC Biobank are the Hollings Cancer Center and the SCTR tissue bank. The goal of the CCNL Brain Bank is to provide support for clinical and basic scientists by linking banked tissue with meaningful clinical information while maintaining compliance and procuring and storing tissues according to national standards. The neuropathology laboratory in the CCNL brain bank provides brain tissue and blood processing and staining. CCNL staff participate in recruitment of subjects for the registry, procurement and dissection of brain tissue, and storage/staining of the tissue in a top notch brain bank facility. A dedicated brain bank room is equipped with four -80°C freezers and three -20 freezers for storage of frozen and fixed brain tissues, which are linked to clinical information via Tissue Metrix biobanking software.
Dr. Van Puymbroeck’s research interests focus on the therapeutic use of recreation-based interventions (primarily yoga and other integrative medicine techniques) to improve function and well-being for individuals with chronic disease and disability. She is the President of the National Academy of Recreational Therapists and Associate Editor of the Journal of Leisure Research, American Journal of Recreation Therapy, and Therapeutic Recreation Journal.

Complementary and alternative medicine (CAM) is becoming increasingly popular and includes different therapies and products not currently recognized as a part of conventional medicine or rehabilitation. Interestingly, CAM use is increasing at a faster rate among individuals with functional limitations and multiple neurological conditions compared to people without any medical problems or limitations. Individuals may be more likely to choose CAM approaches because of the holistic approach to improve overall health and well-being, and the perception of relief from symptoms and side effects associated with a variety of illnesses, medications, and treatments. CAM approaches have been classified into two primary domains by the National Center for Complementary and Alternative Medicine (NCCAM), natural products or mind-body practices. Yoga practice, a common CAM approach, is housed under the mind-body domain. Dr. Van Puymbroeck has studied yoga in a number of populations: older adults with a fear of falling; breast cancer survivors; informal caregivers; and individuals with chronic stroke. A recently funded study will examine the impact of therapeutic yoga on increasing functional skills in individuals with Parkinson’s Disease.
**Jenay M. Beer, PhD**

Assistant Professor  
Director of the Assistive Robotics and Technology Lab (ART Lab)  
Department of Computer Science & Engineering  
College of Social Work  
University of South Carolina  
[Email](mailto:jbeer@cse.sc.edu)

Since 2013, Dr. Jenay Beer has been the Director of the USC Assistive Robotics and Technology Lab, and Associate Director of Usability for SmartHOME. She is an Assistant Professor with a joint appointment in the Department of Computer Sciences and Engineering and the College of Social Work. Dr. Beer has an interdisciplinary background and training in Engineering Psychology (also called Human Factors). Her joint appointment allows her to bridge disciplines and promote a user-centered approach to technology applications. She specializes in human-robot interaction (HRI) and older adults, passionately pursuing the application of technology to improve the quality of lives for the older population.
David G. Clark, MD

Associate Director of Dementia Research
Cognitive and Behavioral Neurology Division
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Dr. David Clark attended medical school at the University of Alabama School of Medicine, and completed his Neurology residency training at Wake Forest University. Following residency, Dr. Clark undertook a fellowship in Cognitive and Behavioral Neurology at the University of California- Los Angeles and the VA Greater Los Angeles Healthcare System. Dr. Clark joined the neurology faculty at the Medical University of South Carolina in the summer of 2014. His research interests include early detection of Alzheimer disease, brain mapping, and aphasia.
Ronald E. Acierno, Ph.D.

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Dr. Acierno is a senior researcher with the PTSD Clinical Team at the Ralph H. Johnson VA Medical Center and Professor and Associate Dean for Research in the College of Nursing at the Medical University of South Carolina (MUSC). Finally, he is Clinical Director and Founder of the non-profit Veterans on Deck, an organization that uses sailing to impart socialization, teambuilding and personal growth in Veterans recovering from PTSD, substance use, and who have been victims of Military Sexual Trauma. In addition to his clinical work with older adult disaster and crime victims and younger Veterans, Dr. Acierno has two related but distinct research foci: epidemiological studies of elder mistreatment and treatment outcome studies, focusing on using home based telemedicine for treatment delivery, with victims of trauma, disaster, combat or loss. He is PI on 2 Department of Defense grants: one comparing sertraline to prolonged exposure for PTSD, the other to determine if home based telemedicine vs. traditional in person treatment is better when trying to deliver exposure therapy to Military Sexual Trauma Victims; PI on a VA MERIT grant to evaluate Prolonged Exposure for PTSD delivered in person vs. home based telemedicine in Veterans, and has recently initiated a second National Institute of Justice grant in conjunction with the Archestone Foundation to study Elder Mistreatment. He is also Co-I on three additional grants, two of which are treatment outcome projects including a VA HSR&D funded project on Telemedicine (IIR-04-421-3). Thus Dr. Acierno thus mixes epidemiological research with treatment outcome research, and keeps close to the clinical world as a clinician-administrator for treatment programs serving both civilian and military traumatized populations.
Sue Levkoff, ScD, SM, MSW

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Dr. Sue Levkoff is the current director of SeniorSMART Center for Economic Excellence (now called SmartState) at the University of South Carolina. She is also serving as a Senior Policy Advisor for the Atlantic (Provinces) Institute for Aging Care. Her research is focused on developing products to help seniors maintain brain health and remain independent. Dr. Levkoff holds degrees from Wellesley College, New York University, Harvard School of Public Health-Department of Health Services Administration, and Harvard School of Public Health-Department of Behavioral Sciences. She has also served on the Mental Health and Aging Network Leadership Council for the American Society on Aging, among much other service work. Dr. Levkoff has authored or co-authored eighty-five original articles; seventeen chapters; eight books, monographs and textbooks; computers-based materials; and one hundred and three abstracts and presentations. She has been funded for seven Small Business Innovation Research grants awarded by NIH. In addition, Levkoff has been funded by various NIH institutes, SAMHSA, and HRSA for projects such as Interdisciplinary Geriatric Team Training, National Older Adult and Mental Health Technical Assistance Center, and Alcohol Outcomes Study.
POSTER ABSTRACTS

BENCH SCIENCE

1. Increased glutamate release in the dorsal striatum of a mitochondrial model of Parkinson’s disease
Heather Boger, Ariana Farrand, Rebecca Gregory, Cristina Backman, Kris Helke

Mitochondrial dysfunction has been implicated in the dopaminergic degeneration of Parkinson’s disease (PD), and a MitoPark mouse was created to mimic this dysfunction. These mice display similar characteristics to PD, including development of L-dopa-induced dyskinesia. Although this mechanism is unknown, a potential cause is glutamate excitotoxicity. The focus of this study was to determine glutamate neurotransmission in 28-week-old MitoPark mice using electrochemical detection. At this age, MitoPark mice have greater glutamate release compared to control mice, and PCR analysis indicates that they have greater RNA expression of several glutamate-specific receptors. These results suggest that MitoPark mice have a greater risk for glutamate-induced toxicity.

2. Cranberry Extract Standardized for Proanthocyanidins Alleviates β-Amyloid Peptide Toxicity in Caenorhabditis elegans Model of Alzheimer’s
Hong Guo

Alzheimer’s disease (AD) is a progressive, neurodegenerative disorder largely diagnosed in aged populations. It is urgent to develop more effective AD treatment with aging populations around the world. Our current results showed that the cranberry extract not only extended the lifespan of C. elegans AD model, but also delayed the body paralysis induced by Aβ toxicity. Heat shock transcription factor (HSF)-1, rather than daf-16 and skn-1 is required in the beneficial effect. Impressively, protein solubility in aged worms was dramatically improved which is HSF-1 dependent. It indicates the cranberry extract may protect C. elegans from Aβ peptide toxicity by promoting the protein homeostasis.

3. Chemokine Receptor 23 Expression levels in Individuals with down syndrome and Alzheimer’s disease pathology: implications for immune stress
Eric Hamlett, Xiuzhe Wang, Laura Columbo, M. Schultzberg, and Ann-Charlotte Granholm

Inflammation is counter-regulated by a separate biological process called resolution, which involves a unique class of receptors and cognate ligands (resolvins). Failure of inflammatory resolution leads to chronic inflammatory stress, which may underlie neuropathology in the brain of individuals suffering with Alzheimer’s disease (AD) or Down Syndrome-related AD (DS-AD). Resolution factors and receptors possess great therapeutic potential but are poorly characterized in the brain. In this poster, we present classical neuropathology in Human Control, AD, and DS-AD brains and our initial investigations that reveal expression levels of ChemR23, resolution
4. **The Effects of Probiotics Supplementation on a Health Using Caenorhabditis Aenorhabditis Elegans as a Model System**
Miranda Klees, Yuqing Dong, Min Cao

With an increasing glycemic index associated with the Western diet, it comes to no surprise that obesity, diabetes, and heart disease are on the rise. Shortened lifespan is associated with these diseases and consumption of a high sugar diet. The benefits probiotics have on shortened lifespan induced by a high glucose diet and the effects of probiotics in combination of cranberry extracts in the model system *Caenorhabditis elegans* were investigated. When *C. elegans* was supplemented with each probiotic strain, lifespan extension was observed. Reversal of glucose induced shortened lifespan and lifespan extension in combination of cranberry extracts was strain dependent.

5. **Elevated serum BDNF after exercise in healthy elderly volunteers**
Aurélie Ledreux, Krister Håkansson, Laura Columbo, Abdul Kadir Mohammed, Lotta Granholm

Many studies have demonstrated beneficial health effects from physical activity, including positive neurotrophic effects. Brain derived neurotrophic factor (BDNF) is usually considered as a key marker of brain health. Higher serum BDNF levels have been related to better memory and larger hippocampal volume. In this experiment, we compared acute serum BDNF changes after a 35-minute session of physical, cognitive and mindfulness exercise in 19 elderly volunteers. We found a significant increase of serum BDNF only after physical training, indicating that physical activity may have a special relevance for brain health. This work was funded by a grant from the Kamprad Foundation, Sweden.

6. **High-fat Diet-induced Obesity impairs spatial memory**
Catrina Sims-Robinson, Janet Boggs, and Eva L. Feldman

Individuals who are obese and/or over 65 years old have an increased risk for cognitive impairment. The purpose of this study is to examine the effect of a high-fat diet (HFD) induced obesity, on cognitive impairment. We hypothesize that a HFD impairs brain insulin signaling and leads to cognitive impairment. We determine that a HFD leads to hyperinsulinemia and alters brain insulin signaling in C57BL6 mice on a HFD. Cognitive impairment was detected by using spatial recognition tasks to assess learning and memory. Our study suggests that impaired brain insulin signaling may play a role in diet-induced cognitive impairment.

7. **Royal Jelly-Mediated Prolongevity and Stress Resistance in Caenorhabditis elegans Is Possibly Modulated by the Interplays of DAF-16, SIR-2.1, HCF-1, and 14-3-3 Proteins.**
Xiaoxia Wang and Lauren Cook

Recent studies suggest that royal jelly and its related substances may have anti-aging properties. However, the molecular mechanisms of beneficial effects remain elusive. We report that the effects of RJ and enzyme-treated RJ (eRJ) on lifespan in *C. elegans* are modulated by the sophisticated interplays of DAF-16, SIR-2.1, HCF-1, and 14-3-3 proteins. RJ and eRJ increased *C. elegans* lifespan in a dose-dependent manner. The RJ and eRJ increased the tolerance of *C. elegans* to oxidative stress, UV, and heat shock stress. Our data showed that RJ/eRJ-mediated lifespan extension requires insulin/IGF-1 signaling and the activities of DAF-16, SIR-2.1, HCF-1, and 14-3-3 protein.
8. **Short-term Outcomes of Delirium and Outpatient Management of Delirium Developed in Hospitalized Geriatric Patients**
Purva R. Choudhari, Maureen Dever-Bumba, RN, MSN, DrPH(c)

Delirium, an under-diagnosed condition afflicting nearly 50% of hospitalized elderly patients, results in greater health costs and long-term cognitive decline. A retrospective, quality improvement study of 164 geriatric-managed patients at a Columbia, SC hospital during a 6-month period was conducted. The study indicated that the incidence rate of delirium was 12.8%. 23.8% of delirium positive patients were readmitted within 60 days compared to 14.7% of non-delirium patients readmitted. Additionally, a survey of geriatricians was performed to explore outpatient management of delirium. While no specific delirium assessment tool was deemed best, the predominant management strategies were medication reconciliation and cognitive assessment.

9. **Fall-Risk-Increasing-Drugs and Falls in Elderly Women**
John Montgomery

30% of adults >65 years old fall annually, 10% resulting in fractures. Fall-risk-increasing-drugs (FRIDs) have been identified but are frequently still prescribed to the elderly. Older women with osteoporosis have a known risk of falling. A retrospective QI study was conducted at a geriatric practice in the Southeast. Using a sample of osteoporotic female patients, drug regimens of women with recent falls and with no falls were compared. FRIDs were more common in the fall-population (37.41%) than the no-fall-population (26.24%), but no significant correlation between numbers of FRIDs and falling was found. Old age and previous fall history were found to be good predictors of falls.

10. **Brain Aging in South Carolina: Imaging Neurodegeneration (BASCING)**
Anne Sorrell, Clifford Chan, Fatima M. Falangola, Jens Jensen, Joseph Helpern, Andreana Benitez

Biomarkers of brain and cognitive aging are crucial for improving the early detection of dementing disorders in our aging society. The purpose of this study is to develop brain biomarkers that sensitively measure cognitive decline using advance MRI techniques and neuropsychological testing. We have recruited 62 cognitively healthy participants between the ages of 60-80 without any significant medical condition. Participants underwent neuropsychological testing, a non-invasive MRI brain scan, a fasting blood draw, and anthropometry. This poster will present the study design, research aims and preliminary data resulting from the study.
11. **A Dynamic, Role based Approach to Understanding Alzheimer’s Caregiver Stress and Workforce Withdrawal**

Atkinson, T. Taylor, M. A. & Myers, B.

Work-related outcomes of caregiver stress include increases in absenteeism, tardiness, and turnover. These carry economic consequences for both the caregiver and the employing agency. In the current model, we attempt to understand the variables that lead to more negative employment outcomes. Our focus is on stress related to the caregiver’s role, their financial and health related resources, and the particular demands of the care receiver.

12. **Effects of Thoughts and Sensory Experiences on Heart Rate Variability of Dementia Caregivers**

C. Dye, C. Galligan, B. Lamont, N. Decker, H. Johnson, B. Carsten, K. Fountain, H. Karg

Undergraduate Creative Inquiry teams studied the impact of interventions including thoughts and external stimuli such as nature images, aromas, and music on heart rate variability (HRV) of older adults. Low HRV is associated with an increased risk of all-cause mortality (Thayer and Lane, 2007; Thayer et al., 2010). It is measured by the sequence of time intervals between heart beats and is an indicator of the balance between the sympathetic and parasympathetic nervous systems. HRV can be measured by a monitor called the emWave2 which indicates the percentage of time that HRV reflects various levels of “coherence” with highest levels in the green zone. In Spring 2014, thirteen caregivers of those with Alzheimer’s Disease and Related Disorders (ADRD) participated in the study and in Fall 2014 there were an additional eight participants. Through a sorting process, all participants chose a preferred nature image, aroma, and musical selection and the effects of these preferred stimuli on HRV was measured during a 2.5 minute reading using the emWave2. Results. We observed variations in the effect of different stimuli on the HRV of participants. As compared to coherence during thoughts of frustration, we found that the greatest improvement in percentage of time in coherence occurred during post-stimuli readings.

Conclusions. Study participants were able to achieve higher levels of coherence (p=.05) in post-intervention readings as compared to coherence levels during thoughts of frustration indicating they learned to shift their thoughts of frustration to feelings of gratitude and appreciation.

13. **Text messages to support ART adherence in HIV+ older African Americans**


Anti-retroviral therapy (ART) for HIV requires 90 percent adherence. African Americans with HIV are less likely than their white counterparts to be adherent. Older age and African American race are correlated with cognitive decline in HIV, placing older HIV+ African Americans at highest risk for ART non-adherence due to memory problems. We piloted a mobile texting program to support ART adherence among HIV+ older African Americans (n=21). Pill reminders were combined with motivational and educational texts. Thirty-eight percent of participants reported perfect adherence in the last 7 days at intake; 86% reported perfect adherence after 8-week trial. Participants found the motivational messages especially supportive.
14. Evaluating the Nutritional Risk of Older Adults Participating in the South Carolina Older Americans Act.
Maciel Ugalde, Katherine Cason, Cheryl Dye, Benjamin Sharp, Vivian Haley, & Lingling Zhang

A goal for older adults included in Healthy People 2020 is to “improve health, function and quality of life”. Congregate and home-delivered meals services provided through the Older Americans Act (OAA) are designed to meet this goal. Maintaining good nutritional status is vital for enabling older adults to remain independent by reducing their risk of disease and disability. The purpose of this study is to determine population “hot spots” of high nutritional risk and their association with demographic indicators by analyzing data collected at senior centers using the South Carolina Lieutenant Governor’s Office on Aging.

15. Sustaining the Family Caregiver
Werts, Amanda A., Charles, Victoria A., Lewis, Deb S., and Miller, Angela D.

The purpose of this study was to identify services sustaining family caregivers and to explore the barriers they face. Caregivers were surveyed who received respite funds from Catawba Area Agency on Aging. Findings suggest similar caregiving experiences, yet unique differences between adult children and spouses, pointing to a need for differentiated support. Sustainability of the in-home caregiving relationship requires attention to the service needs of the caregiver as well as the care recipient. Because informal caregivers are the backbone of home-based community care, consideration of their unique needs is vital the wellbeing of care recipients.

16. Community facilities and older adults’ health in China
Jingyuan Xu

Previous research has indicated that there is an association between community characteristics and health status among older adults, but the mechanisms underlying this relationship and what factors may moderate this relationship are unclear. This study attempts to fill this gap by assessing whether physical activities mediate the relationship between community facilities and older adults’ health using a national survey of older adults in China. In addition, this study tests gender differences in this relationship. Health status is characterized by overall self reported health, functional health, and chronic diseases.
17. **The Office for the Study Of Aging at USC: Promoting healthy aging through program development, evaluation, education/training and research for SC Older Adults**

Aaron Guest, BA; Claire Miller, BA; Sarah Pace; Gelareh Rahimi

The Office for the Study Aging (OSA) at the University of South Carolina was established in 1988 “to promote healthy aging through program development, evaluation, education/training and research” with the founding of the SC Alzheimer’s registry. Over the last twenty-five years the OSA has furthered this mission through the development of research and programs for all of South Carolina’s aging populace. Examples include the award winning strength mat training program, the Dementia Dialogues program that has trained over 20,000 individuals in dementia and Alzheimer’s care, and the South Carolina Vulnerable Adult Guardian ad Litem program.

18. **Dementia Dialogues: Educating South Carolina’s Caregivers**

Macie P. Smith, Ed.D; Aaron Guest, BA; Brenda Hyleman, MSW

The SC Alzheimer’s Disease Registry reports that 11.5% of South Carolinians age 65+ and 42.7% age 85+ have Alzheimer’s disease or a related dementia. Recognizing the growing demands of this disease, Dementia Dialogues, a five session in-person training course, was developed to provide education to those who care for someone who exhibit signs and symptoms of dementia. Since its inception, over 20,000 individuals have received Dementia Dialogues training and over 10,000 have completed the training and have earned the *Dementia Specialist* certificate. Participants report higher rates of understanding Alzheimer’s disease and dementia, recognition of signs and symptoms, and effectively managing challenging behaviors.
EXHIBITORS

alzheimer’s association™