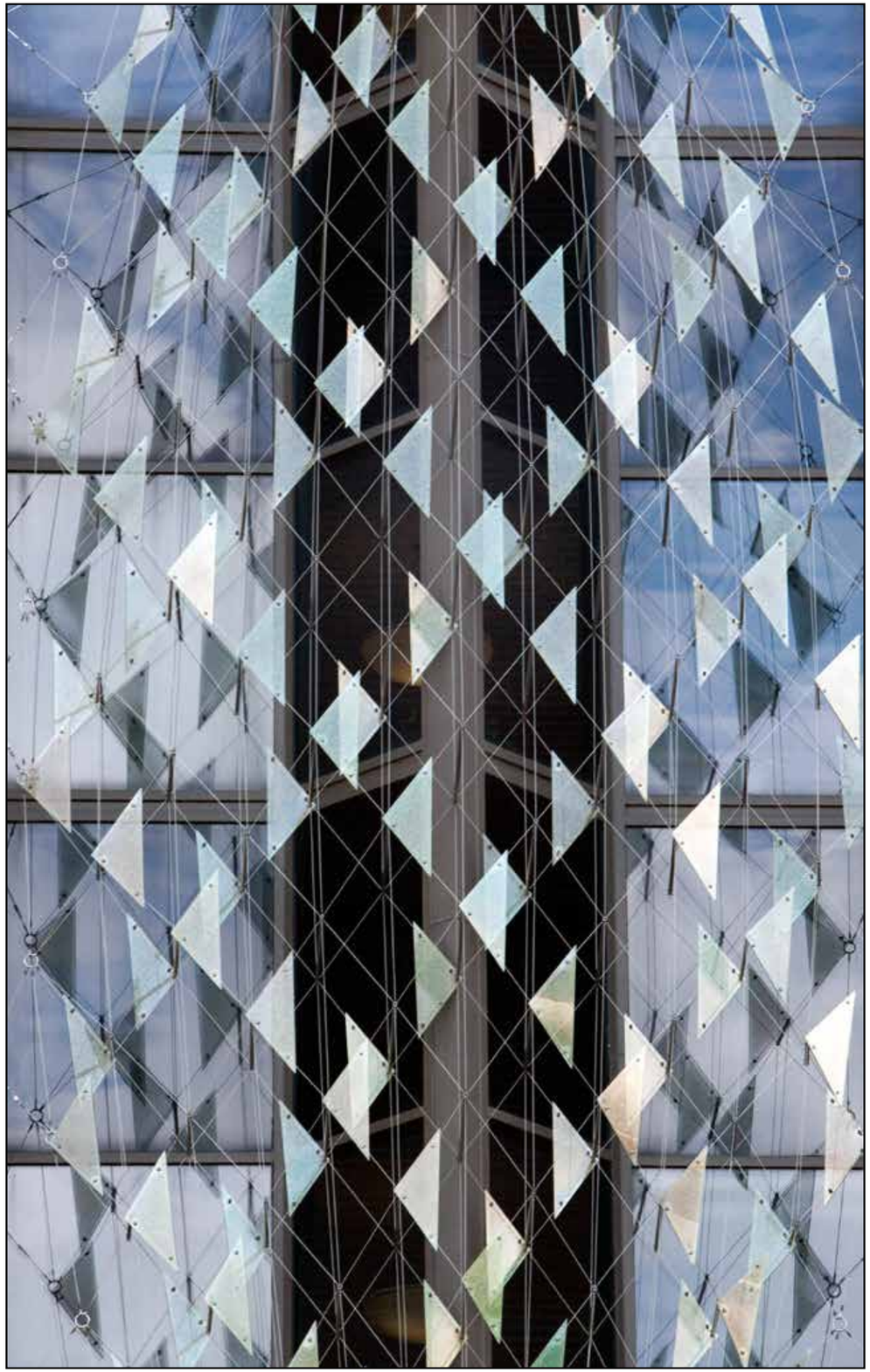
Evelyn F. McKnight Brain Research Foundation 2014 Inter-Institutional Meeting

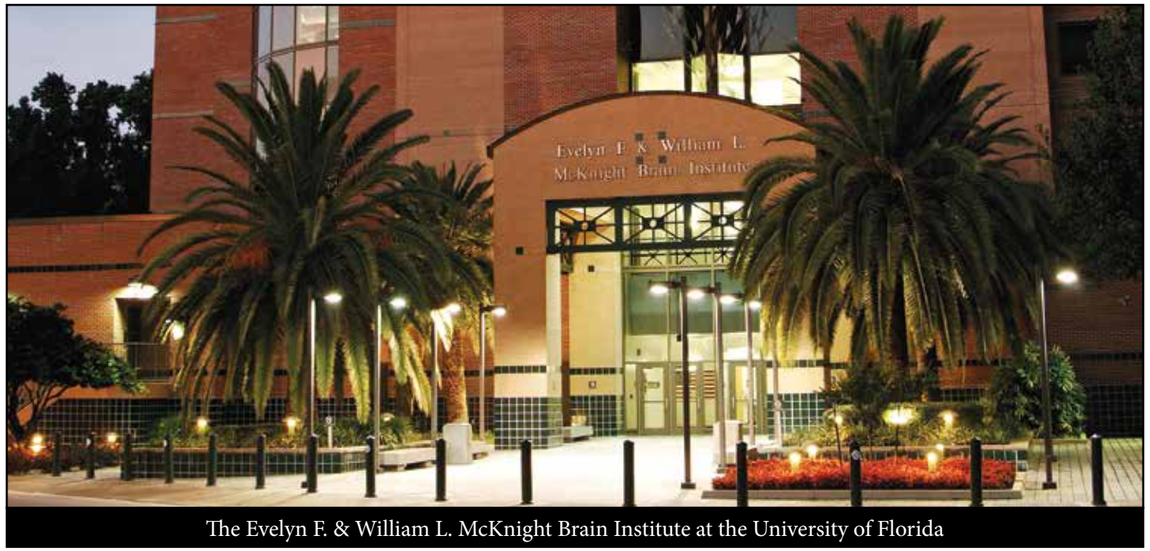
University of Florida
Gainesville, FL

April 23-25, 2014

The McKnight Brain Research Foundation®

Preserving Memory, Enhancing Life





The Evelyn F. & William L. McKnight Brain Institute at the University of Florida

The Evelyn F. and William L. McKnight Brain Institute at the University of Florida welcomes:

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The Evelyn F. McKnight Brain Institute at the University of Alabama at Birmingham

The Evelyn F. McKnight Brain Institute at the University of Arizona

The Evelyn F. McKnight Center for Age-Related Memory Loss at the University of Miami

The Clinical and Translational Research Building
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The Evelyn F. & William L. McKnight Brain Institute at the University of Florida

Tab Page: AGENDA

2014 McKnight Inter-Institutional Meeting
Hilton University of Florida
Gainesville, Florida
April 23 - 25, 2014

WEDNESDAY, APRIL 23, 2014

6:00 - 9:00 pm — Dinner Reception:
University of Florida, Florida Museum of Natural History
Featuring the Butterfly Garden

6:10 - 6:30 pm — **Introduction**
Tetsuo Ashizawa, M.D., Executive Director
Evelyn F. & William L. McKnight Brain Institute
University of Florida

Welcome
Bernie Machen, D.D.S., M.S., Ph.D., President
University of Florida

Remarks
Dr. Thomas Pearson, M.D., MPH, Ph.D., Executive Vice President
Research & Education, UF Health
University of Florida

THURSDAY, APRIL 24, 2014

7:30 - 9:30 am — Breakfast: Break Pavilion

8:30 - 8:50 am — **Welcome:** Century A
Thomas Foster, Ph.D., Professor
Evelyn F. McKnight Endowed Chair for Research on Cognitive Aging and Memory
Evelyn F. & William L. McKnight Brain Institute
University of Florida

J. Lee Dockery, M.D., Trustee
McKnight Brain Research Foundation

2014 McKnight Inter-Institutional Meeting

SESSION I — The Impact of Age-Related Executive Function Changes on Memory: Real Data and Some Speculations

Century A: MODERATOR – Lee Ryan, Ph.D.

8:50 - 9:10 am **Memory and Working with Memory: The Importance of Executive Functions in Effective Memory**
Lee Ryan, Ph.D., Associate Professor
Department of Psychology
University of Arizona

8:10 - 9:30 am **Executive Function, Memory & Emotion: Lessons from Parkinson Disease**
Dawn Bowers, Ph.D., ABPP-CN, Professor
Department of Clinical Health Psychology & Neurology
Evelyn F. & William L. McKnight Brain Institute
University of Florida

8:30 - 9:50 am **Individual Differences in Aged Rodent Models of Executive Function and Decision Making**
Barry Setlow, Ph.D., Associate Professor
Department of Psychiatry
Evelyn F. & William L. McKnight Brain Institute
University of Florida

9:50 - 10:10 am **Cognition and Everyday Task Performance**
Sara Czaja, Ph.D., Professor
Leonard M. Miller Professor
Department of Psychiatry and Behavioral Sciences Scientific Director
Center on Aging
University of Miami Miller School of Medicine

10:10 - 10:30 am **Improving Executive Functions through Real World Interventions: The Role of Social Media**
Betty Glisky, Ph.D., Professor and Department Head
Department of Psychology
University of Arizona

10:30 - 10:45 am Break: Break Pavilion

2014 McKnight Inter-Institutional Meeting

SESSION II — MRI Working Group Update: Leveraging Brain Imaging Across Institutes

Century A: MODERATOR – Clinton Wright, M.D., M.S.

10:45 - 11:00 am **Introduction**
Clinton B. Wright, M.D., M.S., Scientific Director
Evelyn F. McKnight Brain Institute
Associate Professor, Department of Neurology
University of Miami Miller School of Medicine

11:00 - 11:15 am **Brain Imaging Individual Differences in Cognitive Aging**
Gene Alexander, Ph.D., Professor
Director, Brain Imaging Behavior and Aging Lab
Department of Psychology
University of Arizona

11:15 - 11:30 am **Functional Neuroimaging of Older Adults: Diversity in Brain Activity and Relationship to Performance**
Kristina Visscher, Ph.D., Assistant Professor
Evelyn F. McKnight Brain Institute
University of Alabama at Birmingham

11:30 - 11:45 am **Metabolic Risk Factors for Age Related Cognitive Aging**
Ronald Cohen, Ph.D., Professor
Director of Cognitive Aging & Memory Program, CAM-CTRP
Institute on Aging, Evelyn F. & William L. McKnight Brain Institute
University of Florida

11:45 am - 12:00 pm **Quantifying Cerebral Blood Flow and Subclinical: Cerebrovascular Damage in the Aging Brain**
Noam Alperin, Ph.D., Professor
Department of Radiology
Evelyn F. McKnight Brain Institute
University of Miami

12:00 - 1:00 pm Lunch: Albert's Restaurant

2014 McKnight Inter-Institutional Meeting

SESSION III Epigenetics of Cognitive Aging

Century A: MODERATOR – J. David Sweatt, Ph.D.

1:00 - 1:05 pm **Vision Statement**
J. David Sweatt, Ph.D., Professor
Evelyn F. McKnight Endowed Chair
Director, Evelyn F. McKnight Brain Institute
Department of Neurobiology
University of Alabama at Birmingham

1:05 - 1:25 pm **Update on the Inter-Institutional Bioinformatics Core Project**
Thomas Foster, Ph.D., Professor
Evelyn F. McKnight Chair for Research on Cognitive Aging and Memory
Evelyn F. and William L. McKnight Brain Institute
University of Florida

1:25 - 1:45 pm **Needles in Haystacks: Next Generation Approaches for the Molecular Dissection of the Aging Brain**
Matthew Huentleman, Ph.D., Associate Professor
Neurogenomics Division the Translation Genomics Research Institute
Affiliate, Evelyn F. McKnight Brain Institute
University of Arizona

1:45 - 2:05 pm **Epigenetic Control of Homeostatic Plasticity**
John Hablitz, Ph.D., Professor
Vice Chair, Department of Neurobiology
Evelyn F. McKnight Brain Institute
University of Alabama at Birmingham

2:05 - 2:25 pm **Toward Genomic Dissection of Human Brain & Memory Circuits: Single-cell Sequencing of Genomes and Transcriptomes**
Leonid Moroz, Ph.D., Professor
Department of Neuroscience
Evelyn F. & William L. McKnight Brain Institute
University of Florida

2:25 - 2:45 pm **The Pros and Cons of Using Homogenates Versus Defined Cells in Epigenetic Studies of Brain**
Paul Coleman, Ph.D., Senior Scientist
Director, J.L. Roberts Center for Alzheimer's Research
Affiliate, Evelyn F. McKnight Brain Institute
University of Arizona

2:45 - 3:05 pm **Parental Methamphetamine Exposure Affects Offspring's Behavior and DNA Methylation**
Juan Young, Ph.D., Assistant Professor
Dr. John T. Macdonald Foundation, Department of Human Genetics
Evelyn F. McKnight Brain Institute
University of Miami

2014 McKnight Inter-Institutional Meeting

3:05 - 3:20 pm Break: Break Pavilion

SESSION IV Enhancing Cognitive Aging: Clinical Translational Approaches

Century A: MODERATOR – Ronald A. Cohen, Ph.D.

3:20 - 3:40 pm **Cognitive Training Enhances Real World Cognitive Outcome**
Karlene K. Ball, Ph.D., University Professor & Chair
Department of Psychology
Evelyn F. McKnight Brain Institute
University of Alabama

3:40 - 4:00 pm **Cognitive Training Enhances Real World Cognitive Outcome**
Clinton B. Wright, M.D., M.S., Scientific Director
Evelyn F. McKnight Brain Institute
Associate Professor, Department of Neurology
University of Miami Miller School of Medicine

4:00 - 4:20 pm **Pharmacological Approaches to Enhancing Synaptic Plasticity and Cognitive Aging**
Jennifer Bizon, Ph.D., Associate Professor
Department of Neuroscience
Evelyn F. & William L. McKnight Brain Institute
University of Florida

4:20 - 4:40 pm **Enhancing Cognitive Function with Transcranial Direct Current Stimulation**
Adam Woods, Ph.D., Assistant Professor
Department of Aging & Geriatric Research
Cognitive Aging & Memory-Clinical Translational Research Program (CAM-CTRP)
Institute on Aging
Evelyn F. & William L. McKnight Brain Institute
University of Florida

4:40 - 5:00 pm **Real-time fMRI Brain Self-regulation: Applications to Cognitive & Emotional Aging**
Ranganatha Sitaram, Assistant Professor
Department Biomedical Engineering
Cognitive Aging & Memory-Clinical Translational Research Program (CAM-CTRP)
Institute on Aging
Evelyn F. & William L. McKnight Brain Institute
University of Florida

5:30 - 5:45 pm Load Shuttles – for Departure to Dinner: Front of UF Hilton Conference Center

5:45 pm Shuttles Depart Hotel for Dinner

6:00 - 9:00 pm Dinner Reception: University of Florida President's House

2014 McKnight Inter-Institutional Meeting

FRIDAY, APRIL 25, 2014

7:30 - 9:00 am Breakfast Buffet: Break Pavilion

7:30 - 9:00 am Board of Directors Breakfast with MBI Directors:
Magnolia Room

SESSION V Rising Stars

Century A: MODERATOR – Thomas Foster, Ph.D.

9:00 - 9:15 am **Dissecting Cortical-Hippocampal Circuits Across the Life Span**
Sara N. Burke, Ph.D., Assistant Professor
Department of Neuroscience
Evelyn F. & William L. McKnight Brain Institute
University of Florida

9:15 - 9:30 am **Age-Related Changes in the Coordinated Activity of Neurons within the Hippocampus and Frontal Cortex**
Stephen Cowen, Ph.D., Assistant Professor
Department of Psychology
Evelyn F. McKnight Brain Institute
University of Arizona

9:30 - 9:45 am **Uncovering Navigational Circuit Formations of Young and Old Rhesus Macaques Brains**
James Engle, Ph.D., Postdoctoral Research Associate
Evelyn F. McKnight Brain Institute
University of Arizona

9:45 - 10:00 am **Prefrontal Cortical NMDA Receptors in Age-Related Cognitive Decline**
Joseph McQuail, Ph.D., Postdoctoral Fellow
Department of Neuroscience
Evelyn F. & William L. McKnight Brain Institute
University of Florida

10:15 - 10:30 am **Chronic Changes in Neuronal Activity Dynamically Regulate DNA Methylation and Gene Expression**
Jarrod Meadows, B.S., Graduate Student Trainee
M.D., Ph.D. Program
Department of Neurobiology
University of Alabama at Birmingham

10:30 - 10:45 am Break: Break Pavilion

2014 McKnight Inter-Institutional Meeting

10:45 - 11:00 am **ARC, Aging and Neuroprotection Against Ischemic Injury**
Charles Cohan, M.S., Graduate Student
Evelyn F. McKnight Brain Institute
University of Miami

11:00 - 11:15 am **Effect of Cerebral Ischemia on Cognitive Impairment and Hippocampal Plasticity in a Nine Month Old Rat Model**
Jacob Neumann, Ph.D., Postdoctoral Fellow
Cerebrovascular Disease Research Lab
Evelyn F. McKnight Brain Institute
University of Miami

11:15 - 11:30 am **The Basic Neurobiology of Pitt-Hopkins Syndrome**
Andrew J Kennedy, Ph.D., Postdoctoral Fellow
Department of Neurobiology
University of Alabama at Birmingham

11:30 - 11:45 am **Adiponectin Isoforms, Brain Morphology, and Cognition**
Agustina Rossetti, M.S., Graduate Student
Department of Psychology
Evelyn F. McKnight Brain Institute
University of Miami

12:00 pm Meeting adjourns – Box Lunch provided upon departure: Break Pavilion

Shuttle Services provided to the Gainesville airport. Separate schedule provided.

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Tab Page: UF

University of Florida

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UF | Evelyn F. & William L. McKnight Brain Institute
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Stephen Anton, Ph.D.

Assistant Professor & Clinical Research Division Chief
Department of Aging and Geriatric Research

Dr. Anton's specific research interests are in the role that lifestyle factors have in influencing obesity, cardiovascular disease, and metabolic disease conditions. He completed his doctoral degree in Clinical and Health Psychology at the University of Florida (UF), receiving training in health promotion and the delivery of lifestyle interventions designed to modify eating and exercise behaviors. During his post-doctoral fellowship at the Pennington Biomedical Research Center, he served as a critical member of the NIA funded study, Comprehensive Assessment of Long-term Effects of Reducing Energy Intake (CALERIE; PI, Eric Ravussin), and the NHLBI funded study, Preventing Overweight Using Novel Dietary Strategies (POUNDS LOST; PI: George Bray). Following completion of his post-doctoral fellowship in June 2007, he accepted a joint Assistant Professor position within the Department of Aging and Geriatric Research and Department of Clinical and Health Psychology at the University of Florida. Since joining, he has successfully obtained and conducted multiple grants examining the effects that lifestyle-based interventions have on biological and functional outcomes relevant to obesity, cardiovascular disease, and metabolic disease conditions related to aging. In addition to his research on the effects of lifestyle interventions on biological and functional outcomes, Dr. Anton has been actively involved in a line of research evaluating the potential that natural compounds and/or nutritional formulations (i.e., nutraceuticals) may have in preventing and treating metabolic conditions associated with aging. For example, Dr. Anton served as the Principal Investigator of a study funded by the University of Florida's McKnight Brain Institute (Dual PI: Anton S; Manini,T) examining the effects of the natural compound resveratrol on cognitive and physical function in older adults. Dr. Anton is currently conducting clinical trials examining the effects of the natural compounds vitamin D and Fermented Papaya Preparation (FPP), as well as a low dose of the pharmaceutical medication methotrexate, on cognitive and physical function outcomes.

Tetsuo Ashizawa, M.D., FAAN

Executive Director
Evelyn F. and William L. McKnight Brain Institute
Melvin Greer Professor
Chairman
Department of Neurology

Dr. Tetsuo Ashizawa is the Executive Director of the Evelyn F. and William L. McKnight Brain Institute and Professor and Chairman of the Department of Neurology at the University of Florida, Gainesville, Florida. Dr. Ashizawa also holds the Melvin Greer Professor of Neurology. Dr. Ashizawa received his medical degree from the Keio University School of Medicine in Tokyo in 1973. He completed his neurology residency training and subsequent clinical and basic science fellowships at Baylor College of Medicine. In 1981 he joined the faculty at Baylor, where he climbed to the academic rank of tenured Professor 1997. In 2002 Dr. Ashizawa was recruited to the University of Texas Medical Branch (UTMB) in Galveston, Texas to chair the Neurology Department, and then moved to Gainesville, Florida in April 2009 as Chair of the Department of Neurology at UF. He has published over 200 papers including 160 orignal contributions in peer-reviewed scientific and clinical journals. Dr. Ashizawa's basic science research projects have primarily been focusing on neurogenetic disorders caused by expanded short tandem repeats, including myotonic dystrophy, Friedreich's ataxia and autosomal dominant spinocerebellar ataxias. His current research is to investigate the pathogenic mechanism of spinocerebellar ataxia type 10 (SCA10). Dr. Ashizawa is also the principal investigator of a nationwide consortium for clinical research on SCA1, SCA2, SCA3 and SCA6. This consortium has been one of the Rare Disease Clinical Research Consortia (RDCRC) organized and funded by the National Institute of Health (NIH). This consortium will establish the infrastructure and database to prepare for future clinical trials of new therapies for SCAs.

Linda Bean, B.S.

Doctoral Candidate/Graduate Assistant
Department of Neuroscience
Evelyn F. and William L. McKnight Brain Institute

Linda Bean is a Doctoral Candidate working in the laboratory of Dr. Thomas Foster. Linda graduated Summa Cum Laude with a bachelor's degree in biological sciences from Eastern Illinois University in Charleston, Illinois in 2008, where she also worked as a graduate teaching assistant in a Molecular/ Cellular Biology laboratory. Upon entering the Interdisciplinary Program (IDP) in Biomedical Sciences at the University of Florida, Linda received a 2010 Alumni Graduate Program Award and a Grinter Fellowship Award. The goal of her research is to unravel the mechanisms by which estrogens are known to provide protection from memory deficits seen with aging with specific attention directed toward the interaction of estrogen receptors with cellular functions and how these interactions alter behavior in aging female animal models.

B. Sofia Beas, B.S.

PhD Graduate Student
Evelyn F. and William L. McKnight Brain Institute
Department of Neuroscience

Sofia Beas is a fourth year Ph.D. graduate student in the department of Neuroscience at the Evelyn F. and William L. McKnight Brain Institute at the University of Florida, Gainesville, Florida. Sofia received her Bachelor of Science degree from the University of Texas at El Paso in 2004. As an undergraduate, she was awarded with the Minority Access to Research Career (MARC) Fellowship in the fall of 2007, a competitive NIH-funded program that promotes minorities in pursuing biomedical research careers. She also participated in The Leadership Alliance Summer Research Early Identification program at Brown University in the summer of 2008. In addition, during the summer of 2009, she was awarded a Summer Research Fellowship by the National Institute on Drug Abuse (NIDA) for underrepresented students. In the fall of 2009, Sofia was admitted to the Neuroscience Ph.D. program under the mentorship of Dr. Jennifer Bizon, who is a very successful scientist in the field of aging and memory, and who, in collaboration with Dr. Barry Setlow, has an expanding research program in the behavioral, pharmacological, and neural mechanisms of decision-making. In 2011, she was awarded with the National Science Foundation (NSF) Graduate Research Fellowship. Sofia's research topic involves looking at the neural mechanism of age-related alterations in prefrontal cortex and investigating how these mediate changes in executive functioning. Specifically, she is interested in looking at the changes in the dopaminergic system and other relevant neurotransmitter systems.

Jennifer Bizon, Ph.D.

Associate Professor
Department of Neuroscience

Dr. Jennifer Bizon is an Associate Professor in the Departments of Neuroscience and Psychiatry at the University of Florida, College of Medicine. She received her Bachelor of Science with highest honors in Psychology from the University of North Carolina at Chapel Hill (1993) and her Ph.D. in Neurobiology and Behavior from University of California, Irvine (1998). She then received postdoctoral training at Johns Hopkins University (1998-2003) where she investigated how age-related alterations in neuroendocrine and neuromodulatory systems impact neural plasticity and cognition. She established her own laboratory at Texas A&M University prior to joining the University of Florida in 2010. Her research program is broadly focused on understanding brain aging and its implications for cognitive functions, including learning, memory, and executive processes. The central approach in her lab involves using animal models to better understand how aging alters corticolimbic inhibitory and neuromodulatory circuits, and how such alterations contribute to decline of function across multiple cognitive domains. Her laboratory is particularly interested in how age-related changes in inhibitory circuitry within the prefrontal cortex contribute to the decline of executive functions, including working memory, cognitive flexibility, and decision making. A key element of her research approach involves the consideration of individual differences in cognitive aging, which can be leveraged to identify and better understand the relevant cognitive and neural mechanisms that underlie both impaired and successful cognitive outcomes. The long-term goal of her lab is to use behavioral and pharmacological approaches to target effective compensatory strategies to maintain cognitive capacities across the full lifespan. Dr. Bizon's lab is currently funded by the National Institute on Aging. Dr. Bizon serves on several NIH grant review panels, the editorial board of Neurobiology of Aging and on the advisory board for the Alzheimer's Drug Discovery Foundation. Dr. Bizon currently mentors two Ph.D. students, two postdoctoral fellows and serves as the Director for the neuroscience graduate program.

Dawn Bowers, Ph.D., ABPP-CN

Professor
Clinical & Health Psychology and Neurology

Dr. Bowers is the director of the Cognitive Neuroscience Laboratory at the McKnight Brain Institute, the area head of the Neuropsychology division, coordinator of the UF clinical neuropsychology post-doctoral program, and director of the neuropsychology module of the UF Center for Movement Disorders and Neurorestoration. She is internationally known for her expertise in neurocognitive and emotion processing changes associated with neurologic disorders with research spanning laterality, attention and memory, and neuropsychology of emotion using TMS, ERP, psychophysiology, computational modeling, face digitizing. Current research focuses on psychophysiological and behavioral signatures of cognitive/emotional changes associated with aging and dopaminergic depletion disorders (i.e., Parkinson disease, NINDS funded), predictors of decline and wellbeing, and novel treatment approaches for apathy and executive dysfunction. She, along with collaborator Michael Marsiske, direct the newly established UF-Vitality Mind program, a town-gown partnership between UF-PHHP and the Village Retirement Community. This program provides novel 'brain health' research interventions and clinical services to the Village residents in Gainesville, FL.

Sara N. Burke, Ph.D.

Assistant Professor
Department of Neuroscience

Although damage to different medial temporal lobe structures can have dissociable behavioral effects, the dense interconnectivity between the hippocampus, lateral entorhinal and perirhinal cortices suggest that these areas cooperatively support memory. Moreover, it is known that the prefrontal cortex modulates functional interactions among medial temporal lobe structures. Behavioral and electrophysiological data indicate that the perirhinal cortex is compromised with age. Moreover, recent neural recordings from young rats have revealed that stimuli known to modulate perirhinal neuron activity also lead to alterations in the firing properties of hippocampal neurons. Little is known, however, regarding the necessity of interactions between brain areas for memory and if this is vulnerable to the aging process. In order to understand the neural circuits critical for memory, and to promote the design of targeted interventions for treating cognitive aging, it is vital to determine the dynamic relationships between the brain regions that govern this aspect of cognition. Currently, the experiments in my lab are aimed at better characterizing age-associated changes in the intrinsic properties of the perirhinal cortex that lead to behavioral deficits, and defining the interactions between medial temporal lobe structures and the prefrontal cortex that are associated with memory formation and retrieval across the lifespan.

Sarah E. Burke, B.A.

Graduate Research Assistant
Department of Neuroscience

Behavioral data have shown the perirhinal cortex to be vulnerable to normal aging. Through connections to the prefrontal cortex and the other medial temporal lobe structures, the perirhinal cortex is critical for the ability to associate sensory features of an experience with a spatial location and maintain the information across temporal gaps. Recent in vitro physiology data showing that neurons in the perirhinal cortices show persistent firing in the absence of input have led to the hypothesis that persistent activity of perirhinal cortex cells is a mechanism for sustaining relevant sensory information across delays. A direct relationship between persistent firing cells and PRC-dependent behaviors, however, has not been empirically established. In the lab of Dr. Sara Burke and in collaboration with the lab of Dr. Jason Frazier, my experiments are aimed at elucidating changes that may occur in the perirhinal cortex with normal aging via analysis of behavior, molecular components and physiology of the region. Behavioral studies are aimed at testing the interaction between the perirhinal cortex and prefrontal cortex via disconnection lesions to compare performance of young versus old. Whole cell patch clamp electrophysiology experiments are used to elucidate the differences between young and aged tissue with respect to the inherent characteristics of neurons that enable them to fire persistently. These properties are then correlated with molecular mechanisms of activation through in situ hybridization histochemistry of channel expression and neurotransmitter levels that may decrease with normal aging and are required for persistent firing.

Ron Cohen, Ph.D., ABPP, ABCN

Director, Cognitive Aging and Memory-
Clinical Translational Research Program (CAM-CTRP)
Professor, Neurology, Psychiatry, Clinical and Health Psychology, Aging and Geriatric Research Institute on Aging

Dr. Ron Cohen is the Director for the Center on Cognitive Aging at the University of Florida and Professor within the College of Medicine. He received a BSc with honors from Tulane University in 1976 and a PhD in psychology from Louisiana State University in 1982. Following an internship in Clinical Psychology from the Neuropsychiatric Institute at UCLA Medical School with a Medical Psychology Specialization in Neuropsychology and Behavioral Medicine (American Psychological Association Accredited), he completed a postdoctoral fellowship in Neuropsychology at the University of Florida in 1983. He was then awarded Diplomate status by the American Board of Clinical Neuropsychology in 1995. Dr. Cohen's research interests include clinical and experimental neuropsychology; cognitive and clinical neuroscience; neuropsychology of attention; attention and memory; anterior cingulate cortex, short-duration timing; reward systems and their influence on attention and other cognitive functions; neuroimaging; age-associated cognitive and brain dysfunction, neurodegenerative disorders (e.g., Alzheimer's disease, vascular dementia, MCI); HIV-associated neurocognitive dysfunction, and cardiovascular-associated brain dysfunction.

Dr. Cohen is principal and co-investigator on multiple R01 grants from NIH over the past 15 years. In addition, he has chaired several NIH study sections, including the recent review group on MCI, and he has been a standing member of a NIH study section (BMIO) for the past seven years. He is a reviewer for both medical and neuropsychology/ neuroscience journals, and he has served on several editorial boards of multiple scientific journals over the past two decades, including: Brain Imaging and Behavior, Journal of the International Neuropsychological Society, and the Clinical Neuropsychologist. He is also the primary section editor for Stroke on neuropsychological studies.

Dr. Cohen was previously professor of Psychiatry and Human Behavior and Brain Science at Brown University for ten years, and director of Neuropsychology at the Miriam Hospital for 19 years. He was also a founding member of the Magnetic Resonance Foundation at Brown University. He mentored more than 20 post-doctoral trainees over the past 15 years, including 13 F32 awardees and 4 K-awardees from NIH.

Vonetta Dotson, Ph.D.

Assistant Professor
Department of Clinical & Health Psychology,
College of Public Health and Health Professions;
Department of Neuroscience

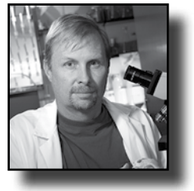
Dr. Dotson is an Assistant Professor in the Department of Clinical and Health Psychology (CHP) with a joint appointment in the Department of Neuroscience at the University of Florida. She is also a Claude D. Pepper scholar. She received her Ph.D. from CHP in 2006 with a specialization in neuropsychology and a certificate in gerontology. She completed her post-doctoral training in the Laboratory of Personality and Cognition in the National Institute on Aging Intramural Research Program under the mentorship of Drs. Susan Resnick and Alan Zonderman. Her research program focuses on studying the underlying neurobiology of late-life depression and its relationship to cognitive changes and functional deficits in the elderly. Currently, work in her lab is aimed at 1) using cognitive and neuroimaging methods to examine the depressive spectrum hypothesis, 2) investigating whether particular symptom dimensions of depression (e.g., somatic vs. affective symptoms) have distinct cognitive and neural correlates in normal aging and Parkinson's disease, 3) examining whether aerobic exercise improves memory functioning and alters memory-related brain functioning in depressed older adults; and 4) examining whether genetic markers impact the effect of exercise on depression in the elderly.

Natalie C. Ebner, Ph.D.

Assistant Professor
Department of Psychology

Dr. Ebner is Assistant Professor in the Department of Psychology at University of Florida since Fall 2011. She received her Ph.D. in 2005 in Psychology with a particular focus on lifespan development and human aging from the Free University of Berlin in Germany. She completed post-doctoral fellowships at the Max Planck Institute for Human Development in Berlin, Germany, and at Yale University, where she also worked as Associate Research Scientist before joining the faculty at University of Florida.

Dr. Ebner's research background is in cognitive, social, and affective changes across the lifespan. Her research focuses on age-related changes in attention and memory in processing socio-emotional information. She uses a multi-methods approach that combines convergent measures, including self-report, cognitive-behavioral, eye tracking, and functional neuroimaging techniques, with the aim to integrate introspective, behavioral, and neuropsychological data. Her work is published in leading peer-reviewed journals in the fields of aging, emotion, and cognition.



Thomas C. Foster, Ph.D.

Professor and Evelyn F. McKnight Chair for Research on Cognitive Aging and Memory

Dr. Thomas Foster is the Evelyn F. McKnight Chair for Research on Cognitive Aging and Memory and Professor of Neuroscience at the University of Florida. Dr Foster's research program utilizes a combination of behavioral characterization with biochemical, molecular, and electrophysiological techniques to obtain a vertically integrated perspective on neural aging, from the molecular to the cognitive level. The two main goals of the lab are to identifying mechanisms for age-related memory impairment and to test treatments to alleviate memory deficits. Electrophysiological recording, gene arrays, and enzyme activity assays are employed to identify biological markers of memory decline and examine the mechanisms for age-related changes in synaptic plasticity and signaling cascades that are thought to mediate memory consolidation. This work has provided evidence for a model linking age-related memory decline with altered Ca2+ homeostasis and increased oxidative stress associated with aging. A second area of research is directed at examining the therapeutic window for beneficial effects of hormone replacement on memory function. Estrogen has effects on the hippocampus that are diametrically opposite to changes observed in aged memory impaired animals; however, estrogen responsiveness declines with advanced age and the duration of hormone deprivation. Finally, Dr. Foster's lab employs behavioral treatments and gene therapy in an attempt to rejuvenate the brain and preserve cognitive function. He has been continuously funded through NIH as a principle investigator since 1992 and his work includes over 100 publications on memory mechanisms and the aging brain. He is currently the principle investigator on two grants from the National Institute of Aging, which includes a MERIT award.

Charles J. Frazier, Ph.D.

Associate Professor
Department of Pharmacodynamics and Neuroscience

My lab is engaged in several projects focused on revealing detailed changes in cellular and synaptic physiology in the aged brain. One project tests the hypothesis that NMDA hypofunction in individual dendritic spines of aged CA1 pyramidal cells is produced by increased activation of calcium gated potassium channels. Another project is revealing an age related shift in tonic inhibition in the medial prefrontal cortex that may help explain beneficial effects of a GABAB receptor antagonist on working memory performance in age impaired animals. A third very recent project is beginning to look for age related changes in the ability of neurons in the perirhinal cortex to enter into a persistent firing mode. We also have worked to develop techniques that will help enable robust genomic analysis of individual aged mammalian neurons. These projects have all been supported and enabled by our efforts to extend and improve technical approaches to studying single cells or synapses in acute brain slices extracted form aged animals, and most are conducted in collaboration with one or more colleagues at UF (e.g. Foster, Bizon, Setlow, Burke, Moroz).

Michael Guidi, B.A.

Doctoral Candidate | Graduate Assistant
Department of Neuroscience
Evelyn F. and William L. McKnight Brain Institute

Michael Guidi is a fifth-year graduate research assistant working in the laboratory of Dr. Thomas Foster. He received his Bachelor's degree in psychology from Florida Atlantic University in 2007. While at FAU, in addition to completing his psychology coursework and graduating summa cum laude, he also completed the requirements to graduate with Honors designation in psychology. This included the completion of an Honors Thesis on research performed using In vivo pharmacological manipulations of small conductance Ca2+-activated K+ channels to assess learning and memory behavior in the novel object regonintion task. After entering the Interdispinary Program in Biomedical Sciences at the University of Florida in 2009, Michael joined the Foster lab in conducting research on age-related cognitive decline. His research focuses on the effects of aging on prefrontal cortex-dependent executive functions and the elucidation of the role of the NMDA receptor in senescent prefrontal cortex physiology. During his time here at the University of Florida, Michael has been the recipient of several honors, including extramural funding through the Department of Physiology (Neurobiology of Aging, Predoctoral Fellowship), as well as a research award from the Bryan Robinson Memorial Endowment.

Lara Ianov, B.S.

Department of Neuroscience
Evelyn F. and William L. McKnight Brain Institute

Lara Ianov graduated magna cum laude with a bachelor's degree in a concentration of molecular biotechnology from the University of Arkansas at Little Rock in May of 2012. She is a second year doctoral student in the Genetics & Genomics program from the University of Florida. Lara joined Dr. Thomas C. Foster's lab in 2013. She is interested in understanding the role of epigenetic & genetic factors involved in age-related memory decline. Her work involves Next-Generation Sequencing (NGS) technology and bioinformatics.

Ashok Kumar, Ph.D.

Assistant Professor
Department of Neuroscience
Evelyn F. and William L. McKnight Brain Institute

The overall goal of my research is in the pursuit of fundamental knowledge of mechanisms underlying alterations in hippocampal function during senescence, as well as the application of that knowledge to promote healthy and successful aging, while reducing the encumbrances of cognitive aging and age-related neurodegenerative diseases. Toward this goal, a central focus of my research involves the role of various interventions such as environmental enrichment and exercise in restoring/improving age-associated impaired learning and memory, synaptic plasticity, and cell excitability. My work has helped to define age-related changes in the response of G-protein coupled cholinergic, metabotropic, glutamate receptors and estrogen receptors on cell excitability and synaptic plasticity in the senescent brain. In the case of hippocampal function during senescence, I have published research showing that environmental enrichment and exercise significantly reduced the age-induced enhanced afterhyperpolarization (AHP), which determines cell excitability and contributes to impaired long-term potentiation (LTP) associated with cognitive aging. My recent work highlighted the link between age-associated oxidative stress and a decrease in N-methyl-D-aspartate (NMDA) receptor function; what many believe underlie a decline in hippocampal dependent learning and memory. Dr. Kumar also studies the effects of estrogen on hippocampal function across the lifespan, and our results indicate that estrogen rapidly increases neuronal excitability, decreases AHP, and augments the strength of synaptic transmission. Finally, my research will determine the complex interaction of cholinergic and metabotropic neurotransmission on hippocampal synaptic function during senescence and delineate the mechanisms that contribute to age-related memory loss.

Dr. Kumar earned his Bachelors and Masters of Sciences and Ph.D. from the University of Lucknow/Central Drug Research Institute, Lucknow.

Andrew Maurer, Ph.D.

Postdoctoral Fellow
Department of Neuroscience

Dr. Andrew Maurer is presently transitioning from one Evelyn F. McKnight Brain Institute to another. At the University of Arizona, under the supervision of Dr. Carol A. Barnes, Dr. Maurer was awarded a Ruth L. Kirschstein National Research Service Award (F32) to investigate the hippocampal physiology of freely-moving primates. Moreover, Dr. Maurer is an affiliate of the Burke and Bizon Laboratories at the University of Florida. His present research interests include the how anatomical changes associated with normal aging affect neural dynamics and the finding potential targets of therapeutic intervention.

Joseph McQuail, Ph.D.

Postdoctoral Associate
Department of Neuroscience

Joe is a postdoctoral associate in the laboratory of Dr. Jennifer Bizon. Broadly, his work seeks to determine how aging alters neurotransmitter receptor expression and function and to link these changes to specific forms of behavioral impairment. He earned his B.S. from the College of William and Mary, graduating with highest honors in Neuroscience in recognition of his work investigating the cholinergic modulation of attention and working memory. As a doctoral student and NIA fellowship recipient at Wake Forest University, Joe examined age-related changes in the functional coupling of muscarinic receptors to specific G-protein subunits and down-stream stimulation of intracellular Ca2+ levels in the hippocampus. Now with the aid of a fellowship awarded by the McKnight Brain Institute at the University of Florida, he and Dr. Bizon are working with a team of McKnight investigators to determine how changes to glutamate receptors in aged prefrontal cortical neurons lead to selective impairments to either working memory or cognitive flexibility and whether targeted transgenic therapy can rescue executive function.

Leonid L. Moroz, Ph.D.

Distinguished Professor of Neuroscience, Genetics, Biology & Chemistry
McKnight Brain Institute & Department of Neuroscience

Dr. Leonid Moroz is a Distinguished Professor of Neuroscience, Biology, Chemistry and Genetics at the University of Florida. His interdisciplinary research utilizes a combination of molecular, physiological, computational and comparative approaches to decipher (i) genomic bases of neuronal identity and plasticity in memory circuits, and (ii) the origins neurological impairments during age-related memory loss. The long-term objective of Dr. Moroz' program is to understand fundamental aspects of (a) mechanisms of integrative activity of genome in neurons as they learn and remember, focusing on individually identified neurons in memory-forming circuits and mechanisms of long-term memory persistence; and (b) the origins and evolution of nervous systems using comparative approaches. To achieve these objectives he develops new tools and methods of single-cell epigenomics to monitor expression and activity of nearly all genes in any single neuron of a given circuit – an approach that has enabled innovative experimental approaches to long-standing questions in neuroscience and the cellular bases of behavior. In doing so he brings to bear, when necessary, concepts or techniques from other disciplines, such as microanalytical chemistry and single-cell metabolic or proteomic profiling, or phylogenomics.

Recently, Dr. Moroz performed the first genome-wide DNA methylation profiling at the single-cell level and demonstrated that fascilatory transmitters induce active and rapid DNA demethylation via formation of 5-hydroxymethylcytosine (the 6th base in DNA), suggesting a critical role for massive genomic-wide demethylation in neuroplasticity. He also provided evidence for linking age-related memory decline with neuron-specific chromatin remodeling, signifying the role of epigenetic mechanisms in differential aging of neuronal subpopulations.

Dr. Moroz is consistently at the forefront of both genomics and neuroscience, as evidenced by his publications in the prominent journals (Nature, PNAS, Cell, Neuron) as well as media coverage of his research. The evolutionary approach, that he promotes, is less developed in modern neuroscience. However, it is crucial to understand how complex networks and brains are formed or to answer "why" questions (e.g. why different subsets of signal molecules were selected in distinct neuronal circuits, or why different neurons "come together" to form a given memory-forming circuit). His recent studies strongly suggest that neurons evolved more than once and, surprisingly, complex brains independently formed at least 9 times in evolution. Dr. Moroz has been continuously funded through NIH as a PI since 1999 with over 120 publications including those on single-neuron genomics of differential aging. He is currently the principle investigator on 5 grants including two NIH, NSF, and NASA awards. Dr Moroz mentors five Ph.D. students and leads 10 large-scale genome sequencing projects.

Lucia Notterpek, Ph.D.

Chair and Neely Professor
Department of Neuroscience
Evelyn F. and William L. McKnight Brain Institute

Dr. Lucia Notterpek is the Neely Professor and Chair of the Department of Neuroscience at the McKnight Brain Institute at the University of Florida, Gainesville, Florida. Dr. Notterpek received a B.A. in Anatomy-Physiology from the University of California at Berkeley. She obtained her Ph.D. in Neuroscience at the University of California at Los Angeles in 1994, working with Dr. Leonard H. Rome. Her postdoctoral training was under the guidance of Dr. Eric Shooter at Stanford University. She was recipient of the 2004 Jordi Folch-Pi Memorial Award, from the American Society of Neurochemistry, awarded to young scientist for research excellence. She has authored and co-authored over fifty peer-reviewed publications. She is actively involved in the educational and research missions of the College of Medicine at the University of Florida. Her research efforts have been supported by the NIH, the National Muscular Dystrophy Association and the National Multiple Sclerosis Society.

Dr. Notterpek investigates how the loss of glial insulation around axons, called myelin, contributes to the pathogenesis of hereditary and age-related neural disorders. Diseases that are specifically linked with defects in myelin include peripheral neuropathies, such as Charcot-Marie-Tooth diseases and multiple sclerosis. Recent studies also suggest an involvement of myelin damage in the underlying and painful symptoms of trigeminal neuralgia. Current research is focused on understanding the subcellular changes within neural cells that underlie the progressive nature of these disorders and normal aging-associated myelin degeneration. A major effort of our lab focuses on approaches to maintain healthy myelin during lifespan and/or restore it in disease paradigms. The laboratory is equipped with models and reagents, including small molecule therapeutics and genetic models to attain these goals. Other areas of active investigation include the optimization of lipid nanoparticles as therapy delivery vehicles for neural disorders.

Caitlin Orsini, Ph.D.

Postdoctoral fellow
Department of Psychiatry

Dr. Caitlin Orsini is a postdoctoral fellow in the laboratories of Dr. Barry Setlow and Dr. Jennifer Bizon. Dr. Orsini received her Bachelor's of Science from Washington College in Chestertown, Maryland. She then went on to receive her PhD from the University of Michigan in the laboratory of Dr. Stephen Maren, in which she investigated the neural circuitry underlying the persistence of fear. After the completion of her doctoral degree, she began post-doctoral training at the University of Florida. Stemming from her graduate work, one line of research that Dr. Orsini is pursuing is how the basolateral amygdala and its interactions with other limbic structures contribute to risky decision-making. In addition to understanding the neural circuitry subserving risk-taking in adulthood, her research focuses on how it may become altered during normal aging. In a broader therapeutic context, results from these projects could have important implications for understanding how the brain balances rewards and risks, and how this balance may change during the aging process.

Asha Rani, M.A., M.Ed.

Assistant in Neuroscience
Department of Neuroscience
Evelyn F. & William L. McKnight Brain Institute

Asha Rani has been working with Dr. Foster for over 11 years. Her work incorporates various molecular techniques and biochemical assays, including next generation sequencing using the Ion Proton System for RNA and DNA sequencing, PCR, RT-PCR, immunochemistry, and immunoprecipitation to localize expression patterns of biological markers in aging animal models. In addition, she uses several different behavioral paradigms such as the Morris water maze, passive avoidance, grid walk, contextual fear conditioning, and novel object recognition to characterize learning and memory function in rats and mice over the course of their lifespan. Past experiments have focused on the impact of environmental enrichment and life-long exercise on cognitive functions and oxidative damage associated with aging.

Barry Setlow, Ph.D.

Associate Professor
Department of Psychiatry

Dr. Setlow received his B.A. from Yale University and his Ph.D. from the University of California, Irvine, followed by a post-doctoral fellowship at Johns Hopkins University. His laboratory uses rodent models to elucidate neurobehavioral mechanisms of psychiatric disorders and age-related cognitive decline, with a particular focus on prefrontal cortical-mediated executive functions and decision making.

Kristy Greene Shimp, B.S.

Graduate Research Assistant
Department of Psychiatry
Department of Neuroscience

Kristy got her bachelors of science in Nutritional Sciences from the University of Florida in 2006. She was then accepted into a competitive internship hosted by St. Vincent's Medical Center in the field of clinical laboratory science. Upon completion of her training, Kristy obtained a position as a clinical microbiologist at St. Vincent's where she worked for three years. She then made a career change to pursue her true passion: Neuroscience. Currently, Kristy is a 3rd year doctoral student in UF's Interdisciplinary Degree Program, and is broadly interested in molecular and genetic/epigenetic mechanisms of individual differences in cognitive function, in both aging and psychiatric disorders. One of her current projects, in which she is mentored by Drs. Bizon, Foster, and Setlow, is to identify transcriptional markers of intact and impaired working memory function in aged rats.

John B. Williamson, Ph.D.

Assistant Professor/Research Health Scientist
Department of Neurology/CAM/VAMC

Dr. Williamson conducts research on the effects of autonomic disruption on the development of chronic cognitive and emotional deficits. He is currently funded by the VAMC to examine individual differences in structural and functional brain profiles in patients with traumatic brain injury and chronic PTSD (a mechanistic study of disrupted central autonomic networks in this population). He is also funded to study the impact of vagal nerve stimulation on autonomic states and responses at baseline and to stress in the same population as well as changes in sleep architecture and subjective quality. In a parallel research line, he has had continuous funding in cerebrovascular disease populations since 2006 studying the impact of regional white matter disease on the development of cognitive and mood symptoms, and asymmetries in spatial perception. Currently, with the CAM, he is a collaborator on aging and HIV studies of white matter changes on fronto-subcortical system behavior, and is working on submitting an R01 on mechanisms of cognitive and emotional changes in heart failure.

Adam J. Woods, Ph.D.

Assistant Professor
Department of Aging & Geriatric Research

My active research program investigates the role of brain arousal systems and attentional processing in conscious perception and cognition. Many patient populations (e.g., stroke, dementia, etc.) suffer from underlying deficits in arousal. Recent research also suggests that decline in arousal systems contribute to attention-related deficits in normal cognitive aging. My research hypothesizes that treatment of underlying deficits in arousal can ameliorate related symptoms of normal cognitive aging and neurological disorders through stimulation of attentional processing. For example, hypo-arousal is known to play a role in spatial neglect, a post-stroke disorder in which patients fail to attend to one side of space. Using an ERP arousal biomarker to detect arousal deficits and a simple sensory arousal stimulation method I was able to temporarily ameliorate symptoms of spatial neglect. Pharmacological manipulations of arousal have proven much longer in duration. My research uses these and other cognitive neuroscience methods (fMRI, tDCS, etc.) to investigate and combat aspects of normal cognitive decline related to arousal and attention.

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Andrew Arrant, Ph.D.

Postdoctoral Trainee
Department of Neurology

Frontotemporal dementia (FTD) is a progressive, fatal neurodegenerative disorder in which the frontal and temporal lobes of the brain degenerate, resulting in behavioral changes such as disinhibition and social withdrawal. Loss-of–function mutations in the progranulin gene (GRN) that result in progranulin deficiency are one of the major genetic causes of FTD. Using Grn+/– mice as an animal model with an FTD-like phenotype, I am investigating the mechanism by which progranulin deficiency produces FTD-like behaviors. I am also investigating potential therapies to prevent or reverse these behaviors.

Karlene K. Ball, Ph.D.

Professor & Chair
Department of Psychology
Evelyn F. McKnight Brain Institute

Karlene Ball, PhD., is a University Professor and Chairs the Department of Psychology at the University of Alabama at Birmingham. She is also the Director of the UAB Roybal Center for Translational Research on Aging and Mobility, and Associate Director, Center for Aging. Dr. Ball is widely published, and recognized internationally as an expert in the field of vision, aging, and cognitive function. She is particularly known for her work with older drivers and cognitive interventions. Her research is funded primarily through the NIH, and she collaborates widely with automobile insurance companies, Departments of Motor Vehicles, industry partners, and other organizations with interests in driving assessment and/or cognitive training to maintain driving competence. She has served on numerous committees for the National Academy of Sciences and the National Research Council and recently chaired the Committee for the Safe Mobility of Older Persons.

Tara M. DeSilva, Ph.D.

Assistant Professor
Evelyn F. McKnight Brain Institute
Physical Medicine & Rehabilitation

While oligodendrocytes (OLs) have the ability to proliferate in inflammatory white matter diseases such as cerebral palsy and multiple sclerosis, they fail to myelinate axons suggesting a disruption in maturation or inability to make functional contacts with axons. Also, there is a substantial decrease in myelin in the aging brain suggesting that with age the brain has a reduced capacity to remyelinate. Therefore, a better understanding of the signaling mechanisms responsible for myelination would allow us to design therapeutic approaches to promote brain repair. The selection of axons to be myelinated, formation of the nodes of ranvier, and regulation of myelin thickness are known to involve axon-glial signaling. One of the emerging molecules in axon-glial signaling is glutamate. Glutamate, as an essential neurotransmitter, exerts its role by activating glutamate receptors on neurons, and is precisely regulated by glutamate transporters. These same constituents of glutamatergic signaling are developmentally regulated throughout the OL lineage. In fact, vesicular release of glutamate from axons induces glutamate receptor mediated currents in postsynaptic OL progenitor cells, underscoring the importance of studying glutamate as a signaling molecule during myelination. Our lab has shown that stimulation of glutamate receptors leads to activation of specific intracellular signaling cascades that enhance myelination and that inflammatory mediators perturb these signaling pathways and disrupt myelination. Our lab uses primary cultured cells in an in vitro model of myelination as well as transgenic animals to understand the role of glutamatergic axon-glial signaling during myelination and how inflammation and the process of aging dysregulate these pathways.

Cristin Gavin, Ph.D.

Research Associate
Department of Neurobiology

Pitt-Hopkins Syndrome (PTHS) is a neurodevelopmental disorder, the underlying genetic basis of which is mutation/deletion of the TCF4 gene and resultant disruption of normal TCF4 transcription factor function. The mutated gene product is present throughout development but is also present in the fully developed adult CNS. At present, it is unclear if Pitt-Hopkins Syndrome is caused exclusively by disruption of TCF4 function during development, or whether loss of TCF4 in the mature CNS might also contribute to neurobehavioral and cognitive dysfunction in PTHS patients. My studies aim to investigate the physiological basis of cognitive dysfunction associated with PTHS, focusing on mechanistic studies to understand the role of the TCF4 transcription factor in central nervous system function.

John J. Hablitz, Ph.D.

Professor
Evelyn F. McKnight Brain Institute
Vice Chair, Department of Neurobiology

Dr. Hablitz's research is centered on understanding control of activity in local cortical circuits. He is using studies on synaptic transmission to further understand basic biophysical properties of mammalian central neurons, as well as to explore the pathophysiology of experimental epilepsy. Whole-cell voltage-clamp recordings from visually identified neurons are used in in vitro brain slice preparations. The goal of these studies is to determine the types of synaptic interactions present among pyramidal cells and interneurons in neocortex and how these patterns change over the lifespan. A particular goal is to understand how hyperpolarization-activated non-specific cation (HCN) channels control neocortical excitability. HCN channels and Ih, the membrane current generated by their activation, have been implicated in a variety of processes including memory, behavior and neurological diseases. HCN channels regulate dendritic integration and affect excitability of individual neurons in prefrontal cortex. Alterations in these processes are potentially important in aging since dendritic integration is altered in spatial learning-impaired aged rats. Additional studies involve the use of imaging techniques to directly visualize activity in presynaptic nerve terminals. These studies examine modulation of neurotransmitter release in normal neocortex and animal models of neurological disease.

New studies are underway examining changes in dopamine (DA) receptor modulation of transmitter release at inhibitory nerve terminals in prefrontal cortex during aging. The hypothesis being examined is that DA modulation of responses to gamma frequency stimulation is altered in aging brain. The question whether DA modulation of GABA release in response to natural stimulation patterns is more efficacious and altered in aged animals also will be studied.

Bryce Johnston, B.S.

Graduate Student
Cell, Molecular, & Developmental Biology

While procedural advances have greatly improved survival following adverse cardiac events over the past several decades, cognitive impairment in survivors is now an emerging epidemic. The underlying mechanisms that precede cognitive decline in cardiovascular disease paradigms is not well understood. Our primary focus is on the role of neuroinflammation as a causative factor in hippocampal-dependent cognitive decline during adverse cardiac events. We utilize mouse models of acute myocardial ischemia-reperfusion to understand the role of inflammation in modifying gene expression in neurons important for hippocampal-dependent learning and memory deficits. Additionally, we utilize transgenic mice to explore how specific inflammatory mechanisms in glia mediate learning and memory deficits in acute myocardial ischemia-reperfusion. Finally, we are exploring novel anti-inflammatory therapies that target both cardiovascular and learning and memory deficits in our disease models.

Andrew J. Kennedy, Ph.D.

Postdoctoral Fellow
Department of Neurobiology

Dr. Kennedy's research interests are the epigenetic mechanisms that facilitate learning and memory, and he is a postdoctoral fellow in the laboratory of Dr. J. David Sweatt at the University of Alabama, Birmingham. Currently, Andrew studies the basic neurobiology underlying Pitt-Hopkins Syndrome, an ultra rare intellectual disorder on the autism spectrum with a phenotype resembling Angelman Syndrome, but that is currently understood in only the most cursory way. Pitt-Hopkins Syndrome is caused by the haploinsufficiency of transcription factor 4 (Tcf4), and understanding its role in epigenetic regulation and transcription may be useful for potential therapeutic intervention as well as determining the role transcription facter 4 performs in learning and memory more broadly.

Robin Lester, Ph.D.

Professor
Department of Neurobiology
Evelyn F. McKnight Brain Institute

Dr. Lester's lab has been researching the role of CNS nicotinic acetylcholine receptors (nAChRs) in tobacco addiction and central synaptic transmission. nAChRs are ligand-gated ion channels composed of five individual protein subunits that cause neuronal excitation when bound and activated by synaptically released neurotransmitter, acetylcholine, or exogenous drugs like nicotine. In respect to drug addiction, they have been studying how exposure of these receptors to nicotine in vivo leads to persistent changes in hippocampal neuronal network activity following long-term withdrawal of the drug. In addition they have uncovered a unconventional form of diffuse synaptic signaling through nAChRs in the brain implying that this transmitter system may participate in volume transmission. Molecular biological studies have characterized at least ten receptor subunits that can be assembled together in numerous combinations giving rise to a wide variety of nAChRs with distinct functional roles. It is because of this diversity that nAChRs have been implicated in a range of CNS behaviors from pain sensation to learning and memory, and multiple pathological states such as aging, epilepsy and schizophrenia.

Farah D. Lubin, Ph.D.

Assistant Professor
Evelyn F. McKnight Brain Institute
Department of Neurobiology

As an Assistant Professor at UAB, Dr. Lubin is focused on studying learning, memory and its disorders. She is investigating the Molecular and Cellular basis for transcriptional regulation of genes in neurons that integrate and encode information in the brain and to find treatments for memory impairments. Currently, the goal of the lab is to gain insights into epigenetic mechanisms and the signaling cascades that mediate the interaction of transcription factors to chromatin and determine how they participate in the regulation of gene expression during memory encoding, allocation, storage and recall in hopes of unraveling the causes of cognitive deficits and to develop treatment options. Dr. Lubin's research program focuses on neurons and synapses in the hippocampus, an area of the brain that plays an important role in learning and memory. She and others have observed that neurons have "highjacked" epigenetic processes such as DNA methylation and post-translational histone modifications to coordinate gene transcription changes in the hippocampus, thus revealing an unexpected role for chromatin structure regulation in mature, non-dividing neurons during memory formation. Furthermore, our chromatin biology studies revealed that DNA methylation and histone methylation work in concert to regulate gene transcription during memory consolidation. The results obtained from my research program will provide fundamental information concerning chromatin biology in mature neurons with clear relevance in learning and memory deficits associated with aging, epilepsy, schizophrenia, and depression.

Lori Wakefield McMahon, Ph.D.

Professor
Director, Center for Neuroscience
Evelyn F. McKnight Brain Institute
Cell, Developmental & Integrative Bio

My lab is currently investigating the role of estradiol in hippocampal synapse density, synaptic plasticity and learning. We are particularly interested in determining how loss of estradiol during aging impacts hippocampal function and whether hormone replacement therapy can activate estradiol-dependent mechanisms to restore normal synaptic function in hippocampus as well as hippocampal dependent learning and memory. Ovariectomized female rats treated with estradiol at various intervals following ovariectomy are used as a model system. Experiments involve electrophysiological measurements of NMDA currents, synaptic transmission, and long-term plasticity in acute brain slices. We have recently reported that estradiol increases NMDA transmission mediated by NR2B containing receptors and that is causally related to the heightened LTP induced by estradiol. Determining how estradiol and hormone replacement affects hippocampal function could lead to development of therapies to alleviate hormone-dependent memory loss in aging.

Jarrod Meadows, B.S.

MD-PhD Student
MSTP/Neuroscience

Experience-dependent modifications of synaptic strength represent a core feature of learning and memory. Site-specific alterations in synaptic efficacy by Hebbian long-term potentiation (LTP) and long-term depression (LTD) have long been regarded as candidate mechanisms of cellular information storage. Yet, if unchecked, both LTP and LTD likely propagate in a feed-forward manner, destabilizing synaptic gain and network equilibrium. Homeostatic synaptic plasticity (HSP) is thought to provide counterbalance to Hebbian plasticity, acting as a crucial locus of negative feedback. A form of HSP, synaptic scaling, involves bidirectional changes in global post-synaptic receptor density in response to chronically elevated or depressed activity. Importantly, synaptic scaling occurs via a cell-wide program that multiplicatively adjusts post-synaptic weights across all synapses. The coordinated, global expression of synaptic scaling suggests an equally coordinated and integral role for transcriptional and epigenetic regulation. One type of epigenetic mechanism, DNA methylation, has received particular attention as a bidirectionally regulated mark necessary for synaptic plasticity. We hypothesized synaptic scaling is dependent on activity-regulated DNA methylation. Indeed, we have shown that bidirectional, multiplicative scaling of excitatory weights is associated with concurrent, bidirectional changes in total genomic hydroxymethylation and with changes in gene expression of enzymes involved in site-specific methylation and demethylation. We have further demonstrated that the competitive DNA-methyltransferase inhibitor, RG108, blocks both the scaling up and down of mEPSCs. Together, our results show the regulation of gene expression via DNA methylation represents a critical point of control during synaptic scaling.

Erik Roberson, M.D., Ph.D.

Co-Director, Center for Neurodegeneration and Experimental Therapeutics
Associate Professor
Depts of Neurology and Neurobiology
Virginia B. Spencer Prof of Neuroscience
Evelyn F. McKnight Brain Institute

Dr. Roberson received his A.B. with highest honors from Princeton University. He then earned his M.D. and Ph.D in neuroscience at Baylor College of Medicine in Houston where he studied molecular mechanisms of learning and memory using a combination of electrophysiology and biochemistry. He completed a residency in neurology at the University of California San Francisco, where he also served as Chief Resident in Neurology. After residency, he completed a clinical fellowship in behavioral neurology with Dr. Bruce Miller at UCSF and resumed basic research in the laboratory of Dr. Lennart Mucke at the Gladstone Institute of Neurological Disease, initiating his current studies of neurodegenerative disease using mouse models. He was appointed as Assistant Professor of Neurology at UCSF in 2005 and moved to UAB in 2008. Dr. Roberson is co-director of the Center for Neurodegeneration and Experimental Therapeutics at UAB, which is dedicated to developing new therapies for age-related cognitive disorders and neurodegenerative disease. In addition to directing a basic science laboratory, Dr. Roberson also cares for patients with memory disorders and dementia at the Kirklin Clinic and directs clinical trials.

The Roberson lab studies the neurobiology of two common neurodegenerative disorders, Alzheimer's disease (AD) and frontotemporal dementia (FTD), with a focus on understanding the underlying cellular and molecular mechanisms that will lead to better treatments. Lab members use diverse approaches to study animal models of these conditions. One area of interest is pursuing the discovery that tau reduction makes the brain resistant to AD-related neuronal dysfunction and seizures, to determine how the protective effects of tau reduction might be harnessed as a treatment for these conditions. Other members of the lab work on determining how mutations in tau and progranulin cause the social and behavioral dysfunction seen in FTD.

J. David Sweatt, Ph.D.

Professor
Evelyn F. McKnight Endowed Chair
Department of Neurobiology
Director, Evelyn F. McKnight Brain Institute

Dr. Sweatt's research program focuses on molecular mechanisms underlying learning and memory. Dr. Sweatt uses knock-out and transgenic mice to investigate signal transduction mechanisms in the hippocampus, a brain region known to be critical for higher-order memory formation in animals and humans. His laboratory also uses a large number of genetically engineered mouse models for human learning and memory disorders in order to investigate the molecular and cellular basis of human memory dysfunction. His laboratory has discovered a number of new roles and mechanisms of gene regulation in memory formation, focusing on studies of transcription factors, regulators of chromatin structure, and other epigenetic mechanisms such as chemical modification of DNA. Overall his work seeks to understand the role of regulation of gene expression in synaptic plasticity and long-term memory formation and storage. His laboratory also is interested in using what they have learned about the molecular basis of hippocampal synaptic plasticity and memory formation to generate insights into human pathological conditions associated with aging-related memory dysfunction.

Kristina M. Visscher, Ph.D.

Assistant Professor
Evelyn F. McKnight Brain Institute
Department of Neurobiology

Dr. Visscher is interested in characterizing what brain mechanisms underlie the human ability to flexibly process inputs from the environment. We often process the same information in different ways at different times. For example, sometimes we may hear a string of numbers (e.g. a phone number on a commercial from the radio) and try to remember it, while at another time, the same string of numbers may be irrelevant, and we may ignore it. Dr. Visscher uses a variety of tools to better characterize how human brain activity before a stimulus is presented may impact the ways in which that stimulus is processed. Behavioral measurements (psychophysics and eye movements), measurement of electrical activity in the human brain using EEG, and measurement of neural activity through fMRI allow insight into this question.

Dr. Visscher started at the University of Alabama at Birmingham in April 2009, after a postdoctoral fellowship at Harvard University, where she worked with Randy Buckner and studied how connectivity among brain areas (as measured with functional MRI) change with experience. She used psychophysical and EEG techniques to examine how brain activity before a stimulus influences whether a stimulus will interfere with items in working memory during a previous postdoctoral fellowship at Brandeis University working with Robert Sekuler. She received her Ph.D. in Neuroscience from Washington University in St. Louis in 2004, where, with Steve Petersen, she studied how techniques of fMRI can be used to examine different timecourses of neural activity.

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Gene E. Alexander, Ph.D.

Professor and Director, Brain Imaging
Behavior & Aging Lab
Department of Psychology and
Evelyn F. McKnight Brain Institute

Dr. Alexander's research interests focus on the study of brain-behavior relationships in the context of healthy aging and age-related, neurodegenerative disease to help elucidate the mechanisms of human cognitive aging. He uses neuroimaging techniques, including structural and functional magnetic resonance imaging (MRI) and positron emission tomography (PET), in combination with measures of cognition and behavior to address research questions on the effects of healthy aging and Alzheimer's disease on the brain. A major focus of his research program includes the use of multivariate network analysis techniques with neuroimaging methods and measures of neuropsychological function, health status, and genetic risk to advance understanding on how these multiple factors interact to influence cognitive function as we age. Dr. Alexander's research also includes the application of these techniques to non-human animal models of aging and age-related disease. He is Professor in the Clinical and Cognition & Neural Systems Programs in the Department of Psychology, and in the Neuroscience and Physiological Sciences Graduate Interdisciplinary Programs. He directs the Brain Imaging, Behavior & Aging Lab in the Department of Psychology and in the Evelyn F. McKnight Brain Institute.

Elsa Baena, M.A.

Graduate Student
Cognition and Neuroimaging Laboratory
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Elsa Baena is sixth year graduate student in the Clinical Neuropsychology Program. She graduated with honors in Psychology and a certificate in Life-Span Development and Gerontology in 2006 from the University of Akron. After graduation she was part of Duke University's Post-baccalaureate Research Education Program (PREP) where her research focused in investigating basic episodic memory processes by comparing age groups. Currently, she studies age-related changes in memory processes and how those changes relate to brain function by using neuropsychological testing, behavioral and neuroimaging techniques such as functional magnetic resonance imaging (fMRI).

Carol A. Barnes, Ph.D.

Regents' Professor, Psychology, Neurology and Neuroscience
Evelyn F. McKnight Chair for Learning and Memory in Aging
Director, Evelyn F. McKnight Brain Institute
Director, ARL Division of Neural Systems, Memory & Aging
Associate Director, BIO5

The central goal of Dr. Barnes' research and teaching program is the question of how the brain changes during the aging process and the functional consequences of these changes on information processing and memory in the elderly. Her research program involves studies of behavior and neurophysiology in young and old laboratory animals. This work provides a basis for understanding the basic mechanisms of normal aging in the brain and sets a background against which it is possible to assess the effects of pathological changes such as Alzheimer's disease. Some current work also includes an assessment of therapeutic agents that may be promising in the alleviation or delay of neural and cognitive changes that occur with age. Dr. Barnes is a Regents' Professor at the University of Arizona, Director of the Evelyn F. McKnight Brain Institute at the University of Arizona and recipient of the Evelyn F. McKnight Endowed Chair for Learning and Memory in Aging. The objective of the Evelyn F. McKnight Brain Institute is to uncover the neurobiological changes in the brain that cause memory changes as we age, and to unravel which changes are due to normal aging and which are due to disease states.

Joe Cardoza, B.S

Graduate Student
Cognition and Neuroimaging Lab
Cognitive and Neural Systems Program

My current research interests lie in the areas of perirhinal cortex, object discrimination and aging. Previous research has found older rats to be significantly different to younger rats in their ability to discriminate similar looking objects. In our experiment, we predict that older adults will have decreased performance in an ambiguous object discrimination task and will show differences in fMRI activation in the perirhinal cortex. Activation and volume analysis will be used to compare both groups. With this project, we hope to learn more about the differences between younger and older adults and the role that the perirhinal cortex plays in aging.

Monica K. Chawla, Ph.D.

Assistant Research Scientist
ARL Division of Neural Systems, Memory and Aging
Evelyn F. McKnight Brain Institute

The primary goal of Dr. Chawla's research is the question of how the brain changes during the normal aging process and the functional consequences of these changes on information processing and memory in the elderly. Her research involves behavioral studies of immediate-early genes and neural plasticity mechanisms using spatial and temporal compartmental analysis in young and old laboratory animals. This work provides a basis for understanding the basic mechanisms of normal aging in the brain and sets a background against which it is possible to assess the effects of pathological changes such as Alzheimer's disease. Dr. Chawla is an Assistant Research Scientist and heads the molecular research team in Dr. Carol Barnes laboratory at the University of Arizona, Evelyn F. McKnight Brain Institute and the ARL Division of Neural Systems Memory and Aging at the University of Arizona.

Paul D. Coleman, Ph.D.

Senior Scientist and Co-Director of J.L. Roberts
Center for Alzheimer's Research
Affiliate, Evelyn F. McKnight Brain Institute

Ever since Dr. Coleman's first publication on Alzheimer's disease that indicated continuing neuronal plasticity in the aging human brain and loss of this plasticity in Alzheimer's disease (Science, 1979) his work has focused on differentiating changes in the brain in Alzheimer's disease from changes related to normal, non-demented ageing. His initial studies in this area were based on quantitative Golgi studies of dendritic extent in human and rodent brains. Feeling a need to be able to competently expand into studies using molecular biology, he spent much of two summers at Cold Spring Harbor Laboratories learning molecular biology and molecular biology methods. One of these summers resulted in the first publication (with Jim Eberwine in PNAS) of a method of profiling gene expression in single identified neurons. Most recently, Dr. Coleman's work has expanded into the realm of epigenetics. This work is successfully demonstrating that reduced transport of epigenetic molecules from the cytoplasm into the cell nucleus is a key event in the Alzheimer's brain. This inability of epigenetic molecules to translocate to the nucleus, where they should be, has consequences for chromatin structure and consequently, the massive changes in gene expression seen in the AD brain. In addition, the aberrant cytoplasmic localization of epigenetic molecules leads to interactions with transport mechanisms in axons and dendrites, to interactions with mitochondria and to other interactions leading to the pathophysiology of Alzheimer's disease.

Jason J. Corneveaux, B.S.

Bioinformatician II
Neurogenomics Division

Mr. Corneveaux is a Bioinformatician II in Dr. Huentelman's laboratory within the Neurogenomics Division at TGen. He has been at TGen for almost nine years. His research is aimed at advancing our knowledge of the aging brain and the complex interactions of genes and environment in both humans and animal models. He has published over 35 peer-reviewed manuscripts including work describing the use of pooled genotyping on the microarray, algorithmic approaches to improved SNP genotype calling, DNA barcoding to enhance next generation sequencing, and the creation of a web-based approach to better understand human cognition and aging. Mr. Corneveaux is unique in his deep interdisciplinary experience in both the wet laboratory and computational informatics realm. He currently is focused on the development and refinement of a bioinformatics toolbox to facilitate the rapid genomic, transcriptomic, and epigenomic analysis of next generation sequencing data in the context of healthy aging.

Mr. Corneveaux received his B.S. in molecular biosciences and biotechnology from Arizona State University in 2007. While at Arizona State, he served as the founding Editor-in-Chief of the Arizona State University chapter of The Triple Helix, the international undergraduate journal of science, society and law, and was also a student researcher in the School of Life Science's esteemed SOLUR program. He was honored with an Affymetrix Scholar award for his exemplary undergraduate research scientific contributions in 2006.

Stephen L. Cowen, Ph.D.

Assistant Professor
Department of Psychology
Evelyn F. McKnight Brain Institute

My research interests revolve around the question of how the activities of ensembles of neurons drive our capacity to decide, remember, and navigate. In particular, I am interested in the role of the prefrontal cortex in cost-benefit decision making and in the role of the hippocampus in navigation and memory consolidation. I investigate these topics through large-scale extracellular recording from networks of neurons in rats as the animals perform decision-making and navigation behaviors. A number of interesting observations have emerged from these experiments. For example, we found that the neurons believed to be critical for working memory also were exquisitely sensitive to small body movements, suggesting a link between working memory systems in the brain and physical movement. This observation that has since motivated me to develop new tools for the analysis and measurement of movement. Our investigation of cost-benefit decision making has revealed that neurons in the anterior cingulate cortex, a region within the frontal cortex, may also be important for the capacity to persevere through physically strenuous sequences of movements (e.g. lifting weights or finishing a marathon) as these neurons respond to specific actions and the effort that must be maintained over time to acquire a goal. Finally, our work in spatial navigation indicates that neurons in the hippocampus, a region that is a critical component of the brain's navigation system, can rapidly switch between visual and egocentric (body centered) reference frames when the location of a goal demands such switching. Our ultimate goal is to connect our investigations of the frontal cortex and hippocampus in order to determine how communication between these regions guides decision making and memory formation.

James R Engle, Ph.D.

Postdoctoral Research Associate
ARL Division of Neural Systems, Memory and Aging
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The goals of James Engle's post-doctoral research is to elucidate: 1) How normal age-related changes in the lower level sensory processing impact higher cognitive functions in the aged, and 2) Develop a monkey model of Alzheimer's disease to determine whether beta-amyloid accumulation contributes to changes in lower level sensory processing and higher cognitive functions. In July 2011, James completed his dissertation entitled, "The recalibrating brain: How the auditory system of the Rhesus Macaque monkey copes with age-related hearing loss." James is currently working on three research projects. His first project focuses on establishing a link between Prebycusis and Presbyopia to changes in the neural substrates of cognition in young and aged Rhesus macaques at the California National Primate Research Center at UC Davis. His second research project focuses on identifying the spatial navigational network, and how it breaks down with normal aging in Rhesus macaques. James's third project focuses on correlating age-related beta-amyloid accumulation to cognitive changes in the nonhuman primate brain.

Megan C. Fitzhugh, M.S.

Research Assistant
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Megan Fitzhugh's research interests focus on investigating the effects of healthy and pathological aging on brain structure and function in humans and animal models. Her techniques for exploring these effects include voxel-based analyses of structural and functional magnetic resonance imaging, combined with multivariate statistical methods, and measures of cognitive performance. Previously, she studied the effects of blood pressure on brain structure and behavior using a novel, transgenic rat model of inducible hypertension and identified a regional pattern of gray matter atrophy associated with hypertension.

Elizabeth L. Glisky, Ph.D.

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Betty Glisky's research interests include changes in memory and executive function that occur as a result of normal aging or age-related neurological conditions such as MCI or Alzheimer's disease. Recent collaborative work has focused on tracking longitudinal changes in cognitive function in a cohort of normally-aging older adults, and relating those changes to measures of brain integrity, genetic predisposition, and other health variables. The goals of this research are to understand the variability in the normal aging process, to identify early indicators of what might be abnormal aging, and to design and implement interventions that might be instrumental in enabling older adults to maintain optimal memory function into the oldest years. Dr. Glisky's work has been supported by the National Institute on Aging, the Arizona Biomedical Research Council, the Arizona Alzheimer's Consortium, and the Evelyn F. McKnight Brain Institute.

Daniel T. Gray, B.S.

Graduate Research Assistant
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This is Daniel Gray's first McKnight conference. He is a first year graduate student at the University of Arizona, and plans on joining the laboratory of Dr. Carol Barnes, although he is currently rotating with Dr. Stephen Cowan. In the Barnes lab, Daniel has had his hands on several projects which include behavioral training of a colony of young and aged bonnet macaques in preparation for electrophysiological recordings, and piloting the combination of fluorescence in situ hybridization of the Arc immediate early gene with the novel CLARITY technique for whole brain functional mapping. Daniel has also been working with the Cowan lab on the analysis of a project investigating sharp wave ripple events in the hippocampus of young and old rats during sleep episodes.

Kari Haws, M.A.

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Kari Haws's research focuses on investigating the differences between pathological and non-pathological aging. Her approach to investigating this problem primarily has involved multivariate statistical methods paired with voxel-based morphometry processing of structural MRI's correlated with behavioral measures of cognitive performance. In particular, she is seeking to understand the effects of 24-hour blood pressure variability and hypertension on brain structures and cognition in healthy aging. Ms. Haws received a B.A. in Psychology at the University of California, Berkeley.

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Department of Physiology
Evelyn F. McKnight Brain Institute

Daniel's research, under the direction of Dr. Stephen Cowen, currently focuses on the role of dopamine signaling in reconciling effort and reward. Dopaminergic projections from the VTA & Substantia Nigra, to areas such as the Striatum, the nucleus accumbens, the anterior cingulate cortex (ACC), and parts of the prefrontal cortex are thought to be differentially involved in signaling stimulus salience, reward value, evaluation of risk & effort, and maintaining effortful output. Daniel is currently trying to assess dopamine's role signaling salience and effort in the nucleus accumbens and maintaining effort in the ACC. This is accomplished by measuring intrasynaptic levels of dopamine using Fast Scan Cyclic Voltammetry and single unit recording during effortful tasks.

Matt Huentelman, Ph.D.

Associate Professor, Neurogenomics Division
Co-Director, Center for Rare Childhood Disorders

Dr. Huentelman's research interests center around the investigation of the "-omics" (genomics, transcriptomics, epigenomics, and proteomics) of neurological traits and disease. His laboratory's overarching goal is to leverage findings in these disciplines to better understand, diagnose, and treat diseases of the nervous system. His laboratory focuses on the study of cognition, successful aging, Alzheimer's disease, and rare neurological diseases of unknown cause. He also has a strong program in comparative genomics where the focus is on understanding the genetic basis of neurological disease in purebred cats and dogs and in the use of insect animal models to better understand cognitive aging.

He and his laboratory team have participated in several successful genetic association studies for diseases and human traits such as autism, episodic memory, Alzheimer's disease, progressive supranuclear palsy, amyotrophic lateral sclerosis, schizophrenia, age-related hearing impairment, and otosclerosis. Their work in this research has led to the identification of several genes associated with individualized altered predisposition to disease as well as the elucidation of multiple novel pharmaceutical targets.

It is clear that the next phase of genomics will revolve around the rapidly emerging field of whole genome sequencing. His team has extensive expertise in the area of next generation sequencing, a technique under use in his laboratory since early 2006. His team currently uses the approach to sequence candidate genes, entire genomes and exomes, and large association peaks to identify functional variants. Additionally he has equally long standing expertise in next generation RNA sequencing to identify differentially expressed transcripts as well as determine splice isoform differences. Lastly, his team also utilizes next generation sequencing to investigate the epigenome using methylation specific sequencing.

Kevin Kawa, M.A.

Graduate Assistant
Cognition and Neuroimaging Laboratories
Department of Psychology

Kevin Kawa's research interests lie in investigating factors that affect cognition during the aging process. In particular, he is interested in genetic factors that may be associated with cognitive functioning in older adults. Under the advisement of Lee Ryan, Ph.D., and in collaboration with Matthew Huentelman, Ph.D., he is examining the roles of KIBRA and COMT on episodic memory ability and frontal functioning, respectively. In addition, diffusion tensor imaging will be used to determine whether KIBRA and COMT genotypes are associated with the underlying structural integrity of white matter pathways in the brain. By examining structural as well as cognitive changes, the influence of an individual's genetic profile can be better characterized.

Adam W. Lester, B.A.

Graduate Research Assistant
ARL Division of Neural Systems, Memory and Aging
Evelyn F. McKnight Brain Institute

The central goal of Adam Lester's dissertation research is the question of how age-associated changes in neural network processing may contribute to impairments in spatial processing in the elderly. It's been found that certain cells in cortical areas surrounding the hippocampus show increased firing rates when rats are in a specific location in an environment, and that these locations make up a regularly tessellating grid of equilateral triangles. Its believed that these cells are involved in integrating information from multiple sensory modalities to determine location, and that this information is passed onto the hippocampus for further processing. Given known impairments in connectivity between hippocampus and its surrounding cortical structures with age, Adam is exploring how these impairments may contribute to changes in local and interregional processing between the hippocampus and surrounding cortical structures during spatial navigation in aged rats.

Molly Memel, B.A.

Graduate Student
Evelyn F. McKnight Brain Institute

Molly Memel's present research investigates age-related changes in visual processing and memory. As the majority of adults age, deficits in associative and source memory arise. This results in a difficulty with the automatic binding of object and context information. As these functions primarily rely on the frontal and medial temporal lobes, my work will investigate the neural correlates of these changes through an analysis of fronto-striatal connectivity and activation. Both tract-based spatial statistics and functional magnetic resonance imaging will be utilized.

Lauren Nguyen, B.A.

Graduate Associate
Psychology Department
Brain Imaging Behavior and Aging Laboratory
Evelyn F. McKnight Brain Institute

Lauren Nguyen's research focuses on investigating the differences between pathological and non-pathological aging. She is investigating the effects of self-report of memory complaints and blood pressure variabilty on brain structures and cognition in healthy aging. To understand these effects, she will utilize multivariate statistical methods paired with voxel-based morphometry processing of structural MRIs correlated with behavioral measures of cognitive performance. Lauren received a B.A. in Psychology at the University of California, Davis.

Brooke Reid, B.A.

Graduate Student
Brain Imaging, Behavior and Aging Laboratory
Department of Psychology

I am a graduate student in the Cognition and Neural Systems Program at the University of Arizona, and I work in the Brain Imaging, Behavior and Aging Laboratory with Dr. Gene Alexander. I am interested in genetic and lifestyle factors that modulate changes in cognition and brain structure in the context of both healthy aging and degenerative disease. The goal of my current research is to determine whether APOE status and self-reported measures of sleep quality are associated with differences in behavioral measures of memory in healthy older adults. Additionally, I am using voxel-based morphometry with structural MRI to investigate whether these factors contribute to differences in gray matter volume. I graduated in 2012 with a B.A. in Psychology from the University of Notre Dame, where I was a research assistant in the Sleep, Stress and Memory Lab.

Linda L. Restifo, M.D., Ph.D.

Professor, Departments of Neurology, Neuroscience, Cellular & Molecular Medicine
University of Arizona College of Medicine
Member, Evelyn F. McKnight Brain Institute
Member, BIO5 Collaborative Research Institute
Member, Steele Children's Research Center
Member, Sarver Heart Center

Dr. Linda Restifo received her B.A. (Biology), M.D., and Ph.D. (Genetics) degrees from the University of Pennsylvania. As a graduate student, she studied the molecular genetics of steroid-hormone-regulated gene expression during development. She completed three years of postgraduate clinical training in Internal Medicine and Neurology, the latter at Harvard Medical School hospitals, including Boston Children's Hospital. During her postdoctoral research training at Brandeis University, she merged her scientific and clinical interests to decipher how genes control brain remodeling during development.

Dr. Restifo directs a developmental neurogenetics research program, with an emphasis on how mutations and environmental exposures cause intellectual disability (a/k/a mental retardation) and autism. Her research team has developed novel strategies to better understand, prevent, and treat developmental brain disorders. One major goal is to identify safe and effective drug therapies that improve cognitive function of patients with these disorders. This would represent a dramatic improvement in the medical approach toward diagnosis and treatment of children with developmental delay or cognitive/behavioral problems. Dr. Restifo is also interested in the connection between brain aging and brain development. She is testing the hypothesis that genetic influences on brain maturation can also impact cognitive aging, increase risks for aging-associated neurodegeneration, or risks of drug-induced cognitive dysfunction.

A founding member of the University of Arizona Genomic Medicine group, Dr. Restifo works with a team of clinicians and scientists using next-generating sequencing for molecular diagnosis.

The Restifo lab uses bioinformatics, molecular genetics, and cell biology, primarily in the fruit fly genetic model system. With funding from the National Institutes of Health and Autism Speaks, Dr. Restifo and colleagues have developed a novel cellular bioassay, based on primary culture of developing brain neurons, that can reveal defects caused by mutations or toxins. They have recently completed a proof-of-concept drug screen and have encouraging results from cross-species validation studies. Collaborators include human geneticists, computer scientists, computational chemists, mechanical engineers, cancer biologists, pediatrics physicians, a neuroethologist, as well as other neuroscientists.

AZ Public Media visits the Restifo Lab: http://www.youtube.com/watch?v=jnPrphF_Yos&feature=youtu.be
http://www.uanews.org/story/research-reveals-possible-reason-for-cholesterol-drug-side-effects

Ruth Robbins, B.A.

Graduate Student
Aging and Cognition Laboratory

Ruth Robbins' present research investigates the relation between cognition and social interaction. Of particular interest are examining the quality and quantity of social interaction. Previous studies examining the relation of social interaction and cognition have relied on self-report or subjective measures. Using self-reports as behavioral measures cannot be considered completely valid indicators of social interaction because of biases or idealized self-views. I n addition, self-reports rely on participants' memory of their daily interactions which can sometimes be difficult for older adult populations. Therefore, an objective measure, The EAR technology, a digital audio recording device that tracks real-world behavior by periodically recording snippets of sounds while participants go about their daily lives, will be utilized. The goal of this research project is to explore if social interaction in the form of frequent and substantive conversations with others might be related to memory and cognitive function in persons 65 years of age and above.

Lee Ryan, Ph.D.

Associate Professor, Psychology and Neurology
Associate Head, Department of Psychology
Evelyn F. McKnight Brain Institute
University of Arizona

Dr. Lee Ryan received her Ph.D. in Cognitive and Clinical Psychology at the University of British Columbia in 1992 and completed a postdoctoral fellowship at the University of California, San Diego. Dr. Ryan is an Associate Professor in the departments of Psychology, Neurology, and the Neurosciences Interdisciplinary Graduate Program. She is the Associate Head and the Director of Graduate Studies for the Department of Psychology. Dr. Ryan has engaged in studies of memory and the neural basis of memory since 1996, publishing over 60 scholarly articles utilizing various neuroimaging methods including functional MRI, ASL perfusion, voxel-based morphometry, and diffusion tensor imaging. She is currently a member of the Evelyn F. McKnight Brain Institute at the University of Arizona.

Dr. Ryan's research on the neural basis of memory has focused on understanding the hippocampal processes mediating autobiographical and semantic memory, how memory changes across the adult lifespan, and how those changes relate to brain structure and function. Recent studies using morphometric analyses and diffusion imaging have investigated factors that influence individual differences in age-related cognitive function, including genetic markers, obesity, hypertension, and anti-inflammatory drug use. As a clinical neuropsychologist, Dr. Ryan has worked with individuals and families who are coping with chronic and progressive diseases that affect cognitive functioning, including multiple sclerosis, Parkinson's disease, and Alzheimer's disease. Dr. Ryan teaches undergraduate and graduate courses in memory, neuropsychology, neuroanatomy, and cognitive neuroscience. She has been very active in mentoring programs at the University of Arizona that encourage women and minority students to become involved in research and pursue a career in science.

Ashley Siniard, B.S.

Research Associate III, Neurogenomics Division
Evelyn F. McKnight Brain Institute

Ms. Siniard is a Research Associate III in Dr. Huentelman's lab in the Neurogenomics Division at TGen. She joined TGen in October of 2008 after receiving her undergraduate degree in Biology from Indiana University in Bloomington, IN. She has expertise in multiple molecular-based protocols and techniques including histology, laser capture microdissection, RNA/DNA/Protein isolation from standard and low input samples, SNP genotyping, next generation sequencing as well as data analytical approaches necessary for each. Ms. Siniard is currently researching the genetic basis of age-related cognitive decline using data collected from the MindCrowd cohort as well as investigating the genes associated with "exceptional aging" phenotypes like cognitively normal APOE-E4 homozygotes and amyloid plaque-free autopsy donors over 80 years of age.

Ariana Stickel, B.A.

Graduate Student
Cognition and Neuroimaging Laboratory

Ariana Stickel's present research investigates the relationship between body fat and brain structure. Of particular interest are observing changes in white matter that may result from increased adiposity in older adults. Tract-based spatial statistics and voxel-based morphometry processing methods are being combined to research this. Further, these relationships will be studied to see how they may affect cognition in older adults using both behavioral and functional magnetic resonance imaging. Also important to these investigations are interactions of genes (e.g., the fat mass and obesity gene) and other physiological measurements (e.g., hypertension).

Jean-Paul L. Wiegand, B.S.

Graduate Student
ARL Division of Neural Systems, Memory and Aging
Evelyn F. McKnight Brain Institute

The goal of Jean-Paul Wiegand's research is to investigate the role of prediction in decision-making as well as age-dependent and pathological changes in electrophysiological sleep patterns. It has been shown in rats that the same hippocampal place cell sequences during behavior are replayed in subsequent sleep periods, pre-played during preceding sleep periods and moreover, correlate strongly with sleep ripples, short high-frequency neural oscillations found in the hippocampus. Given known memory and sleep disruptions with age, Jean-Paul is exploring how electrophysiological sleep patterns change with memory encoding and anticipation tasks in aged rats.

Cindy Woolverton, B.A.

Graduate Student
Aging and Cognition Laboratory
Evelyn F. McKnight Brain Institute

Cindy Woolverton's present research investigates the use of a form of self-referential processing, called the self-imagination effect (SIE), which can be used as an effective memory strategy. Recent research demonstrates that SIE—the imagination of an event from a personal perspective—is an effective mnemonic strategy in memory-impaired patients and older adults. These studies have also suggested that SIE does not depend on memory function, emotional processing or executive function, although the findings have been inconsistent with the latter. Her research investigates the mechanisms of this strategy in a population with a low sense of self-knowledge as well as looks at several cognitive and social variables that may be driving the improvement in memory we see using this strategy.

Tab Page: MIAMI

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Noam Alperin, Ph.D.
Professor of Radiology and Biomedical Engineering
Physiologic Imaging and Modeling Lab
Advance Image Processing Lab

Noam Alperin came to the University of Miami in May 2009 from the University of Illinois at Chicago. He obtained his Graduate Degree from the University of Chicago's Medical Physics program. Dr. Alperin's research focuses on blood and CSF flow dynamics using flow sensitive MRI techniques. A primary aim of the research is to provide noninvasively, important physiologic parameters among which are cerebral blood perfusion and intracranial pressure. These parameters play impotent role in a wide range of neurological problems, including hydrocephalous and stroke. Since joining the University of Miami, Dr. Alperin' Advance Image Processing laboratory is working closely with the Evelyn F. McKnight Center for Age Related Memory Loss, using different MRI modalities to characterize and quantify morphologic and physiologic changes in the brain associated with aging as well as the coupling between age related brain tissue volume loss and cerebral blood flow decrease.

Ahmet Murat Bagci, Ph.D.
Senior Research Associate, Department of Radiology
University of Miami Miller School of Medicine

Dr. Bagci received his graduate degree from the Electrical and Computer Engineering Department at the University of Illinois at Chicago in 2008. He joined the Department of Radiology at the University of Miami in May 2009. Dr. Bagci's area of research is signal and image processing, and development of algorithms and methods for segmentation of medical images. He is a member of the Advanced Image Processing Laboratory, jointly supported by Department of Radiology and Evelyn F. McKnight Brain Institute. His current research focuses on investigating morphological and cerebral blood perfusion changes in brain due to aging using MRI.

Ashley H. Beecham, M.S.
Project Manager
Human Genomics
University of Miami Miller School of Medicine

Ms. Beecham is a Project Manager for John P. Hussman Institute for Human Genomics and Evelyn F. McKnight Brain Institute. Ms. Beecham's research focus is on statistical genetics and methods for analyzing complex diseases such as stroke, multiple sclerosis, and vascular cognitive impairment. In particular, she has focused on genetic factors influencing both cognitive function and white matter lesions.

Susan Halloran Blanton, Ph.D.

Executive Director, Hussman Institute for Human Genomics
Associate Professor of Human Genetics and Neurology
Dr. John T. Macdonald Department of Human Genetics
Associate Director of Communications and Compliance
Hussman Institute for Human Genomics

Dr. Blanton received her PhD in Human Genetics from Virginia Commonwealth University/Medical College of Virginia. She obtained post-doctoral training in Biostatistics (University of Pittsburgh) and Population Oncology (Fox Chase Cancer Center). Her primary research has focused on the mapping of genes for Mendelian and complex diseases; she has been instrumental in studies identifying over twenty genes/loci for Mendelian disorders. Stroke and the underlying genetics of its risk factors, deafness, retinal diseases, skeletal dysplasias, cleft lip/palate, and clubfoot are among the diseases which she currently studies. She collaborates with Drs. Sacco, Wright and Rundek to identify genetic factors influencing white matter and cognition and their relation to ageing. In addition, she has been involved in developing and implementing genetic education materials for Federal and appellate level judges and science writers in an ELSI sponsored project. Dr. Blanton is the Executive Director of the Hussman Institute for Human Genomics as well as the Associate Director of Communications and Compliance. She is an Associate Professor in the Dr. John T. Macdonald Foundation Department of Human Genetics.

Yesica Andrea Campos, M.D.

Research Assistant (Volunteer)
McKnight Brain Institute
University Of Miami, Miller School of Medicine

I received my degree in Medicine at Universidad Militar Nueva Granada School of Medicine in Bogota Colombia. During my training experience I served as the intern coordinator for the cardiovascular disease health promotion program. Additionally, I participated in clinical clerkships in Jackson Memorial Hospital. Afterwards, I moved to U.S to enhance my research background in neurology field and achieve my goals of becoming a culturally competent neurologist. Therefore, I met Dr Clinton Wright, who invites me to collaborate in his research team. Since then, I was involved in different projects related with aging and cognitive decline including: Brain Mapping and Segmentation on brain MRI images and the creation and data collection of a Cognitive Disorders Database.

Charles Harlan Cohan, B.S.

Graduate Student
Department of Neurology

Mr. Cohan received his B.S. from the University of Michigan. Currently, Mr. Cohan is pursuing his Ph.D. at the University Of Miami Miller School Of Medicine. As a graduate student he joined the lab of Dr. Perez-Pinzon at the University of Miami. Under the guidance of Dr. Perez-Pinzon and Dr. Clinton Wright he is currently investigating cognitive decline after aging and cardiac arrest. The focus of his research is on the synaptic changes that take place in both cardiac arrest and aging and to examine what molecular mechanisms govern these changes. Additionally, he has a strong interest in designing translatable treatments that can prevent cognitive decline.

Sara Czaja, Ph.D.

Professor, Scientific Director, Center on Aging
Department of Psychiatry & Behavioral Sciences

Sara J. Czaja is a Leonard M. Miller Professor in the Departments of Psychiatry and Behavioral Sciences, and Industrial Engineering at the University of Miami. She is also the Scientific Director of the Center on Aging at the University of Miami and the Director of the Center on Research and Education for Aging and Technology Enhancement (CREATE). CREATE is funded by the National Institute on Aging involves collaboration with the Georgia Institute of Technology and Florida State University. The focus of CREATE is on the interface between older adults and technology systems in work, healthcare and living settings.

Dr. Czaja has extensive experience in aging research and a long commitment to developing strategies to improve the quality of life for older adults. Her research interests include: aging and cognition, aging and healthcare access and service delivery, family caregiving, aging and technology, human-computer interaction, training, and functional assessment. She has received funding from the National Institutes of Health, Administration on Aging, National Science Foundation, the Markle and Langeloth Foundations, AT&T, and IBM to support her research. Dr. Czaja is very well published in the field of aging and has written numerous books, book chapters and scientific articles and servers on the editorial board of several top tier journals. She is a fellow of the American Psychological Association, the Human Factors and Ergonomics Society and the Gerontological Society of America. She is also President Elect of Division 20 (Adult Development and Aging) of the American Psychological Association.

She is also a member of the National Research Council/National Academy of Sciences Board on Human Systems Integration and the Institute of Medicine Committee on the Public Health Dimensions of Cognitive Aging.

Kunjan R. Dave, Ph.D.

Research Associate Professor
Department of Neurology

Dr. Dave received his Ph.D in Biochemistry in 2000 from the M. S. University of Baroda, India. During his PhD training he worked on several research projects including secondary complications of diabetes, Alzheimer's disease and drug toxicity among others. From 1999 to 2000 Dr. Dave served at the Zandu Pharmaceutical Works, Mumbai, India, as a Biochemist, where he participated in a drug development program. The goal of Dr. Dave's current research is to study potential signaling pathways responsible for neuronal death in neurodegenerative diseases, especially cerebral ischemia. Investigation of intracellular signaling pathways may lead to the development of novel therapies for patients with neurodegenerative diseases and stroke. Dr. Dave's research also investigates the effect of cerebral ischemia on cognitive and motor functions in young and old rats.

Susan Fox-Rosellini, M.B.A

Executive Director of Development & Marketing
Neurology
University of Miami Miller School of Medicine

Susan has 30+ years experience and a proven track record in developing new business and clients, new markets and new products and improving the revenues of for-profit and not-for-profit businesses. She joined UM Neurology in 2007 and after a year off to develop the Foundation for Miami Jewish Health System has rejoined the Department as the Executive Director for Development and Marketing. Prior to UM, Susan worked as a development leader with the Family Resource Center, the Coconut Grove Playhouse and the Miami City Ballet. She also has experience in domestic and international business development for for-profit organizations.

Susan is married with two daughters and has been very active in Miami-area organizations including the Miami City Ballet, where she served as President of the Board of Trustees, the Coconut Grove Playhouse, the Jackson Foundation Board and has served as Chair of the Little Havana Community Partnership. In 2008 she went back to School at UM and got her M.B.A in Health Policy and Administration. Susan has been an active patron of the arts, particularly ballet, and loves old movies, about which she has written a book. She speaks French and Spanish.

Bonnie E. Levin, Ph.D.

Bernard and Alexandria Schoninger Professor of Neurology
Director, Division of Neuropsychology
University of Miami Miller School of Medicine

Dr. Bonnie Levin is the Alexandria and Bernard Schoninger Professor of Neurology and Director of the Division of Neuropsychology in the Department of Neurology at the University of Miami Miller School of Medicine. She received her BS from Georgetown University and her Ph.D. from Temple University. She completed an internship at the Boston Children's Hospital where she was a clinical fellow in Psychiatry at Harvard Medical School and an externship at the Boston VA Hospital.

Dr. Levin is a neuropsychologist whose research examines neurocognitive and affective changes associated with neurodegenerative disease and the normative aging process. Her work examines the role of cardiometabolic risk factors in cognitive decline. Another focus has been the inter-relationship between behavioral and motor symptoms in Parkinson's disease and the neural circuitry underlying memory and age related cognitive change. Her current work is aimed to advance our understanding of frontal striatal circuit function in cognition and to generate data that will improve our knowledge of key clinical parameters associated with differential rates of cognitive decline. Current projects include: examining which components of the metabolic syndrome predict cognition, identifying imaging and clinical correlates of white matter changes associated with the aging process and linking structural and metabolic markers underlying different symptom profiles in neurodegenerative disease.

Nooshin Nabizadeh, M.S.

Graduate Assistant
University of Miami Miller School of Medicine

Nooshin Nabizadeh received her Bachelor and Master degrees in Electrical Engineering at Isfahan University of Technology (IUT) and Sharud University of Technology (SUT), Iran. Upon completion of her Master's degree, she moved to the United States, where she started her PhD training in Virginia Commonwealth University at Richmond, Virginia. She transferred to the University of Miami to continue her education. Currently, she is working at the McKnight Brain Foundation with Dr. Clinton Wright and his team on the brain mapping and segmentation project on brain MRI images. This project consists of measuring cortical and sub-cortical brain volumes using FreeSurfer software to evaluate effect of aging on total brain volume, total cranial volume, cortical thickness, occipital, parietal, temporal and frontal lobes on population based data. She is also working on automatically detection of infarct lesion on MR brain images.

Jacob T. Neumann, Ph.D.

Postdoctoral Scholar
Department of Neurology

Dr. Neumann first received B.S in biochemistry from the University of Illinois at Chicago, He then continued his education at Southern Illinois University School of Medicine where he earned his Ph.D. in Pharmacology. Dr. Neumann is being trained by Dr. Miguel Perez-Pinzon in the department of Neurology at the University of Miami Miller School Of Medicine, where is current research is focused on the electrophysiological synaptic changes that occur in the hippocampus following cerebral ischemia. He is interested in potential therapies to prevent the neurological decline from these insults. Dr. Neumann is collaborating with the McKnight Brain Research Foundation researching the relationship between age-related memory loss and cerebral ischemia.

Alberto Ramos, M.D., MSPH, FAASM

Assistant Professor of Clinical Neurology
Co-Director of the Sleep Disorders program

Dr. Alberto Ramos is Assistant Professor of Clinical Neurology and Co-Director of the Sleep Disorders program at the University of Miami, Miller School of Medicine. Dr. Ramos' research focus is on sleep and cerebrovascular disease. Dr. Ramos was the recipient of a Research Supplement in Health Related Research - an NIH/NINDS funded supplement grant to the ongoing Northern Manhattan Study, to study the relationship between sleep and risk factors for stroke.

Dr. Ramos is the site Principal Investigator for the Sleep Patterns as a Risk Factor for Disease in the Hispanic Community Health Study – Field Center at the University of Miami. An NHLBI funded ancillary study to the Hispanic Community Health Study to evaluate sleep patterns and cardiovascular risk in Hispanics. Dr. Ramos is also the recipient of Mentored Translational Research Scholars Program (K12) from the CTSI at the Miller School of Medicine. The K12 research study evaluates cerebral hemodynamics and impaired cerebral vasomotor reactivity in obstructive sleep apnea utilizing the Hispanic Community Health Study. He is a member of the American Academy of Sleep Medicine and the Sleep Research Society.

Mentor: Tatjana Rundek, MD, PhD.; Co-Mentor: Ralph L. Sacco, MD, MS

Agustina Rossetti, M.S.

Doctoral Candidate
University of Miami Miller School of Medicine
Department of Psychology

My dissertation study seeks to elucidate the role of circulating adiponectin isoforms (anti-inflammatory cytokine) and their association with adiposity, hippocampal volume, white matter hyperintensities, and cognition in a sample of patients with complaints of memory impairment from the McKnight registry. Specifically, I propose that differing levels of circulating adiponectin isoforms will be correlated with BMI, cognitive impairment, and brain morphology. Additionally, I will examine the role of IL-6, as a marker of acute inflammation, and how it relates to the variables described above. Results of this study may further elucidate the underlying pathophysiology of inflammation and its role in neurological disorders.

Tatjana Rundek, M.D., Ph.D., FANA

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Director, Clinical Translational Research Division
Director, CME Grand Round Series in Neurology

Dr. Tatjana Rundek is a Professor of Neurology, Epidemiology and Public Health with tenure, Vice Chair of Clinical Research, and a Director of Clinical Translational Research Division in the Department of Neurology of the University of Miami Miller School of Medicine. She holds a secondary faculty appointment at the Department of Neurology at Columbia University in New York. Dr. Rundek is a stroke neurologist, clinical researcher and principal investigator of several NIH/NINDS funded R01 grants on genetic determinants of carotid atherosclerosis and stroke. Dr. Rundek is a recipient of a NINDS K24 mid career development award. She participates in large stroke genetic consortia including the NINDS Stroke Genetic Network and International Stroke Genetic Consortium. Dr. Rundek was the Fulbright Scholar and the recipient of the research awards from the Hazel K. Goddess and the Dr. Gilbert Baum Funds. Dr. Rundek serves on the editorial boards of several scientific journals including Stroke, Neurology, Journal of Ultrasound in Medicine and Cerebrovascular Diseases. She has published over 210 scientific publications, editorials, reviews, and book chapters. She is a fellow of the American Neurological Association, a member of the American Heart Association and American Academy of Neurology. She is past President of the Neurosonology Communities of Practice of the American Institute in Ultrasound in Medicine, the largest professional medical ultrasound organization in the US. Dr. Rundek serves on the Intersocietal Accreditation Commission (IAC) Vascular Testing Board of Directors, a national organization that accredits clinical echocardiography, nuclear/PET, MRI, CT and Dental laboratories and carotid stenting programs.

Ralph L. Sacco, M.D., M.S., FAHA, FAAN

Professor & Chair
Department of Neurology

Ralph L. Sacco, MD, MS, is the Chairman of Neurology, Olemberg Family Chair in Neurological Disorders, Miller Professor of Neurology, Epidemiology and Public Health Sciences, Human Genetics, and Neurosurgery, Executive Director of the Evelyn McKnight Brain Institute at the Miller School of Medicine, University of Miami, and Chief of the Neurology Service at Jackson Memorial Hospital.

A graduate of Cornell University in Bio-electrical Engineering and a cum laude graduate of Boston University School of Medicine, he also holds an MS in Epidemiology from Columbia University, Mailman School of Public Health. Dr. Sacco completed his neurology residency training and postdoctoral training in Stroke and Epidemiology at Columbia Presbyterian in New York. He was previously Professor of Neurology, Chief of Stroke and Critical Care Division, and Associate Chairman at Columbia University before taking his current position as Chairman of Neurology at the University of Miami, Miller School of Medicine.

He is the Principal Investigator of the NINDS-funded Northern Manhattan Study, the Florida Puerto Rico Collaboration to Reduce Stroke Disparities, and the Family Study of Stroke Risk and Carotid Atherosclerosis, as well as co-investigator of multiple other NIH grants. He has also been the Co-Chair of international stroke treatment and prevention trials. Dr. Sacco has published extensively with over 425 peer-reviewed articles and 102 invited articles in the areas of stroke prevention, treatment, epidemiology, risk factors, vascular cognitive impairment, human genetics and stroke recurrence. His research has also addressed stroke and vascular disparities. He has been the recipient of numerous awards including, the Feinberg Award of Excellence in Clinical Stroke, the Chairman's Award from the American Heart Association, and the NINDS Javits Award in Neuroscience. He has lectured extensively at national and international meetings.

Dr. Sacco is a fellow of both the Stroke and Epidemiology Councils of the American Heart Association, the American Academy of Neurology, and the American Neurological Association, and currently serves as Vice President of the American Academy of Neurology. He is also a member of the American Association of Physicians. He was the first neurologist to serve as the President of the American Heart Association, 2010-2011, and is the current Co-Chair of the American Heart Association's International Committee.

Dr. Sacco has been a member of the World Stroke Organization since 2008. He currently chairs the Research Committee - 2012-2016, and is on the Board of Directors - 2012-2016.

Clinton B. Wright, M.D., M.S.

Scientific Director
Evelyn F. McKnight Brain Institute
Associate Professor
Department of Neurology

Dr. Wright is Associate Professor of Neurology, Epidemiology & Public Health, and Neuroscience and Scientific Director for the McKnight Brain Institute. He is Chief of the Division of Cognitive Disorders in the Department of Neurology and Co-Director of the University of Miami Memory Disorders Center. Dr. Wright's research focus is on the effects of vascular risk factors on brain structure and function, with an emphasis on subclinical damage such as covert infarcts, white matter lesions, and brain atrophy. His research also focuses on vascular cognitive impairment with an emphasis on early cognitive changes and the interaction between aging, vascular damage, and Alzheimer disease. He has an R01 from the National Heart, Lung, and Blood Institute to study mineral metabolism in relation to vascular disease and cognition. He also leads a pilot clinical trial as part of a Bugher Foundation/American Heart Association Center of Excellence to study the effects of exercise and cognitive training in mild stroke patients. In the past, a National Scientist Development Grant from the American Heart Association, as well as an Independent Scientist Award from the National Institute of Neurological Disorders and Stroke have funded Dr. Wright's work. He is a member of the American Heart Association, the American Academy of Neurology, and the Alzheimer Association.

Juan Young, Ph.D.

Assistant Professor
Dr. John T Macdonald Department of Human Genetics

The research in the laboratory of Dr. Young is focused on uncovering the role of epigenetic mechanisms in the regulation of brain function. In particular, the lab uses transgenic mouse models carrying mutations in epigenetic interpreters to explore functional aspects of epigenetic control of genome activity in brain cells. The research also focuses on understanding the pathogenesis of neurological diseases such as Rett Syndrome and Microdeletion 2q23.1 Syndrome.

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