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

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2019 McKnight Inter-Institutional Meeting
Hilton University of Florida
Gainesville, Florida
April 10 - 12, 2019

WEDNESDAY, APRIL 10, 2019

6:00 - 9:00 pm  Dinner Reception
Hilton University of Florida Conference Center
Century Ballroom BC

6:10 - 6:30 pm  Introduction
Thomas Foster, Ph.D., Professor
Evelyn F. McKnight Chair for Research on Cognitive Aging and Memory
Department of Neuroscience and Genetics and Genomics Program
University of Florida

Welcome
David P. Norton, Ph.D.
Vice President for Research
University of Florida

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

THURSDAY, APRIL 11, 2019

7:00 - 7:45 am  Breakfast: Pre-function Room

7:45 - 8:00 am  Load buses to depart for UF @ 8 am
Harrell Medical Education Building - Room 125 (right side of the building as you enter the ground floor)

8:30 - 8:40 am  Welcome
Thomas Foster, Ph.D., Professor
Evelyn F. McKnight Chair for Research on Cognitive Aging and Memory
Department of Neuroscience and Genetics and Genomics Program
University of Florida

Todd E. Golde, M.D., Ph.D.
Executive Director, McKnight Brain Institute
Department of Neuroscience
University of Florida

Stephen P. Sugrue, Ph.D.
Senior Associate Dean for Research Affairs
University of Florida

J. Lee Dockery, M.D.
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SESSION I  McKNIGHT BRAIN AGING REGISTRY (MBAR)

MODERATOR – Ron Cohen, Ph.D.

8:40 - 8:55 am  Patterns of Daily Activity in the Oldest Old: Findings from the McKnight Brain Aging Registry
Gene E. Alexander, Ph.D.
Professor and Director
Brain Imaging, Behavior & Aging Lab
Department of Psychology and Psychiatry
University of Arizona

8:55 - 9:10 am  Cognition and Brain Volume in the Oldest Old: Findings from the McKnight Brain Aging Registry
Joseph Gullett, Ph.D.
Post-doctoral fellow
Department of Clinical and Health Psychology
University of Florida

9:10 - 9:25 am  Relationship of Brain Functional Connections to Behavior in the Oldest Old
Kristina M. Visscher, Ph.D.
Associate Professor
Department of Neurobiology
University of Alabama, Birmingham

9:25 - 9:40 am  Frontal GABA Concentrations in the Oldest Old in the McKnight Brain Aging Registry: An Update
Eric Porges, Ph.D.
Assistant Professor
Department of Clinical and Health Psychology
University of Florida

9:40 - 9:50 am  General Discussion

9:50 - 10:00 am  Break

10:00 - 11:00 am  KEYNOTE ADDRESS
Systemic Regulation of Brain Aging and Neurodegeneration
Tony Wyss-Coray, Ph.D.
Professor, Department of Neurology and Neurological Sciences
Stanford University

11:00 - 11:15 am  Load buses to depart for Hilton UF Conference Center @ 11:15 am
2019 McKnight Inter-Institutional Meeting

SESSION II  EFFECTIVELY COMMUNICATING YOUR SCIENCE TO THE PUBLIC

MODERATOR – Richard Isaacson, M.D.

11:30 - 1:00 pm  Communications Luncheon
Century Ballroom A

12:00 - 12:15 pm  Introduction by Dr. Lee Dockery and video presentation

Panel Discussion

Richard Isaacson, M.D.
Trustee and Chair Communications Committee, McKnight Brain Research Foundation, Assistant Dean for Faculty Development and Director of the Alzheimer’s Prevention Clinic, Weill Cornell Medical College

Carol Barnes, Ph.D.
Director, Evelyn F. McKnight Brain Institute, the Evelyn F. McKnight Chair for Learning and Memory in Aging, and Associate Director of BIOS Institute of the University of Arizona; Member National Academy of Science

Jennifer Bizon, Ph.D.
Professor, Departments of Neuroscience and Psychiatry, Associate Chair of Department of Neuroscience and co-Chair of the Education and Outreach Committee for The Evelyn F. and William L. McKnight Brain Institute of the University of Florida

Lynne Anderson
Senior Health and Medicine Editor for The Conversation. Atlanta, GA, an innovative resource that features expert writing by academics who explain and analyze topics in the new for lay audiences.

Michelle Jaffee
Former AP writer, former Assistant Director of Communications, and current Science Writer for the Evelyn F. and William L. McKnight Brain Institute of the University of Florida

12:50 - 1:00 pm  General Discussion
SESSION III  COGNITIVE AGING AND MEMORY INTERVENTIONAL CORE UPDATES

MODERATOR – Tatjana Rundek, M.D., Ph.D.

1:00 - 1:12 pm  Interventional Core Pilot Program Introduction
Tatjana Rundek, M.D., Ph.D.
Professor
Scientific Director of Evelyn F. McKnight Brain Institute
Department of Neurology
University of Miami

1:12 - 1:28 pm  Detecting Deceptive Information in Scamming Paradigms: A Training Intervention
Natalie Ebner, Ph.D.
Associate Professor
Department of Psychology
University of Florida
Sarah Getz, Ph.D.
Assistant Professor
Department of Neurology
University of Miami

1:28 - 1:44 pm  Transcranial Near Infrared Stimulation
Dawn Bowers, Ph.D. ABPP/CN
Professor
Department of Clinical and Health Psychology
University of Florida

1:44 - 2:00 pm  The Multi-Site ACT Study
Adam Woods, Ph.D.
Assistant Professor
Department of Clinical and Health Psychology
University of Florida

SESSION IV  BIOMARKERS OF COGNITIVE DECLINE

MODERATOR – Sara Burke, Ph.D.

2:00 - 2:16 pm  Hippocampal Network Dynamic in Aging
Andrew Maurer, Ph.D.
Assistant Professor
Department of Neuroscience
University of Florida

2:16 - 2:32 pm  The Gut Microbiome In Age-Related Inflammation And Cognitive Frailty
Christy Carter, Ph.D.
Associate Professor
Division of Gerontology, Geriatrics, and Palliative Care
UAB Department of Medicine

2:32 - 2:48 pm  Accelerated Biological Aging and Chronic Pain in Older Individuals
Yenisel Cruz-Almeida, M.S.P.H., Ph.D.
Assistant Professor
Institute on Aging
University of Florida

2:48 - 3:00 pm  Break
2019 McKnight Inter-Institutional Meeting

SESSION V  MECHANISMS OF COGNITIVE DECLINE

MODERATOR – Bonnie Levin, Ph.D.

3:00 - 3:15 pm  
**Hospital Associated Disability**  
Cynthia Brown, M.D., M.S.P.H., A.G.S.F.  
Professor and Director  
Division of Gerontology, Geriatrics, and Palliative Care  
Director, Comprehensive Center for Healthy Aging  
UAB Department of Medicine

3:15 - 3:30 pm  
**Can we cure aging phenotypes with an antibody?**  
Todd E. Golde, M.D., Ph.D.  
Executive Director, McKnight Brain Institute  
Department of Neuroscience

3:30 - 3:45 pm  
**Neural Circuits of Decision Making in Aging**  
Caesar Hernandez, Ph.D.  
Post-doctoral fellow  
Department of Neuroscience  
University of Florida

3:45 - 4:00 pm  
**D delirium in Older Adults: Improving Recognition and Treatment**  
Richard Kennedy, M.D., Ph.D.  
Associate Professor  
Division of Gerontology, Geriatrics, and Palliative Care  
UAB Department of Medicine

SESSION VI  TREATMENT OF COGNITIVE DECLINE

MODERATOR – Bonnie Levin, Ph.D.

4:00 - 4:20 pm  
**Neuromodulation by Non-Invasive Delivery of Drugs and Other Agents**  
Mark Bolding, Ph.D.  
Associate Professor  
Division of Advanced Medical Imaging Research  
UAB Department of Radiology

4:00 - 4:20 pm  
**Metabolic Treatments for Cognitive Aging**  
Abbi Hernandez, Ph.D.  
Post-doctoral fellow  
Department of Neuroscience  
University of Florida

4:40 - 5:00 pm  
**Improving Cognition in Cognitive Aging: A Synaptic Approach**  
Christian Camargo, M.D.  
Department of Neurology  
University of Miami

DINNER RECEPTION

5:45 - 6:00 pm  
Load buses to depart for Cade Museum for Creativity and Invention @ 6 pm

6:30 - 9:15 pm  
Dinner Reception

9:20 - 9:30 pm  
Load buses to depart for Hilton UF Conference Center @ 9:30 pm
2019 McKnight Inter-Institutional Meeting

FRIDAY, APRIL 12, 2019

7:30 - 9:00 am Breakfast: Pre-function Room

Board of Directors Breakfast with MBI Directors
Breakfast Buffet: Foyer Salon ABCD  ->  Meeting: Helena Room

SESSION VII  NEW PEOPLE AND DATA BLITZ

MODERATOR – Lee Ryan, Ph.D.

9:00 - 9:20 am  EMR-based Approaches to Prevent Cognitive Decline and Dementia and to Promote Brain Health
Demetrius Maraganore, M.D., FAAN
B.J. and Eve Wilder Professor in Alzheimer’s Disease
Department of Neurology
University of Florida

9:20 - 9:40 am  Aging and HIV: What’s different? What’s new?
Michael Saag, M.D.
Professor of Medicine
Associate Dean for Global Health Director of the UAB Center for AIDS Research
Division of Infectious Diseases
UAB Department of Medicine

9:40 - 10:00 am  Navigation deficits in aging: What we can learn from immersive virtual reality
Arne Ekstrom, Ph.D.
Associate Professor
Department of Psychology
University of Arizona

10:00 - 10:20 am  Neural computational models of decision making in frontal cortical networks: how might these circuits change in aging?
Robert Wilson, Ph.D.
Assistant Professor
Department of Psychology
University of Arizona

10:20 - 10:40 am  Measuring Financial Cognition in Older Adults – The Financial Capacity Instrument-Short Form
Daniel Marson, J.D., Ph.D.
Professor Emeritus
Division of Neuropsychology
UAB Department of Neurology

10:40 - 11:00 am  Trends in the Rate of Vascular Dementia Diagnosis in the Nationwide Inpatient Sample
Alexis Simpkins, M.D., Ph.D.
Assistant Professor
Department of Neurology
University of Florida

12:00 pm  Meeting adjourns

Lunch:  Boxed lunches provided upon departure

Airport Transfer:  G-Taxi Services (Freddy): 352-777-9488
Transportation will be paid for by the Institute. Tipping is encouraged by traveler(s).
2019 McKnight Inter-Institutional Meeting

KEYNOTE BIOGRAPHY

Systemic Regulation of Brain Aging and Neurodegeneration

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Tony Wyss-Coray is a professor of Neurology and Neurological Sciences at Stanford University, the Co-Director of the Stanford Alzheimer’s Disease Research Center, and a Senior Research Career Scientist at the Palo Alto VA. Dr. Wyss-Coray obtained his Ph.D. in Immunology at the University of Bern in 1992, working with Dr. Werner Pichler. He completed a postdoctoral fellowship at the University of Bern Institute of Clinical Immunology in 1993 and went on to complete a postdoctoral fellowship with the Department of Neuropharmacology at the Scripps Research Institute under the guidance of Dr. Lennart Mucke. He is the recipient of multiple awards and distinctions and was listed in TIME Magazine’s “The Health Care 50” as one of the most influential people transforming healthcare in 2018. He currently holds a D. H. Chen Distinguished Professorship at Stanford University. He has over 120 peer-reviewed publications and his research efforts have been supported by the NIH, the American Heart Association and the Department of Veterans Affairs.

Dr. Wyss-Coray’s lab studies brain aging and neurodegeneration with a focus on age-related cognitive decline and Alzheimer’s disease. The Wyss-Coray research team is following up on earlier discoveries which showed circulatory blood factors can modulate brain structure and function and factors from young organisms can rejuvenate old brains. These findings were voted 2nd place Breakthrough of the Year in 2014 by Science Magazine and presented in talks at Global TED, the World Economic Forum, Google Zeitgeist, and Tencent’s WE Summit in China. Wyss-Coray is the co-founder of Alkahest, a company developing plasma-based therapies to counter age-related diseases such as Alzheimer's. Current studies in his lab focus on the molecular basis of the systemic communication with the brain by employing a combination of genetic, cell biology, and proteomics approaches in killifish, mice, and humans and through the development of bio-orthogonal tools for the in vivo labeling of proteins.
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COMMUNICATIONS PANEL MODERATOR

Richard Isaacson, M.D.

Dr. Isaacson serves as an Associate Professor of Neurology, Assistant Dean for Faculty Development and Director of the Alzheimer’s Prevention Clinic in the Weill Cornell Memory Disorders Program at NewYork-Presbyterian/Weill Cornell Medical Center. A graduate of the accelerated 6-year B.A./M.D. program at the University of Missouri–Kansas City School of Medicine, he completed his medical internship at Mount Sinai Medical Center in Miami Beach, FL and a residency in neurology at Beth Israel Deaconess Medical Center/Harvard Medical School. He specializes clinically in Alzheimer’s disease risk reduction and treatment, pre-clinical forms of the disease, and mild cognitive impairment due to Alzheimer’s.

As an educator, Dr. Isaacson’s career has encompassed teaching of medical students, residents, fellows, and faculty, as well as patient, caregiver, and community education and outreach. He serves as the Director of the Neurology Residency Training Program at Weill Cornell Medicine and was previously Vice Chair of Education and Education Director of the McKnight Brain Institute in the Department of Neurology at the University of Miami Miller School of Medicine. He has conducted research on neurology and medical education that has been presented nationally and internationally, developed the online educational portal AlzU.org which has reached over one million people worldwide, and is the recipient of several awards, including the 2013 Paff Award for Teaching, the highest teaching award for faculty at the University of Miami.

Dr. Isaacson serves on the Board of Trustees for the McKnight Brain Research Foundation.

COMMUNICATIONS PANELISTS

Carol A. Barnes, Ph.D.

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 older individuals. 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 of her 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.
Jennifer L. Bizon, Ph.D.

Dr. Jennifer Bizon is a Professor in the Departments of Neuroscience and Psychiatry at the University of Florida, College of Medicine. She received her Bachelor of Science 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 received postdoctoral training at Johns Hopkins University (1998-2003) and then established her own laboratory at Texas A&M University prior to joining the University of Florida College of Medicine in 2010. Her research program is broadly focused on understanding brain aging and its implications for cognitive function.

Specifically, her laboratory employs an integrative approach that combines sensitive cognitive assessments with molecular, pharmacological and optogenetic methodologies. Recent work from her laboratory has uncovered disruptions in prefrontal cortical glutamatergic and GABAergic signaling that contribute to age-associated impairments in cognitive flexibility and working memory. Moreover, her laboratory has shown that age differences in the recruitment of the basolateral amygdala during decision-making contributes to an enhanced ability to delay gratification in older subjects.

Dr. Bizon regularly reviews for the National Institutes of Health, is a Senior Editor at Neurobiology of Aging and is a member of the McKnight Brain Research Foundation Communications Working Group. She also serves as the Associate Chair of Department of Neuroscience and as co-Chair of the Education and Outreach Committee for the McKnight Brain Institute at the University of Florida. In 2018, she was named both a University of Florida Term Professor and a University Foundation Research Professor.

Virginia Lynne Anderson

Lynne Anderson of Atlanta has been an award-winning journalist for more than three decades. She served as a reporter, bureau chief and editor at The Atlanta Journal Constitution and The Lexington (Ky.) Herald-Leader. For the past 15 years, she has specialized in health, medicine and health care policy.

She also is well versed in working with academics to help them communicate about complicated medical topics, having served as director of communications at Emory University’s Winship Cancer Institute and also at the University of Kentucky’s Kentucky Cancer Program.

In addition to her medical writing and editing background, she also has been a business and personal finance reporter and columnist. She reported and wrote a six-part investigative business series on the first thoroughbred breeding farm to go public, and those stories were finalists for a Pulitzer Prize. And, she was a sports reporter, helping to break the story of Heisman Trophy winner Herschel Walker turning pro.

Currently, she is senior health and medicine editor at The Conversation, an innovative start-up that features the expert writing of academics who explain and analyze topics in the news for lay audiences. She has a bachelor’s degree in philosophy, with a concentration in ethics, from the University of Georgia, and a master’s degree in science, health and environmental journalism from The Graduate School of Journalism at Columbia University.

Michelle Koidin Jaffee

Michelle Jaffee is the science writer for the McKnight Brain Institute of the University of Florida. In more than 20 years as a journalist, she worked as a reporter for the Associated Press in six cities and as a features writer for the San Antonio Express-News.

In 2006, she wrote a weekly column for the Express-News about life with her infant twins during her husband’s deployment to Iraq.

Before joining the UF Health staff in February 2016, she also served as a regular contributor to the American Heart Association’s news site. A native of Chicago, she graduated from the University of Texas at Austin, where she studied government and Spanish.
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UNIVERSITY of FLORIDA

THE UNIVERSITY OF FLORIDA

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Alejandro Albizu  
Graduate Student

My current research focuses on multi-modal neuroimaging to identify targets for novel intervention techniques (i.e., multi-modal neuromodulation). I am interested in investigating novel computational modelling methods to improve the understanding of biochemical and functional changes that occur in the brain following non-invasive brain stimulation.

Jolie Barter
Ph.D. Candidate Neuroscience  
Evelyn F. and William L. McKnight Brain Institute  
University of Florida, College of Medicine  
Department of Neuroscience

Jolie Barter is a fourth-year graduate student working the lab of Dr. Thomas C Foster. Her primary interest involves the influence of systemic inflammation on age-related cognitive decline. Aging is associated with low-grade chronic systemic inflammation due to immunosenescence. Age is also a major influential factor in the outcome of sepsis. The incidence of sepsis and the associated complications, such as cognitive impairments, increase with advancing age. Specifically, she looks at how chronic inflammation and sepsis influence the hippocampus by using next generation sequencing, bioinformatics, and multiple behavioral techniques.

Russell M. Bauer, Ph.D., ABPP  
Professor  
Evelyn F. and William L. McKnight Brain Institute  
University of Florida, College of Public Health and Health Professions  
Departments of Clinical and Health Psychology and Neurology

Russell M. Bauer, Ph.D. is Professor and Director of the Doctoral Program in Clinical Psychology in the Department of Clinical & Health Psychology at the University of Florida Academic Health Center. He also has an appointment as a Research Health Scientist in the Brain Rehabilitation Research Center at the Malcom Randall VAMC in Gainesville, FL. Dr. Bauer’s research program uses clinical and experimental neurocognitive probes along with structural and functional MRI to evaluate preclinical biomarkers of neurocognitive decline in aging and traumatic brain injury. Novel experimental cognitive probes include a virtual human adaptation of the Morris water maze, and object recognition paradigms thought to be sensitive to dysfunction in perirhinal cortex/anterior temporal lobe memory network. His laboratory is also investigating factors that hasten cognitive decline, including depletion of cognitive reserve, sleep disturbances, and other risk factors operative in the transition from normal aging to dementia. In a separate line of investigation, he is also investigating best methods for rehabilitation of memory dysfunction and other symptoms after mild/moderate traumatic brain injury with the goal of developing personalized approaches to rehabilitation that can maximize rehabilitation outcomes in individuals with specific structural or functional phenotypes. This work utilizes cognitive rehabilitation and timed aerobic exercise as primary interventions. A final line of research seeks to understand factors that predispose to complicated recovery or chronic symptoms after concussion/mild TBI. His work has been funded by the NIH, NCATS, NINCDS, the Health Resources and Services Administration, the State of Florida Brain and Spinal Cord Injury Research Trust Fund, and the Veterans’ Administration Rehabilitation Research and Development (RR&D) Service.
Jennifer L. Bizon, Ph.D.
Professor and Associate Chair
Department of Neuroscience

Dr. Jennifer Bizon is a Professor in the Departments of Neuroscience and Psychiatry at the University of Florida, College of Medicine. She received her Bachelor of Science 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 received postdoctoral training at Johns Hopkins University (1998-2003) and then established her own laboratory at Texas A&M University prior to joining the University of Florida College of Medicine in 2010. Her research program is broadly focused on understanding brain aging and its implications for cognitive function. Specifically, her laboratory employs an integrative approach that combines sensitive cognitive assessments with molecular, pharmacological and optogenetic methodologies. Recent work from her laboratory has uncovered disruptions in prefrontal cortical glutamatergic and GABAergic signaling that contribute to age-associated impairments in cognitive flexibility and working memory. Moreover, her laboratory has shown that age differences in the recruitment of the basolateral amygdala during decision-making contributes to an enhanced ability to delay gratification in older subjects. Dr. Bizon regularly reviews for the National Institutes of Health, is a Senior Editor at Neurobiology of Aging and is a member of the McKnight Brain Research Foundation Communications Working Group. She also serves as the Associate Chair of Department of Neuroscience and as co-Chair of the Education and Outreach Committee for the McKnight Brain Institute at the University of Florida. In 2018, she was named both a University of Florida Term Professor and a University Foundation Research Professor.

Emanuel Boutzoukas, B.S.
Graduate Student
Clinical Psychology

Emanuel’s research focuses on counteracting cognitive decline in aging using non-invasive brain stimulation paired with cognitive training. He aims to use multimodal neuroimaging (structural and functional magnetic resonance imaging) and neuropsychological testing to characterize mechanisms of cognitive improvement in older adults.

Dawn Bowers, Ph.D., ABPP-CN
Professor
Clinical & Health Psychology and Neurology

Dawn Bowers is a professor and clinical/research neuropsychologist in the Departments of Clinical & Health Psychology and Neurology at the University of Florida. She directs the Cognitive Neuroscience laboratory at the Center for Movement Disorders and Neurorestoration. She co-directs (MPI), along with David Vaillancourt, the only predoctoral T32 in the country that is devoted to Interdisciplinary Training in Movement Disorders and Neurorestoration. Historically her laboratory has used various tools (startle, pupillometry, ERP, computational modeling, face digitizing, advanced statistical approaches) to better understand mechanisms that underlie emotional and cognitive changes in age related neurodegenerative disorders. One ongoing research emphasis is the development of hypothesis driven methods for enhancing emotional reactivity in blunted Parkinson patients vis a vis emotion regulation and ERP metrics. A second line of research involves mechanisms underlying poor performance of individuals with cerebellar abnormalities (essential tremor) on classic emotional neuroscience tasks. Third, along with other McKnight investigators she is examining the validity of novel NIR stimulation for enhancing memory in older adults. Dr. Bowers has been continuously funded by NIH since 1981, has over 200 publications, 1 book, and 1 affect measure.
Although a large proportion of older adults experience cognitive decline that interferes with their quality of life, understanding the neurobiology of these impairments in advanced age remains elusive. A significant barrier to uncovering the neurobiology of age-related cognitive decline is that these processes are distributed throughout the brain and a fundamental gap exists in our understanding of how different brain structures interact over the lifespan. The long-term goal of my laboratory’s research is to determine the alterations in network-level interactions that underlie cognitive impairment in advanced age. Current projects are focused on uncovering mechanisms of age-related impairments in sensory discrimination across modalities, identifying age-associated changes in medial temporal lobe-prefrontal functional connectivity that contribute to memory deficits, and testing whether diet can globally improve neural network function in old animals. To answer these questions, we are integrating neurophysiology and anatomy with behavioral analysis in order to determine the extent that age-related memory impairments manifest from dysfunction in inter-regional communication. Our rationale is that by elucidating how aging influences systems-level dynamics, we will be better positioned to develop interventions that broadly improve cognition.

Dr. Cohen is director of the University of Florida Center for Cognitive Aging and Memory Clinical Translational Research (CAM). He is a professor of Clinical and Health Psychology with joint appointments in the departments of Clinical and Health Psychology Neurology, Psychiatry. Dr. Cohen also is the Evelyn McKnight Chair for Cognitive and Memory Clinical Translational Research at UF. The CAM is a multidisciplinary research program focused on factors that influence cognitive aging that will integrate neurocognitive, neuroimaging, and laboratory biomarker methods. A primary goal of this center is clinical translational in nature with a focus on translating neuroscience findings from the laboratory to clinical application for both improvement assessment and intervention. He has extensive background in neuroimaging and the neuroscience of attention-executive functions, and strong record of research involving the use of functional and structural neuroimaging methods in studies of age-associated brain disorders and neurodegenerative brain disorders. He has published over 250 peer-reviewed articles, and numerous book chapters on topics of relevance to this project. Besides co-editing several books on topics related to areas of clinical neuropsychological research, Dr. Cohen authored “Neuropsychology of Attention” in 1993 which was the first book on this topic in the field, which was recently updated and published as a second edition this year. He authored a book “Brain Imaging in Behavioral Medicine and Clinical Neuroscience”, which will be the first to address the use of neuroimaging methods for studying various problems in clinical neuroscience and to lead the current project. Specifically, Dr. Cohen’s CAM laboratory has been conducting human studies employing multimodal neuroimaging in conjunction with MRS to examine pathophysiological changes occurring in normal and pathological brain aging, and also secondary to risk factors including obesity, diabetes, heart disease, viral infections (e.g., HIV), and neurodegenerative disease such as AD. Recently, Dr. Cohen received NIH Funding to study microbiome in HIV and aging. He has assembled an outstanding team of researchers with specific areas of expertise that will enable the success of the CAM.
Steven T. DeKosky, MD, FACP, FANA, FAAN

Deputy Director, Evelyn F. and William L. McKnight Brain Institute
Aerts-Cosper Professor Alzheimer’s Research
Associate Director, 1Florida Alzheimer’s Disease Center
Departments of Neurology and Neuroscience

Dr. DeKosky is a neuroscientist, clinician, translational and clinical researcher, and seasoned administrator with over 20 years of academic leadership positions as a division head, department chair, and university vice president and medical school dean. I have had continuous basic and clinical research funding from the NIH for over 30 years, and consult for academic institutions, pharmaceutical companies, and biotechnology companies, on a wide variety of research and administrative issues. In July 2015 I moved to the University of Florida College of Medicine as professor of neurology, deputy director of the McKnight Brain Institute, and associate director of the NIA-funded 1Florida Alzheimer’s Disease Research Center

My research interests have centered on brain-behavior relationships in aging, neurodegenerative diseases and traumatic brain injury (TBI). My translational research has extended from in vitro models to in vivo rodent studies to clinical studies of normal aging and dementia, including cognitive, neuropsychiatric, neuroimaging, genetic, and therapeutic, including prevention and treatment research, in Alzheimer’s disease. While initially utilizing models of TBI to emulate the pathological cascades of age-related neurodegeneration, I identified the first cases of chronic traumatic encephalopathy (CTE), which was well known in boxers, in American football players. My current research includes brain stimulation studies in age-related memory loss and mild cognitive impairment, and neuroimaging and therapeutic studies in AD.

Nicholas M. DiCola

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

The groundbreaking research into the genetic, molecular, and cellular mechanisms of age-related cognitive decline has contributed bottom-up knowledge which has combined with top-down clinical psychological research in a way that allows us to begin to bridge that divide by exploring neuron population level changes in age. My research uses densely packed silicon probes placed into the CA1 and CA3 of the hippocampus in freely behaving rats to record both local field potentials as well as single-unit spiking events. Our aim is to examine the influence that sub-regional, age-related changes such as CA3 hyperactivity, hilar interneuron dysfunction, and Schaffer collateral synaptic efficacy decreases has on the ability of the CA3 to influence CA1’s activities. These rats are tested on behavioral tasks which aged rats have been shown to perform worse on than young rats, and which also have human correlates with similar negative age effects. This research is done in conjunction with dual hippocampal - lateral entorhinal cortex electrophysiological recordings to examine the impact age-related perforant pathway degradation has on medial temporal lobe dysfunction. The end goal of this project is to begin unpacking the functional changes within the medial temporal lobe that are associated with aging in the hope of allowing for the future development of better diagnostic tools and treatments. My research is funded through Drs. Sara Burke and Andrew Maurer’s NIA R01, the McKnight Brain Institute, and with support from UF’s NIA T32 grant on Alzheimer’s Disease and Associated Dementias.

Nicole Evangelista

Graduate Research Assistant

Nicole is interested in utilizing multi-modal imaging and other translational research methods to better characterize inter-individual differences underlying age-associated cognitive impairments that could potentially serve as targets for intervention strategies.
Thomas C. Foster, Ph.D.
Professor and Evelyn F. McKnight Chair for Research on Cognitive Aging and Memory

Dr. Foster is the Evelyn F. McKnight Chair for Research on Cognitive Aging and Memory and Professor of Neuroscience and the Genetics and Genomics Program 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. Electrophysiological techniques, including patch-clamp recording, are employed to investigate the relationship between age-related cognitive decline and altered synaptic transmission and synaptic plasticity. My lab acts as a core for collaborations involving next generation sequencing of RNA, miRNA, and DNA methylation to test hypotheses of gene regulation in resiliency in the face of aging, inflammation, stress, and changing hormonal milieu in humans and animal models.

Todd E. Golde, M.D., Ph.D.
Professor
Director, Evelyn F. and William L. McKnight Brain Institute
Director, 1Florida Alzheimer's Disease Research Center
Member, Center for Translational Research in Neurodegenerative Disease

I am currently Director of the Evelyn F. and William L. McKnight Brain Institute at the University of Florida where I oversee, champion, and facilitate UF’s neuroscience and neuromedicine research programs. I previously served as the founding director of the Center for Translational Research in Neurodegenerative Disease at UF, and prior to that appointment served as Chair of Mayo Clinic’s Department of Neuroscience. In these administrative roles, I have been fortunate to have outstanding scientists and physicians as colleagues, and the record of accomplishment of scientific advances made by faculty in these groups has been, and continues to be, outstanding. I also currently direct the 1Florida ADRC a consortium of Florida institutions that is one of the newer NIA funded Alzheimer's disease centers. This center has a unique focus on Spanish speaking Hispanic individuals and currently over 55% of our participant are elderly Hispanics.

With respect to my own research program, I remain committed to translational studies that are designed to better identify potential therapeutic targets and strategies in AD, other neurodegenerative diseases, breast and brain cancers, and pain. Much of this work now involves rAAV-mediated delivery of biologically active proteins to the brain using a suite of vectors and methodologies developed and optimized in my laboratory over the last ten years. Indeed, this “rAAV-toolkit” now enables us to collaborate to opportunistically expand our scope of research into areas such as cancer and pain. My lab has been at the forefront of utilizing rAAV somatic brain and spinal cord transgenic technology to accelerate translational research in preclinical models of neurodegenerative disorders and we continue to enhance our rAAV-based tool-kit and have now successfully applied this technology to disease modifying studies in models of amyloid deposition, tauopathy, SOD1 mediated ALS, and D-synucleinopathy. We continue to innovatively use this technology. Indeed, our studies using rAAV somatic brain and spinal cord transgenesis demonstrate that this is a major technology accelerator that can greatly reduce the cost and other resources required to explore disease-modifying strategies in preclinical settings.
My name is Dylan Guenther. I am a second-year neuroscience graduate student in the lab of Dr. Andrew Maurer. I graduated with a B.S. in electrical engineering at the University of Florida in Spring of 2017. I primarily work with in-vivo electrophysiology recordings in freely behaving animals to better characterize how the functionality of neural networks works in the service of higher cognition. My primary interest is investigating how inhibitory-excitatory balance shifts affect working memory and brain functionality.

Currently, I am working on understanding how neural network communication is altered in the ventral tegmental area following methamphetamine use. I am curious how novel networks are immediately altered following methamphetamine administration, and how the dynamics of these networks are permanently altered following chronic methamphetamine abuse. The functional alterations in single cells in the presence of methamphetamine has been well researched and documented for some time now, however, little is known about how these single unit changes have cascading effects up to neural networks. I believe that this is the missing step in understanding and improving treatments for those recovering from drug addiction.

Interests include the application of Diffusion Weighted Imaging and functional MRI to the study of white matter, connectivity, biological variables, and neurocognitive function in various clinical populations as well as successful aging.

Hanna Hausman
Graduate Research Assistant
Department of Clinical and Health Psychology

Hanna is interested in characterizing interindividual functional connectivity differences implicated in cognitive aging and utilizing non-invasive techniques (i.e. tDCS) for combatting cognitive decline in older adults.

Abbi Hernandez
Postdoctoral Associate
Department of Neuroscience

Abbi Hernandez is currently a postdoc in the laboratory of Dr. Sara Burke at the University of Florida. Broadly, the focus of Abbi's research is on identifying mechanisms of decline in network-level interactions across the brain that explain loss of cognitive function with advancing age and ways to treat these declines. Specifically, Abbi’s work is aimed at developing a potential therapeutic intervention to ameliorate age-related cognitive decline through the implementation of a ketogenic diet. This diet contains a macronutrient profile that is high in fat and low in carbohydrates in order to shift the main fuel source away from glucose towards the utilization of ketone bodies, which is hypothesized to reinstate the balance between inhibition and excitation across the brain. Furthermore, Abbi's work has shown numerous cognitive, affective and physical benefits of the restoration of metabolic health in aged rats through the consumption of the dietary paradigm. Abbi is evaluating the efficacy of the ketogenic diet at multiple levels of analysis including behavior and quantification of gene and protein expression.
Transcranial electrical stimulation (tES) is a promising non-invasive neuromodulation technique to improve brain functions. While useful, observed tES outcomes have largely varied across individuals, and thus poses a concern in reliability and reproducibility of tES application. Using multimodal neuroimaging and computational models, my research goals are to improve tES reliability/reproducibility by: predicting tES current dose in stimulated brain regions, identifying/reducing possible sources of individual variability in tES outcomes, and investigating possible mechanisms of action that contribute to physiological changes caused by tES. I am currently a postdoc in the Woods Neuromodulation Laboratory in the Department of Clinical and Health Psychology at the University of Florida. In this lab, my current role involves data analysis in tES participants collected from clinical trials. Specific projects include building a workflow that integrates all tES data analysis (behavior, neuroimaging and computational models) and developing new tools for quality control in tES to ensure reliable tES application across studies.

Sarah Johnson is a Postdoctoral Fellow in the laboratory of Dr. Sara Burke at the University of Florida. The overarching goal of her research program is to understand how circuit-wide patterns of neural activity support memory, and how these functions evolve across the lifespan. Her early postdoctoral training focused on reverse translation of age-related deficits in distinguishing similar stimuli to a rodent model of cognitive aging. Namely, she developed and validated a rodent version of the mnemonic similarity task and determined performance on the task requires coordinated neural activity across hippocampal and cortical circuits. Dr. Johnson's current work examines monoaminergic regulation of learning and memory across the lifespan. Specific experiments address the role of hippocampal dopamine signaling in detecting novel stimuli, and relative contributions of dopamine input from midbrain versus locus coeruleus to this ability in young and aged animals. Dr. Johnson acknowledges support from the McKnight Brain Research Foundation and National Institute on Aging (K99 AG058786).
The complexity of the brain provides many different avenues of investigation across a variety of disciplines that each incorporate a unique perspective to understanding higher-cognition. In light of this, I chose to focus on electrical engineering because of the broad interdisciplinary scope in which it can be applied. Supplementing the standard engineering curriculum with classes focused on applying principles of electrical engineering to the biological sciences allowed me to indulge in my desire to keep learning more about the brain as an electrical system. Pursuing this interest led me to a neuroscience lab in the McKnight Brain Institute, where I have worked as a Research Assistant and Engineer since the spring of 2015. Under Dr. Andrew Maurer, I have been able to apply engineering methodologies to several ongoing projects, the first of which examined Addictive Properties of Cannabis Smoke while I was an undergraduate in the laboratory. As a technician, I developed technology aimed towards determining the temperature dependence of oscillatory rhythms in the hippocampus and entorhinal cortex. Based on a study that demonstrated cooling of the premotor nucleus HVC in songbirds slowed their produced song speed by up to 45% (Long & Fee, 2008), we were inspired to investigate if a similar technique could be used to speed or slow the oscillatory rhythms of the brain. The current experiments will investigate the role of thermoelectric cooling in altering perception (e.g., time and space) while others will investigate the effects of modulating septal temperature on working memory, and by extension, the frequency of the theta rhythm. Analyzing the performance of the rats will allow us to evaluate how memories of prior outcomes are related to the speed of oscillatory rhythms in the hippocampus. I believe that the application of engineering principles to the study of neuroscience will yield amazing breakthroughs in furthering our understanding of the brain.

Jessica Kraft is a doctoral student under the mentorship of Dr. Adam Woods in the Graduate Program in Biomedical Sciences, with a concentration in Neuroscience. She graduated from Penn State University, Harrisburg with her M.A. degree in Applied Psychological Research. Following her master’s degree, Jessica joined the Woods lab in March 2017. During this time, she worked as a research assistant on the ACT Study, a phase III clinical trial assessing the efficacy of a brain training and tDCS intervention on improving cognition in older adults. Jessica was directly involved in administration of neuroimaging and neuropsychological assessments throughout the study. Jessica's research interests include neural correlates of cognition and the use of cognitive training to improve cognition in an older adult population.
The overall goal of my research is in the pursuit of fundamental knowledge of mechanisms underlying prefrontal cortex (PFC) and hippocampal-mediated cognition over the life span, 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, exercise, and viral-vector mediated upregulation of target proteins 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, glutaminergic, and estrogen receptors on cell excitability and synaptic plasticity in the senescent brain. 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 PFC-hippocampal-mediated cognition including spatial memory and executive function. 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 upregulation of glutamatergic neurotransmission on hippocampal and PFC-mediated synaptic function during senescence and delineate the mechanisms that contribute to impaired cognition over the life span.

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

My long-term goal is to bridge cutting edge basic science and clinical/treatment focused research. The goal of my research is to improve our understanding of autonomic function and modulations of learning and memory. In particular, I am investigating transcutaneous vagal nerve stimulation (tVNS) as a novel treatment for amnestic mild cognitive impairment (aMCI) to enhance cognition both in healthy individuals as well as amnestic mild cognitive impairment. tVNS is an exciting approach based on our understanding of the neurophysiological basis of memory and cognitive function, as well as pilot data. I look forward to extending our knowledge of this mechanistic impact of this innovative tool, laying a foundation for future clinical applications. I also have DARPA funding to further elucidate the neural circuit impacted by vagal nerve stimulation, providing complementary animal model data for the development of this approach. Apropos the mission of the Cognitive Aging and Memory Clinical Translational Research Program, my funded work on novel potential preventative treatments for aMCI (i.e., prodromal Alzheimer's) continues to show translational promise.
The complex dynamics that underlie higher-cognition remain opaque, impeding our ability to alleviate mental health outcomes or age-related cognitive decline. Therefore, my research seeks to understand how the brain, a densely interconnected set of individual neurons, rapidly translates environmental information into complex representations in support of cognitive function. In order to achieve these goals, my collaborators and I have embarked on a unique research trajectory that will allow us to test the hypotheses of complex network activity using both a bottom-up approach, inspired by computational models, and a top-down approach, re-evaluating our data in the perspective of non-linear physics. It is our expectation that, by adopting an integrative approach that bridges disciplines, we can learn how the small actions of single neurons, connected in a network can bring about the emergence of sophisticated dynamics that support behavior and higher cognitive function. Moreover, by examining neural processing on multiple scales, from small groups of isolated cells to the population dynamics of entire brain regions, we believe that we will find a common etiology of how coordinated activity emerges that can be extended into the larger field of complexity. This research extends into investigating the neuronal dynamics behind age-related decline in memory and cognition. Along with my collaborators in McKnight Brain Institute in the Age-Related Memory Loss group, we seek to find therapeutic interventions that maximize longevity and neuronal processing in hopes of maintaining independence in the elderly population.

Dr. McQuail is a Research Assistant Professor in the Department of Neuroscience at the University of Florida. He earned his B.S. with highest honors in Neuroscience from the College of William & Mary in 2004 and his Ph.D., also in Neuroscience, from Wake Forest University in 2013. He was a postdoctoral fellow at the University of Florida from 2013-2018. Broadly, his work examines age-related changes to neural signaling in the frontal and medial temporal lobes that contribute to distinct forms of memory impairment. Ongoing work examines how experiential and physiological factors accumulate over the lifespan to precipitate molecular and behavioral changes, with a specific focus on psychogenic stress and glucocorticoid signaling. Dr. McQuail also investigates neurobiological mechanisms by which pharmacological or lifestyle interventions can protect or restore function in aging. Dr. McQuail is Co-Director (with Dr. Sara Burke) of the University of Florida’s Summer Neuroscience Internship Program and a member of the Society for Neuroscience’s Trainee Advisory Committee.
Lucia Notterpek, Ph.D.
Professor & Chair
Department of Neuroscience

Dr. Lucia Notterpek is Professor and Chair of the Department of Neuroscience at the McKnight Brain Institute at the University of Florida, Gainesville, Florida. 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 Dr. Notterpek’s 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. She has authored and co-authored over 70 publications, reviews and book chapters. She is actively involved in the educational and research missions of the College of Medicine at the University of Florida. Nationally and internationally, she serves on research advisory and grant review panels for private and public organizations. Her research efforts have been supported by the NIH, the National Muscular Dystrophy Association, the National Multiple Sclerosis Society, the Facial Pain Foundation and the Hereditary Neuropathy Foundation.

Eric C. Porges, Ph.D.
Assistant Professor
Department of Clinical and Health Psychology

My research focus is on individual differences in age-related changes to cognitive and social-cognitive function, with an emphasis on mechanisms that may provide interventional opportunities. To conduct my research, I integrate neuroimaging and behavioral and affective research methods with autonomic nervous system measures, genetics (oxytocin receptor polymorphism), salivary endocrine measures (cortisol and testosterone) and in vivo measurement of concentrations of α-Aminobutyric acid (GABA), the principal inhibitory neurotransmitter, using magnetic resonance spectroscopy (MRS).

My recent work measuring cortical GABA concentrations in a healthy aging population extends the previous use of MRS, and was the first exploration of the relationship of cortical GABA concentrations to general cognitive function. Previous reports had provided evidence of decreasing GABA concentrations during adulthood. It had been unclear, however, how age-related decrements in cerebral GABA concentrations contribute to cognitive functioning, or whether previously reported declines in cerebral GABA concentrations persist during healthy aging. My recent work has demonstrated that: A) participants with higher GABA concentrations in frontal cortex exhibit superior cognitive function and that this relationship remained significant when controlling for age, years of education, and brain atrophy. B) Previously reported age-related decrease in cortical GABA concentrations continues into advanced age in a healthy cohort. We have continued this work to employ recently developed, advanced corrections for tissue atrophy that account for differential GABA concentrations in grey and white matter. With the implementation of these methods, we now report (under review) that tissue-specific concentrations of GABA do not decrease with age. However, these tissue corrected values are still predictive of general cognitive function.

Our findings suggest that GABA measurement via MRS may provide a clinically useful method for the assessment of normal and abnormal age-related cognitive changes. Furthermore, these findings have laid the groundwork for collaborative investigations with other McKnight Brain Research Foundation (MBRF) supported researchers. These collaborations will utilize a GABAergic compound, demonstrated by MBRF-supported researchers to improve cognitive functioning in animal models, in a human intervention study.
Destin Shortell
Graduate Research Assistant
Department of Clinical and Health Psychology

I am broadly interested in investigating the use of neuromodulation techniques for the treatment of alcohol use disorder. Specifically, my research interests lie in investigating how to reduce craving and physiological reactions to alcohol cues in individuals with heavy drinking behavior with the ultimate goal of preventing drug-seeking behavior and relapse.

Puja Sinha, Ph.D.
Postdoctoral Associate
Department of Neuroscience

My research focuses on epigenetic regulation mainly DNA methylation landscape on aging, memory and cognition. The work also involves estrogen replacement therapy (ERT) mediating its effect on cognition and memory during the process of aging in animal models and understanding the regulatory pathways by different epigenetic mechanisms.

Garrett R. Smith
MD/PhD Candidate
Department of Neuroscience

Garrett Smith is a second-year graduate student and MD/PhD candidate at the University of Florida. He is working in the lab of Dr. Tom Foster and pursuing a PhD in neuroscience. His current research explores the differences in hippocampal RNA expression between aged rats that show impairments in spatial discrimination with age and those that remain unimpaired with age. Garrett is a graduate of Davidson College, and has previously worked at the Medical Research Institute of Chemical Defense.

Glenn E. Smith, Ph.D.
Chair and Elizabeth Faulk Professor
Department of Clinical and Health Psychology

Research Interests:
- How to support adherence to lifestyle modifications to reduce the risk for Mild Cognitive Impairment and Dementia.
- Cognitive functions on which behavioral interventions can build, such as procedural memory, in healthy elderly as well as in patients with Mild Cognitive Impairment and Dementia.
- Patient preferences in treatment outcomes for patients with Mild Cognitive Impairment and Dementia.
- Neuroimaging markers of behavioral interventions.
John B. Williamson, Ph.D.
Assistant Professor
Department of Psychiatry

I am an assistant professor in the Center for OCD and Anxiety Related Disorders (COARD) in the Department of Psychiatry at UF and in the Department of Neuroscience. I also hold affiliations with the Center for Cognitive Aging and Memory and Clinical Translational Research Program (CAM), and the One Florida Alzheimer’s Disease Research Center. I am the Emotion Function Initiative lead at the VA RR&D Brain Rehabilitation and Research Center. I am the site-PI for the VA funded Brain-Heart Consortium, aimed at understanding linkages between PTSD and maladaptive aging outcomes including cardiovascular disease and heart failure and cognitive aging, such as Alzheimer’s disease.

I have conducted clinical neuroscience research that has incorporated neuroimaging, cognitive and autonomic data in the study of cerebrovascular disease (vascular cognitive impairment and vascular dementia), heart failure and traumatic brain injury including both NIH and VA funding sources.

Current funded research includes NIH support to understand the role of improvement in cardiac output in patients with heart failure on brain healthy, cerebral hemodynamics, and cognitive function, NIA support to determine the effects of Transcutaneous Vagal Nerve Stimulation (tVNS) on cognition in people with amnestic mild cognitive impairment in the Alzheimer’s spectrum, VA funding to determine autonomic mechanisms in the impact of mild traumatic brain injury on the development and presentation of Post Traumatic Stress Disorder (PTSD), and VA funding to determine the effects of tVNS on sleep architecture and daily emotional functioning in people with PTSD.

Adam J. Woods, Ph.D.
Assistant Professor
Assistant Director, Center for Cognitive Aging and Memory
Department of Clinical and Health Psychology

Cognitive function declines as we age. As our thinking and memory skills decline, the rate of functional dependence, mortality, and acute illness requiring hospitalization increases. Increased rates of cognitive and functional decline associated with dementia represent a growing concern in light of our rapidly aging population. There is currently a paucity of effective treatments for preventing dementia or recovering age-related cognitive decline. A variety of methods have been proposed to counteract cognitive aging and/or slow onset of dementia (e.g., cognitive training). Unfortunately, these techniques have limited degrees of success and transfer to everyday life. My work demonstrates that combining treatments like cognitive training with non-invasive brain stimulation (tDCS, TMS, tACS, near infrared stimulation, intermittent hypoxia) facilitates neuroplasticity, improves cognitive abilities, and leads to long-term improvement. In combination with multimodal neuroimaging and electrophysiology recording, this work not only identifies mechanisms underlying improvement, but also provides information important for optimizing treatment effectiveness. This work has led to over 9 million dollars in federal funding over the past 3 years, including the largest and only Phase III randomized clinical trial for tDCS as an adjunctive method with cognitive training to combat cognitive aging and slow dementia onset. In addition, my lab is funded to investigate mobility enhancement in older adults, treat chronic knee osteoarthritic pain, and enhance working memory using a variety of non-invasive electrical brain stimulation methods in Phase II trials.
Dr. Yegla is a postdoctoral research associate under the mentorship of Dr. Thomas Foster. Her research is focused on investigating cognitive function in an animal model of aging to determine factors related to resilience and, alternatively, neurodegeneration with rising age. She utilizes a multi-system approach to examine the dynamic shifts in cellular, molecular, and circuit-level components that impact cognition, specifically those dependent upon the prefrontal cortex and hippocampus which exhibit greatest age-related functional decline. Dr. Yegla’s work currently focuses on two main lines of research, one of which examines exercise-induced exosome release as a mediator of exercise’s cognitive benefits, utilizing next-generation sequencing to examine exosomal miRNA content. This work is directly funded by the Pepper Center and the Age-Related Memory Loss program. The second line of research evaluates the heightened inflammatory milieu in the aging brain. By manipulating its response through microglial depletion and endotoxins, Dr. Yegla is gaining insight into the impact of neuroinflammation in aging on attentional function, as well as spatial and fear memory.
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Dr. Arrant is a scientist in Dr. Erik Roberson’s laboratory in UAB’s Department of Neurology. His research focuses on cellular mechanisms of brain aging and neurodegenerative disease, with a particular interest in the endolysosomal system.

Marcas M. Bamman, Ph.D., FACSM
Professor and Center Director
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As Director of the UAB Center for Exercise Medicine (UCEM, >200 members), Dr. Bamman has been fostering and leading clinical and translational research focused on exercise medicine/rehabilitation and biology since the 1990s, and has maintained continuous federal research support (NIH, VA, DoD) as PI for 20+ years. He is PD/PI of the NIH National Rehabilitation Research Resource to Enhance Clinical Trials (REACT, P2CHD086851); PD/PI of the Coordinating Center for the NIH National Medical Rehabilitation Research Resource Network (MR3 Network); PI of a NIAMS Clinical Center for the NIH Common Fund MotPAC initiative (U01AR071133); and founding Director of the 77-site, CTSA Consortium-affiliated National Exercise Clinical Trials Network (NExTNet) – all of which are designed to foster and increase the scientific rigor and impact of clinical trials.

Dr. Bamman has directed several exercise clinical trials including randomized dose-response trials (e.g., NCT02442479), and he is currently the overall PI or site PI of five, multi-site randomized exercise trials focused on: (i) molecular transducers of exercise-induced health benefits (NIH U01AR071133); (ii) total joint arthroplasty rehabilitation (NIH R01HD084124, NCT02628795); (iii) exercise-drug interaction in older adults with mobility impairment (NIH R01AG046920, NCT02308228); (iv) Parkinson’s disease rehabilitation to promote neuroplasticity (foundation funding); and (v) epigenetic determinants of exercise responsiveness (DoD Office of Naval Research N000141613159, NCT03380923). All of these human studies are biologically driven with the goal of better understanding mechanisms underpinning skeletal muscle atrophy and neuromuscular dysfunction, and exercise-induced health benefits in disease prevention, treatment, and rehabilitation. He is also PI of a Gamma Testing Site for the Million Veterans Program, with a focus on GWAS-PheWAS to better understand genetic and phenotypic determinants of osteoarthritis and its progression to end-stage (i.e. total joint arthroplasty). Finally, Dr. Bamman serves as Associate Editor of two peer-reviewed journals and has served on >80 federal grant review panels and site visit teams.

Mark Bolding, Ph.D.
Associate Professor, Departments of Radiology, Neurobiology, and Vision Sciences
Director, Civitan International Neuroimaging Laboratory
Investigator, Evelyn F. McKnight Brain Institute

Dr. Bolding’s research focuses on eye movements and gaze from both a basic vision science perspective and in the context of neuropathology. To facilitate this basic oculomotor and neuroscience research, Dr. Bolding is applying magnetic resonance imaging, materials engineering, and ultrasound in novel ways. Currently, he is collaborating with several other labs to develop a new MRI-guided non-invasive drug delivery system that will allow localized modulation of brain activity. The ultimate goal is the investigation of oculomotor control using dynamic eye imaging and high resolution functional and anatomical eye imaging in vivo in concert with targeted non-invasive, pharmacological manipulations.

In addition to pursuing his own research, Dr. Bolding’s lab maintains several shared resources. He is director of the Civitan International Neuroimaging Laboratory and the small animal MRI in the Small Animal Imaging Shared Facility at UAB. Dr. Bolding is also working to build a shared transcranial ultrasound core facility at UAB.
Cynthia J. Brown, M.D., MSPH
Professor and Director
Division of Gerontology, Geriatrics, and Palliative Care

Dr. Brown’s research interests combine the issues of low mobility and falls in the hospitalized older patient. Her mobility work has been well supported by NIH and VA grants and has been presented at national and international meetings. Dr. Brown has won numerous awards including the prestigious 2013 American Geriatrics Society Outstanding Scientific Achievement for Clinical Investigation Award. Dr. Brown is on the editorial board and served as a section editor for the Journal of the American Geriatrics Society. In addition, she is the medical director for the Fall Prevention and Mobility Clinic at the Birmingham VA Medical Center.

Cynthia J. Brown, MD, MSPH, is the Emmett G. and Beverly S. Parrish endowed Professor of Medicine in the Division of Gerontology, Geriatrics, and Palliative Care at UAB. Dr. Brown completed an undergraduate degree in physical therapy from East Carolina University and a MD from the University of North Carolina at Chapel Hill. At Yale University, Dr. Brown completed residency training in internal medicine, which included a Chief Resident year, and a three-year Geriatric Medicine fellowship. She has been on faculty in the Division of Gerontology, Geriatrics, and Palliative Care at UAB since 2003 and completed her MSPH in Health Behaviors at UAB in 2006. She was named Director of the Division as well as the Comprehensive Center for Healthy Aging in 2014.

Christy Carter, Ph.D.
Associate Professor, Div of Gerontology, Geriatrics, and Palliative Care Investigator, Evelyn F. McKnight Brain Institute

Dr. Carter is an Associate Professor in the Division of Gerontology, Geriatrics and Palliative Care in the Department of Medicine, School of Medicine, at the University of Alabama at Birmingham (UAB). She is also a faculty member of the UAB Center for Exercise Medicine, McKnight Brain Institute and Comprehensive Center for Healthy Aging and an investigator in the Evelyn F. McKnight Brain Institute. Dr. Carter also serves as the co-Leader of the UAB Nathan Shock Center Research Development Core. Globally, her research interests focus on preserving health-span during aging. Dr. Carter has demonstrated that the application of standardized physical performance measures to a variety of animal models of aging may help to define similarities between species in the underlying mechanisms of loss of mobility, the age-related decline in performance, cognition, disability, and longevity. She has extended this area of research to other special aging populations such as the frail and obese, and has developed combinatorial therapies. These interventions include diet, exercise, as well and nutritional and pharmaceutical approaches. Many of the pharmaceutical compounds in her laboratory modulate the reninangiotensin system (RAS). Dr. Carter has translated these preclinical findings to humans through collaboration with clinical researchers. More recently, she has developed a growing interest in the role of the gut microbiome in the development of age-related pathologies – with particular interest in the contributions of the gut microbiome to agerelated increases in systemic inflammation and declining cognition.

Lara Ianov, Ph.D.
Bioinformatics Specialist, Scientist II
Civitan International Research Center

Dr. Ianov currently leads the Civitan International Research Center Neurodevelopmental Bioinformatics Initiative. She earned her PhD in Genetics and Genomics from the University of Florida under the mentorship of Dr. Thomas Foster. During her graduate studies, Dr. Ianov investigated the transcriptomic and epigenomic alterations associated to age-related cognitive decline. At UAB, she currently develops high-performance pipelines with the latest validated tools in the field of bioinformatics for the analysis of several next-generation sequencing applications from bulk DNA/RNA input to the single-cell level. Her work at UAB has benefited several labs in the Evelyn F. McKnight Brain Institute and the Department of Neurobiology for the analysis, interpretation and visualization of next-generation sequencing data.
Silvienne Sint Jago  
Ph.D. Student

Silvienne received her undergraduate degree from the University of Louisiana at Monroe in Biology with a minor in Chemistry and Psychology. She is now a second-year PhD student in the Graduate Biomedical Science program at the University of Alabama at Birmingham. She joined the Lubin lab in March 2018 and her research interests include neurobiology, epigenetics, learning and memory, aging and neurodegeneration. Her current project focuses on exercise mediated memory improvements in an experimental temporal lobe epilepsy model in aged rats. She hopes that these studies will provide a better understanding into the mechanisms contributing to memory deficits in aging and epilepsy as well as elucidate to how exercise attributes its benefits on memory function.

Richard Kennedy, M.D., Ph.D.  
Associate Professor  
Investigator, Evelyn F. McKnight Brain Institute  
Department of Medicine, Division of Gerontology, Geriatrics, and Palliative Care

I am an Associate Professor in the Division of Gerontology, Geriatrics, and Palliative Care in the Department of Medicine at UAB. I have dual training as a doctoral-level biostatistician (with postdoctoral training in statistical genetics) and as a psychiatrist (with fellowship training in psychosomatic medicine). My primary interest is in the intersection between medical illness and neurobehavioral disorders in the aging process. My work in this area has encompassed a variety of cognitive disorders, including Alzheimer’s disease, traumatic brain injury, Parkinson’s disease, and stroke, as well as healthy aging. I am co-PI on a collaborative methodological grant examining concomitant medications taken by participants in a meta-database of Alzheimer’s clinical trials, using data mining to determine which medications may be associated with slower disease progression. I am also PI on two delirium grants, one examining speed of processing training to improve cognitive deficits and one using data mining of electronic health records to improve recognition of delirium in the hospital. I have statistical expertise in longitudinal modeling of cognitive data within clinical trials and cohort studies, as well as the analysis of high-dimensional datasets and multivariate modeling of assessment instruments.

Ronald M. Lazar, Ph.D., FAHA, FAAN, FANA  
Professor of Neurology  
Evelyn F. McKnight Endowed Chair for Learning and Memory  
Director, UAB Evelyn F. McKnight Brain Institute  
Division Director, Neuropsychology

Dr. Lazar is a neuropsychologist with broad interests in aging and vascular disease, with emphases on reversible causes of cognitive decline, risk-factor modification to promote cognitive resiliency, and recovery after stroke. Dr. Lazar is Principal or Co-Principal (MPI) of Cerebral Hemodynamics and Neurocognition in Aortic Valve Disease (NINDS/NIA), the NINDS-funded Blood Flow and Cognition in Asymptomatic Carotid Artery Disease, the NINDS-funded Carotid Revascularization for Primary Prevention of Stroke – Hemodynamics (CREST-H), and the NINDS-funded Co-Investigator and Cognitive Core Leader for the Carotid Revascularization for Primary Prevention of Stroke (CREST-2) trial. His other NIH grants have been funded by NHLBI, NICHD, NIDDK, NCI, and NIAID. His publications have appeared in the New England Journal of Medicine, Nature, Circulation, Brain, Neurology, Lancet Neurology, JAMA Neurology, Annals of Neurology, Brain, Cerebral Cortex, Stroke, JAMA Internal Medicine, the Journal of the American College of Cardiology, among many others. He has served as a permanent member of NIH study section and FDA advisory panel. He was Editor-in-Chief of Neuropsychology Review. His book, Neurovascular Neuropsychology (Springer), was published in 2009, with the next edition expected in 2018.
**Farah D. Lubin, Ph.D.**

Associate Professor  
Co-Director, NINDS Neuroscience Roadmap Scholar Program  
Investigator, Evelyn F. McKnight Brain Institute  
Associate Scientist, Comprehensive Center for Healthy Aging  
Associate Scientist, Comprehensive Neuroscience Center

Dr. Lubin is focused on studying the Molecular and Cellular basis for transcriptional regulation of genes in neurons that integrate and encode information in the brain. Epigenetics is the study of both heritable and non-heritable regulation of gene expression that occurs without any alteration in the DNA sequence; it has been newly implicated as a mediator of experience- and environment-induced persisting behavioral change. She and others have observed that neurons have “hijacked” epigenetic processes such as DNA methylation and posttranslational 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. Her work has provided insights into epigenetic mechanisms that 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. Results from these studies will provide fundamental information concerning epigenetics in mature neurons with clear relevance in learning and memory deficits associated with normal aging, epilepsy, schizophrenia, and depression.

**Dan Marson, J.D., Ph.D.**

Professor Emeritus  
Alzheimer’s Disease Center

Daniel Marson, JD, PhD is a clinical neuropsychologist, licensed attorney, and Emeritus Professor in the Department of Neurology at the University of Alabama at Birmingham (UAB). He directed the Department’s Division of Neuropsychology from 1995 to 2016 and the UAB Alzheimer’s Disease Center from 2005 to 2015. Dr. Marson graduated magna cum laude and Phi Beta Kappa from Carleton College in Northfield, Minnesota (1976), and earned his JD at the University of Chicago Law School (1981) and his PhD in clinical psychology (specializations in geropsychology and neuropsychology) at Northwestern University Medical School (1990). Dr. Marson has lectured nationally regarding competency and other medical-legal and ethical issues in dementia and other neurocognitive disorders. He has published over 100 papers, handbooks, and book chapters on these topics. He has been principal investigator on multiple National Institute of Health (NIH) funded studies of decisional and functional capacity in Alzheimer’s disease, mild cognitive impairment, and traumatic brain injury. His work on financial capacity in older adults has been featured in the New York Times, USA Today, BBC, Kiplinger Report, and NPR. At the national level, Dr. Marson is the past president and a fellow of the National Academy of Neuropsychology (NAN). He is a member and former chair of the Internal Ethics Committee of the Alzheimer’s Disease Cooperative Study, an NIH funded clinical trials group. He has served as a chartered reviewer at the NIH Center for Scientific Review. Dr. Marson previously served on the Committee on Human Research of the American Psychological Association and chaired the committee in 2012. Dr. Marson often testifies as an expert witness in civil and criminal forensic matters. On a personal note, Dr. Marson has played the diatonic harmonica for many years and is a lover of blues and jazz. He has published in the jazz magazine Downbeat.

**Terina Myers**

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Preclinical research of cognitive decline and conversion to MCI and AD, neuroinflammation and identifying the underlying systemic factors that contribute to immune responses.
Ms. Norling is a predoctoral fellow in the Translational and Molecular Sciences T32 program in the laboratory of Dr. Ronald Lazar, Director of the Evelyn F. McKnight Brain Institute at the University of Alabama, Birmingham. As a PhD student in the Behavioral Neuroscience program, Amani’s research focuses on identifying the physiological and molecular mechanisms that maintain cognitive function in aging, with a particular focus on exercise effects and factors that impact the brain to promote healthy aging.

Dr. Roberson is a physician-scientist dedicated to age-related cognitive impairment. He received his A.B. with highest honors from Princeton University and then earned his M.D. and Ph.D in neuroscience at Baylor College of Medicine where he studied molecular mechanisms of learning and memory. 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 joined the neurology faculty at UAB in 2008.

The Roberson lab studies the neurobiology of Alzheimer’s disease (AD) and frontotemporal dementia (FTD), with a focus on understanding the cellular and molecular mechanisms of these disorders and identifying new therapeutic strategies. The role of tau in neuronal dysfunction in AD and FTD is a major area of interest, and the lab also studies how progranulin deficiency causes FTD.

In addition to directing his laboratory, Dr. Roberson directs the UAB Alzheimer’s Disease Center and the Center for Neurodegeneration and Experimental Therapeutics. Dr. Roberson also cares for patients with memory disorders and dementia at the Kirklin Clinic and directs clinical trials related to tauopathies.
Dr. Saag received a B.S. in chemistry with honors in 1977 Tulane University, earned his medical degree with honors from the University of Louisville, and completed his residency and infectious disease and molecular virology fellowship training at the University of Alabama at Birmingham. During the last 6 months of his fellowship, Dr. Saag conceived the concept of a comprehensive HIV outpatient (1917) clinic dedicated to the provision of comprehensive patient care in conjunction with the conduct of high quality clinic trials, basic science, and clinical outcomes research. Within the clinic structure, he established a clinical trials unit, a data management center, and a Clinical Specimen Repository designed to support the activities of the newly established Center for AIDS Research at UAB. In essence, the clinic became a “hub” for the clinical, basic science, and behavioral science investigators within the Center by creating a dynamic interface between the patients and the investigators. Dr. Saag has participated in many studies of antiretroviral therapy as well as novel treatments for opportunistic infections. He has published over 450 articles in peer reviewed journals, including the first description of the use of viral load in clinical practice (Science, 1993), the first description of the rapid dynamics of viral replication (Nature, 1995), the first guidelines for use of viral load in practice (Nature Medicine, 1996), the first proof of concept of fusion inhibition as a therapeutic option (Nature Medicine, 1998), and directed the ‘first-in-patient’ studies of 7 of the 30 antiretroviral drugs currently on the market. Dr. Saag serves on the International AIDS Society-USA Board of Directors, is a Past-President of the HIV Medical Association, is Chair of the IAS-USA Antiretroviral Therapy Guidelines panel, was a founding CoChair of the AASLD / IDSA Hepatitis C Guidelines Panel, is a member of the WHO Antiretroviral Therapy Guidelines panel and a past-member of the HHS Guidelines Panel on Antiretroviral Therapy. In 2014, he was the Castle-Connolly National Physician of the Year and was inducted into the Alabama Healthcare Hall of Fame. An accomplished teacher, Dr. Saag has been awarded Argus awards annually by the UAB medical students as Best Lecturer in the Patient, Doctor, and Society module. Dr. Saag recently published a memoir entitled “Positive: One doctor’s encounters with death, life, and the US Healthcare system,” now in its second printing.

I am interested in how brain regions are physically connected to one another, the validity of psychological tests in older populations, and how the brain can be resilient to the effects of aging and diseases associated with age.
How is it that we can process the same information in different ways at different times? Humans have a remarkable ability to process inputs from the environment flexibly. Our lab is interested in understanding what brain mechanisms underlie this ability and how those mechanisms change with age and experience. We therefore examine brain activity and behavior in older adults, and in younger and older adults who train to do vision tasks. We are particularly interested in brain structure and function of people who have altered visual experience due to living with the retinal disease Macular Degeneration. We study human behavior and brain structure and function using precise behavioral measurements (including psychophysics and tracking of eye movement), magnetic resonance imaging (MRI) and electroencephalography (EEG).

Yuliya Voskobiynyk, received her Neuroscience Bachelor of Science degree from the University of Illinois at Chicago working with Dr. Daniel Nicholson in the Rush University Medical Center studying cognitive aging, Alzheimer’s disease (AD), and epilepsy. Currently, Yuliya is a predoctoral fellow in the Center for Neurodegeneration and Experimental Therapeutics in the laboratory of Dr. Erik D. Roberson in The University of Alabama at Birmingham. Yuliya researches the contribution of BIN1, one of the leading genetic risk factors in AD, to network hyperexcitability in Alzheimer’s disease and age-related cognitive impairment.
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Mónica C. Acevedo-Molina is a second-year graduate student in the Clinical Psychology Ph.D. program at the University of Arizona. As a graduate student working with Dr. Matthew Grilli, Mónica's research focuses on how bilingualism influences memory in healthy aging. She aims to explore the potential of episodic autobiographical memory as a cognitive process that can be used to detect early signs of memory impairment among Hispanic individuals that are bilingual.

Gene E. Alexander, Ph.D.
Professor and Director, Brain Imaging Behavior & Aging Lab
Departments of Psychology and Psychiatry, Neuroscience and Physiological Sciences Graduate Programs, BIOS Institute, Evelyn F. McKnight Brain Institute
Director, Brain Imaging and Fluid Biomarkers Core

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 risk factors for 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, lifestyle, 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 and Director of the Brain Imaging, Behavior & Aging Lab in the Clinical Psychology and Cognition & Neural Systems Programs in the Department of Psychology, in the Department of Psychiatry, in the BIOS Institute, in the Neuroscience and Physiological Sciences Graduate Interdisciplinary Programs, and in the Evelyn F. McKnight Brain Institute. Dr. Alexander is a Fellow of the American Psychological Association (Divisions 20 and 40) and of the Association for Psychological Science, and is Director of the Brain Imaging and Fluid Biomarkers Core for the Arizona Alzheimer’s Disease Center.

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, Division of Neural Systems, Memory & Aging

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 older individuals. 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.
Monica K. Chawla, Ph.D.

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

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 Associate 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.

Lindsey Crown, M.S.

Laboratory of Dr. Stephen Cowen
Department of Psychology

Lindsey’s primary interests are in the neurobiological basis of decision-making and memory and how these cognitive constructs are altered in disorders of the nervous system. With regards to decision-making, Lindsey is particularly interested in understanding how effort modulates brain activity both at the level of individual neurons and large-scale oscillatory patterns. Within memory systems her interest is in how large-scale local field potential (LFP) oscillations known to be involved in memory consolidation, particularly cortical spindles and hippocampal ripples, may be altered in Parkinson’s disease. Lindsey is currently involved in a project researching how a mutation of the LRRK2 gene (the most common genetic cause of Parkinson’s disease) affects these memory-consolidation related oscillations in mice. This research may help to uncover biomarkers for early stage Parkinson’s disease and identify possible targets for treatment.

Arne Ekstrom, Ph.D.

Associate Professor
Department of Psychology

Rodent models of aging and neural disease offer a compelling means of mechanistically addressing brain changes accompanying these processes. Yet, exactly how information learned from these models compares with humans remains difficult to quantify, in part because invasive techniques are rare in humans and human experimental work lacks the kind of precise experimental control we can exert in rodents. The lab of Dr. Arne Ekstrom focuses on understanding two areas that offer particular promise for cross-species dialogue, navigation and memory. His research involves a variety of different neural observation techniques, including direct invasive recordings from human patients undergoing surgical monitoring, high-resolution fMRI targeting the hippocampus, mobile scalp EEG, and the study of patients with focal brain lesions. His lab also employs novel technical devices, like the omnidirectional treadmill, wireless immersive navigation, and virtual reality. Examples of recent findings from these approaches include evidence that, like rodents, humans also demonstrate navigation-related low-frequency oscillations in the hippocampus and findings suggesting that we can decode environment-specific neural codes from the human hippocampus using high-resolution hippocampal imaging. These two recent findings offer promise in better understanding the neural changes accompanying healthy aging and Alzheimer’s disease and are the current focus of several projects currently underway in the lab.
Elizabeth L. Glisky, Ph.D.
Professor
Department of Psychology
Evelyn F. McKnight Brain Institute

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, Ph.D.
Postdoctoral Research Associate
Division of Neural Systems, Memory and Aging
Evelyn F. McKnight Brain Institute

Daniel’s research focuses on the relationship between sensory function and cognitive decline in older individuals. To explore this relationship, Daniel and his team combine behavioral assessments of cognitive function, electrophysiological estimates of sensory function, structural and diffusion tensor magnetic resonance imaging, and chemical anatomical techniques in adult and aged macaque monkeys. Daniel is a postdoctoral research associate at the University of Arizona in the laboratory of Dr. Carol Barnes.

Matthew D. Grilli, Ph.D.
Assistant Professor
Department of Psychology
Evelyn F. McKnight Brain Institute

Dr. Matt Grilli’s research focuses on uncovering the cognitive and neural bases of memory and understanding how memory supports other aspects of cognition. Dr. Grilli is particularly interested in understanding how autobiographical memory changes in normal and abnormal cognitive aging, as well as in adults with stable memory impairment secondary to acquired brain injuries. He utilizes cognitive, neuropsychological, neuroimaging, and genetic methods. Ongoing projects are investigating semantic and episodic forms of personal memory across the adult lifespan. He also studies the impact of disrupted autobiographical memory on the self-concept and future-oriented cognition. The goals of this research are to 1) understand the impact of age-related memory changes on cognition, well-being, and everyday functioning, 2) uncover strategies that promote the adaptive uses of memory, and 3) develop interventions for cognitive deficits.
Dr. Hay’s laboratory studies the neurobiology of peptide and hormone actions in the brain. Dr. Hay is also President and founder of a new Tucson biotechnology company, ProNeurogen, Inc. (http://www.proneurogen.com/). ProNeurogen is a preclinical and clinical stage biopharmaceutical company developing novel peptide-based therapeutics to treat cognitive impairment in patients at risk for Alzheimer’s disease and brain injury caused by cardiovascular disease and trauma. Dr. Hay and ProNeurogen are collaborating with physicians and scientists at the University of Arizona’s Sarver Heart Center, the Evelyn F. McKnight Brain Institute, BIO5 Institute and Banner Alzheimer’s Institute to advance these peptides through FDA Phase II clinical trials. The goal of these studies is to reduce or prevent memory loss related to decreased brain blood flow and inflammation. Future studies are underway for treatment of traumatic brain injury.

Dr. Hay is the former Executive Vice President and Provost of The University of Arizona. She was the University of Arizona’s chief operating officer with responsibilities for the entire $2.1B university budget including the Arizona Health Sciences Center. Prior to coming to Arizona, Dr. Hay served as Vice President for Research at the University of Iowa.

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. Recent work in his laboratory has focused on the use of internet-based study of cognitive aging, the incorporation of wearable device measurements and “internet of things” to study age-related changes in the study subject’s home environment, single cell-based transcriptome sequencing to perform in-depth brain region cell censuses, and the reduction to practice of single dried blood drop transcriptome profiling to power the easier longitudinal assessment of biomarkers of health and disease.

The primary goal of Ashley Lawrence’s research is to understand changes in brain function and cognition in normal aging and how these changes are impacted by certain health and lifestyle factors. Her previous research has centered on the effects of longitudinal changes in cortisol on medial temporal volume and memory in normally aging individuals. Currently she is working on identifying certain aspects of memory that may be relatively preserved in aging and whether this preservation reflects individual differences in medial temporal lobe function, as well as health and lifestyle. Ashley Lawrence is a fifth year graduate student in the Clinical Neuropsychology program at the University of Arizona.
The central goal of Adam Lester's 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. It’s 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.

Stephanie Matijevic's research explores the relationship between cognition and the brain's structural and functional integrity in healthy aging. She is particularly interested in examining the role of physiological, lifestyle and genetic factors in moderating the associations between white matter health and cognition in older adults. She has used diffusion tensor imaging to investigate the influence of hypertension and APOE E4 status on age-related changes in white matter integrity. More recently, Stephanie has developed an interest in exploring how functional and structural connectivity changes might underlie differences in memory retrieval strategies between young and older adults.

Jack-Morgan's research focuses on how decision-making changes as we get older and specifically how it changes in healthy aging as opposed to those with cognitive impairment. Currently, he is focusing on how older adults solve the “explore-exploit” dilemma, and how their exploration strategies relate to their cognitive abilities. He is using Transcranial Magnetic Stimulation on older adults to temporarily affect activity within the prefrontal cortex and gain a better understanding of how explore-exploit computations are done. In addition to this work with aging, he has an additional project examining how bumblebees balance their explore-exploit behavior when foraging. Jack-Morgan is a second year PhD in the Cognition and Neural Systems program at the University of Arizona.

Justin is primarily interested in differentiating between normal age-related changes in the brain and major neurocognitive disorders such as Alzheimer's disease (AD). Currently, he is investigating the difference between APOE E4 carriers and non-carriers on pattern separation in both younger and older adults. He is specifically interested in how the scene context influences the type of errors younger and older adult carriers make. In addition, he wants to better understand how these behavioral changes relate to the structural and functional changes within the medial temporal lobe that are associated with aging. Justin is a first-year graduate student in the Clinical Neuropsychology program at the University of Arizona working in Dr. Lee Ryan’s Cognition and Neuroimaging Laboratory.
Wonn S. Pyon
Research Specialist
Division of Neural Systems, Memory and Aging

Wonn’s research focuses on the anatomical changes of the midbrain and how these could inform why we experience age-related cognitive decline. Using techniques such as immunohistochemistry and confocal imaging, Wonn and his team are able to quantify dopaminergic neurons found within the ventral tegmental area, substantia nigra and the locus coeruleus of behaviorally-characterized macaque monkeys. These regions, implicated in various neurodegenerative diseases such as Parkinson’s, may give crucial insight into healthy brain aging. Wonn is currently a research specialist at the University of Arizona in the laboratory of Dr. Carol Barnes, however, he is excited at the prospect of pursuing his graduate studies at University of Florida’s McKnight Brain Institute.

Lee Ryan, Ph.D.
Professor, Psychology and Neurology
Head, Department of Psychology
Associate Director, Evelyn F. McKnight Brain Institute

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 a Professor in the departments of Psychology, Neurology, and the Neurosciences Interdisciplinary Graduate Program. She is the 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 the Associate Director 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, cardiovascular health including obesity and 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 underrepresented students to pursue a career in science.

Samantha G. Smith, B.S.
Graduate Student
Brain Imaging, Behavior and Aging Lab

Sam Smith is a graduate student studying neuropsychology in the Clinical Psychology program at the University of Arizona. Her primary research interests include the effects of behavioral and lifestyle factors on the neural and cognitive components of aging. She is currently assessing the interaction between physical activity and sleep on brain structure, brain function, and cognitive outcomes in healthy aging cohorts. Further, she is exploring how the differences between subjective and objective measures of activity influence brain-behavior relationships in aging.
Hyun Song's research centers on individual differences in age-related changes in the brain and cognition. She is particularly interested in the beneficial effects of lifestyle factors on the aging brain combined with multiple neuroimaging approaches, and age-related cognitive decline. Her previous research focused on exploring the neural basis underlying education-related differences in proportional reasoning in healthy older adults using task-based fMRI, and the impact of education on temporally coherent spontaneous brain activity and its relation to reasoning ability in healthy older adults using resting state fMRI. Currently, Hyun has developed an interest in the protective and restorative role of physical activity in the aging brain and cognition. She is working on examining neural substrates of individual differences in responsivity to exercise in healthy older adults.

Sahana’s research investigates the neural substrates underlying spatial memory and decision making and age-related changes in these circuits. The hippocampus plays a critical role in episodic memory and has shown to encode spatial locations during behavioral tasks followed by sequential replay during rest. The prefrontal cortex is involved in working memory and decision making. Interactions between neurons of these two regions regions, as well as coordinated network activity, plays a crucial role in learning and memory dependent decision making. Neurophysiological changes have been observed in both the prefrontal cortex and the hippocampus during normal aging. The goal of Sahana’s research is to understand how changes in the aforementioned neural circuits leads to age-age-associated impairments in learning, memory and decision making.

Emily Van Etten is a graduate student studying neuropsychology in the Clinical Psychology program at the University of Arizona. Her primary research interests include examining the neuroanatomical and neurofunctional substrates that underlie cognitive changes in healthy aging and how possible modifiers of normal aging, including lifestyle and genetic factors, influence relationships between brain and behavior. Currently, she is working on a study to investigate the neuroanatomical substrate of subjective memory complaints and objective memory performance in healthy older adults, and how this may be influenced by hypertension status.

Aubrey Wank's research broadly encompasses autobiographical memory and normal cognitive aging. Her previous work includes examining episodic autobiographical memory retrieval in cognitively healthy older adult carriers of APOE ε4 to identify possible markers of early cognitive decline associated with Alzheimer's disease (AD). Currently, Aubrey is interested in investigating early stages of episodic autobiographical memory retrieval and underlying neural networks to shed light on memory quality in older adults, including those with genetic risk factors of AD. Aubrey is a third-year graduate student in the Clinical Psychology PhD program at the University of Arizona and is minoring in Neuropsychology.
Robert C. Wilson, Ph.D.
Assistant Professor
Department of Psychology
Cognitive Science Program

Dr. Bob Wilson's research focuses on the computational neuroscience of reinforcement learning and decision making. Dr. Wilson is particularly interested in how we decide between exploring the world for information and exploiting what we already know, how we learn and use mental representations of a task, how and why we make so many "mistakes" when making decisions, and how all of these processes change with age. His approach mixes computational modeling, behavioral experiments, eye tracking, electroencephalography (EEG), functional magnetic resonance imaging (fMRI) and transcranial magnetic stimulation (TMS).

Cindy Woolverton, B.A.
Graduate Student
Aging and Cognition Laboratory

Cindy Woolverton's current research focus is on social and cognitive factors in aging. Specifically, she is interested in evaluating the impact of social interactions on cognitive performance and social cognition in both older and younger adults. Using intergenerational interactions, she hopes to evaluate how this intervention impacts young adult's: perceptions of aging, attitudes toward aging, anxiety towards interacting with older adults; and communication skills. Similarly, she hopes to further understand how this type of intervention provides cognitive and social benefits for older adults.
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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 an important role in a wide range of neurological problems, including hydrocephalus and stroke. Since joining the University of Miami, Dr. Alperin’s 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.

Nik Banerjee, M.S.  
Doctoral Candidate  
Clinical Psychology

Nik is a fifth year doctoral candidate in the University of Miami Clinical Psychology program (Health Track). His research interests center on the neuropsychological sequelae of neurological disease and injury. Within this context, he is particularly interested in vascular and immune-mediated disease processes, cognitive aging, and traumatic brain injury. He has published in the areas of HIV-associated neurocognitive impairment, vestibular-cognitive links in mild traumatic brain injury, and neuropsychological correlates of frailty in aging adults. He is currently a research assistant for the McKnight Frailty and Health study. For his dissertation, Nik is applying neuroimaging analyses to better understand the link between fatigue and cognitive decline in older adults through cardiovascular and cerebrovascular intermediates.

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Professor of Human Genetics and Otolaryngology  
Dr. John T. Macdonald Department of Human Genetics

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, hearing loss, 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 Associate Director of Collaborations and Compliance in the John P. Hussman Institute for Human Genomics. She is a Professor in the Dr. John T. Macdonald Foundation Department of Human Genetics.
Christian J. Camargo, M.D.
Instructor, Division of Cognitive Neurology
Department of Neurology

Dr. Camargo did his undergraduate studies at the Massachusetts Institute of Technology (MIT,) where he majored in Brain and Cognitive Sciences, and Music. He attended and received his MD from the Cleveland Clinic Lerner College of Medicine of Case Western Reserve University. He completed his Fellowship in Cognitive and Behavioral Neurology at the University of Miami, as the Evelyn F. McKnight Brain Institute Fellow. Presently, he serves clinical and research roles as faculty at the Miller School of Medicine Department of Neurology, sits on the McKnight Brain Research Foundation’s Communications Workgroup, and was recently awarded the 2019 American Academy of Neurology / McKnight Brain Foundation Clinical Translational Research Scholarship.  His research interests include clinical interventions to promote synaptic recovery and repair, advanced imaging for improved Alzheimer’s Disease diagnosis in diverse populations, and the therapeutic use of stem cells in primary neurodegenerative disease.

Kunjan R. Dave, Ph.D.
Research Associate Professor
Department of Neurology

Dr. Dave received his Ph.D. in Biochemistry from the M. S. University of Baroda, India. During his Ph.D. training he worked on several research projects including secondary complications of diabetes, Alzheimer’s disease and drug toxicity among others. Dr. Dave served at the Zandu Pharmaceutical Works in 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.

Marti Flothmann, B.S.
Research Associate

Marti Flothmann is a research associate in the Department of Neurology at the University of Miami, Miller School of Medicine. She received her Bachelor of Science degree from the University of Miami majoring in Exercise Physiology and minoring in sports medicine. She completed a senior internship in the Department of Neurology under the guidance of Dr. Tiozzo, where she decided to continue working in research.

Marti has been working with The Bugher study, an AHA funded phase IIa clinical trial investigating the effect of exercise on cognition in post-stroke patients. She has been with the study since 2014, and taken over coordinating the study in April of 2017. She directed the exercise training sessions for research participants, trained new RAs, managed the study’s database, carried out all biospecimen collections and administered the neuropsychological batteries for the study. She has now joined the Evelyn F. McKnight Brain Institute and is managing data and study visits for the McKnight Brain Aging Registry (MBAR) study. Her current research interests include the effects of physical activity on cognitive aging and brain health.
Susan Fox-Rosellini, M.B.A.
Executive Director Marketing and Administration
McKnight Brain Institute, Department of Neurology

Susan has 35+ years' experience and a proven track record in developing new business and marketing strategies, new products and improving the revenues of for-profit and not-for-profit businesses. She joined UM Neurology in 2007 as the Executive Director for Development and Marketing. In January of 2019, Susan, has become the Executive Director Marketing and Administration for the McKnight Brain Institute and Department of Neurology, focusing on marketing and electronic media as well as strategic plan. Prior to joining UM, Susan worked as a development and marketing leader with the Family Resource Center, the Coconut Grove Playhouse and the Miami City Ballet. She also has experience in international business development in Latin America, Asia and Europe.

Sarah Getz, Ph.D.
Instructor of Neuropsychology
Department of Neurology
Division of Neuropsychology

Sarah Getz, PhD, is an instructor in the Division of Neuropsychology, in the Department of Neurology of the University of Miami, Miller School of Medicine. Dr. Getz earned her doctorate in psychology with a specialization in cognitive neuroscience at Princeton University in 2013. Her dissertation research focused on the role of cognitive control in decision making processes. She completed her clinical training in Boston, including advanced externships at Harvard Medical School, and her clinical internship at the Miami VA Medical Center. Current lines of clinical research include investigations into the role of lifetime emotional factors in developing the frailty syndrome as well as cognitive and socio-affective correlates of scam susceptibility and deception. Current efforts are also focused on screening measures and primary interventions to reduce deception among vulnerable elderly.

Hong Jiang, M.D., Ph.D.
Assistant Professor of Clinical Neuro-ophthalmology & Neurology
Bascom Palmer Eye Institute

Hong Jiang, M.D. Ph.D. is an Assistant Professor of Neurology and Ophthalmology at the University of Miami, Miller School of Medicine. She earned her undergraduate medical degree from Zhejiang University in Hangzhou, China. She received her Ph.D. at the University of Hong Kong in Hong Kong, China. Dr. Jiang completed her Neurology residency training at Jackson Memorial Hospital/University of Miami, and her Neuro-ophthalmology fellowship at Bascom Palmer Eye Institute, University of Miami.

As a neuro-ophthalmologist at the Bascom Palmer Eye Institute, Dr. Jiang specializes in the diagnosis and treatment of various neuro-ophthalmologic disorders, such as vision loss due to brain tumor or dementia, optic neuritis and double vision. In the Department of Neurology, Dr. Jiang provides expertise in the evaluation and treatment of various neurologic diseases such as memory disorders, headaches, spine diseases and Multiple Sclerosis.

Dr. Jiang’s research interest is to study the ocular microvascular dysfunction in ocular and central nervous system diseases, such as dry eye, dementia and multiple sclerosis. She has multiple publications in ocular microvascular function studies. She is interested in studying the vascular pathway in the pathogenesis of Alzheimer’s disease. With support from both the McKnight Brain Institute and North American Neuro-Ophthalmology society (NANOS), she and her team at Bascom Palmer Eye Institute recently found that decreased retinal microvascular network density and blood flow volume in patients with Alzheimer’s disease compared to normal controls.

Dr. Jiang is a member of the North American Neuro-Ophthalmology Society (NANOS), the American Academy of Neurology (AAN), the American Academy of Ophthalmology (AAO) and the Association for Research in Vision and Ophthalmology (ARVO).
Sang H. Lee
Senior Research Associate
Department of Radiology

Sang Lee received his BS in Bioengineering at the University of Illinois, Champaign-Urbana and received an MS in Bioengineering at the University of Illinois, Chicago. Sang Lee has been a member of Dr. Noam Alperin’s MR research group for more than 20 years by participating in many important projects including implementation of the pulsatility based method for segmentation (PUBS) of lumen conducting non steady flow. He helped to develop MR based method for measurements of intracranial compliance and pressure, and he has built experiences and knowledge in hydro- and hemo-dynamics of the cranio-spinal system. Currently, Sang Lee is a member of the Advanced Image Processing Lab (AIPL) and Physiologic Imaging and Modeling Lab (PIML) in the Department of Radiology, University of Miami. Sang Lee is proficient with brain segmentation/parcellation software packages such as FreeSurfer, FMRIB Software Library and ASHS (Automatic Segmentation of Hippocampal Subfields).

Bonnie E. Levin, Ph.D.
Bernard and Alexandria Schoninger Professor of Neurology
Director, Division of Neuropsychology

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.

Judith Diane Lobo
PhD Student
BREATH Laboratory

Judith Lobo received her BS in Biological Psychology at the New College of Florida, the honors college of Florida. She completed an honor thesis examining metacognition in vertebrates before working as a Research Assistant for the Cognitive Neuroscience division of Florida International University investigating white matter tracks and their association to language development. Judith is currently in the PhD Program at the University of Miami, pursuing her PhD in Cognitive Behavioral Neuroscience. Under the mentorship of Roger C. McIntosh PhD, she completed her Master's thesis investigating risk of cardiovascular disease and resting-state functional connectivity of brain structures supporting episodic memory in a group of Successful Agers (older adults with remarkable episodic memory function) using a dataset from the Human Connectome Project. She aspires to be a researcher studying cognitive aging, health biomarkers and its related functional brain activity.
Katalina Fernández McInerney, Ph.D.
Assistant Professor – Clinical
Department of Neurology, Division of Neuropsychology

Dr. McInerney's research focuses on intervention and rehabilitation strategies for neurologically compromised individuals along with the understanding and promotion of healthy aging. She is currently engaged in research examining neuropsychological and affective changes associated with frailty in older age and the effect of moderate and high intensity exercise on sedentary individuals. Additionally, she is involved in several studies examining decision making, including identifying markers of competency in healthy cognitive aging. She is working on a screening questionnaire to assess financial and medical capacity in Hispanic and non-Hispanic individuals with mild cognitive impairment and the oldest old. Her prior research focused on the neurocognitive correlates of hazard perception and probabilistic learning in healthy aging older adults.

Stacy S. Merritt, M.A., CCRP
Professor of Neurology, Epidemiology and Public Health
Vice Chair, Clinical Research in Neurology
Director, Clinical Translational Research Division
Director, CME Grand Round Series in Neurology

Stacy Merritt, MA received her Master's Degree in Gerontology from the University of South Florida. She has been involved in research and policy aimed at improving quality of life for the aging population and culturally competent care for the minority aged. She was a Program Coordinator for the Florida Department of Elder Affairs (DOEA) Elder Abuse Prevention Program and for the Central and North Florida Chapter of the Alzheimer’s Association. At the University of Florida's Department of Neurology, she was the Assistant Director of Clinical Trials overseeing research on neurological disorders including a post-mortem DBS brain bank. As the Research and Administration Director for the Evelyn F. McKnight Brain Institute, she works with research projects involving normal cognition and memory changes in aging, as well as pathological changes.

Milena Pinto, Ph.D.
Research Assistant Professor
Department of Neurology

Dr. Milena Pinto is Research Assistant Professor in Neurology at the University of Miami, Miller School of Medicine. She received her BS from University of Trieste in Italy and her Ph.D. from SISSA (International School for Advanced studies) in Italy.

Dr. Pinto has more than ten years of research experience on neurodegenerative disorders, in particular on Parkinson's and Alzheimer’s disease. During her Masters and PhD studies, she extensively worked on drug-induced and genetically modified animal models of neurodegeneration as well as on neuronal cellular models and primary cultures. For her postdoctoral training, she has been involved in understanding the neuronal-specific role of mitochondrial dysfunctions and mitochondrial DNA deletions and depletion in mouse models of neurodegenerative disorders, in particular of Parkinson's and Alzheimer's diseases. She now focuses her research in the neurodegeneration associated with Alzheimer's and aging. She recently accepted an appointment as research assistant professor at the University of Miami to establish a program in Alzheimer's Disease.
Dr. Jordyn Rice completed her Doctorate of Physical Therapy at the University of Miami. Currently she is pursuing her PhD at the Neuromotor Plasticity Laboratory under the guidance of Dr. Gomes-Osman with the goal of translating neuroscience research into clinical physical therapy practice. She is interested in the neurophysiological mechanisms underlying cognitive and motor performance in aging adults. She is gaining expertise in the use of non-invasive brain stimulation to characterize cortical function and neuroplasticity to explain variations in functional performance. The focus of her dissertation studies is to understand the relationship between cognitive and motor function, and how to promote cognitive health through exercise interventions.

Joshua completed his doctorate in clinical psychology at the University of Miami. His clinical internship was completed at the West Los Angeles VA with a specializations in geropsychology and neuropsychology. Joshua is currently in the first of a two-year neuropsychology postdoctoral fellowship at the University of Miami Department of Neurology, Division of Neuropsychology. His research background is in studying cognitive changes as a result of mindfulness training, particularly in populations with high performance demands (e.g., military personnel & elite athletes). Joshua is currently contributing to multiple ongoing research projects sponsored by the McKnight Brain Institute on topics related to healthy cognitive aging in older adults.

Dr. Tatjana Rundek is a Professor of Neurology, Epidemiology and Public Health with tenure, Executive Vice Chair of Research and Faculty Affairs, and Director of the Clinical Translational Research Division in the Department of Neurology of the University of Miami, Miller School of Medicine. Dr. Rundek is a neurologist, neuroscientist, clinical researcher and principal investigator of several NIH/NINDS funded R01 grants on genetic determinants of carotid atherosclerosis, stroke and cognitive decline. As Scientific Director of the Evelyn F. McKnight Brain Institute, she is involved in cognitive and neuroimaging studies for age-related cognitive decline, MRI imaging phenotypes of neurodegeneration and cognitive and imaging analytical quantitative methods. Dr. Rundek conducts cross-disciplinary research in aging brain health and disease using clinical, genetics and neuroimaging approaches. She has been a productive investigator with over 380 publications in the area of brain atherosclerosis and cognitive decline in aging populations. She is a true collaborative clinical researcher with established extensive collaborations on the large NIH-funded studies at Columbia University (NOMAS, INVEST and eMERGE), at Albert Einstein in the Bronx (Einstein Aging Study), and national and international consortia (SIGN, ISGC). Her current clinical translation research focuses on multi-modal interventions against age-related cognitive decline and dementia.
Dr. Sacco is the founding Principal Investigator of the 26-year 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 in the areas of stroke prevention, treatment, epidemiology, risk factors, vascular cognitive impairment, brain health, human genetics and stroke recurrence. His research has also addressed healthcare disparities. He has lectured extensively at national and international meetings. He served on the National Academy of Medicine panel on Preventing Cognitive Decline and Dementia, 2017, and is an elected member of the NAM.

William K. Scott, Ph.D.

William K. Scott, Ph.D. is Professor and Vice-Chair for Education & Training in the Dr. John T. Macdonald Foundation Department of Human Genetics, and Professor of Neurology and Public Health Sciences at the University of Miami Miller School of Medicine. He is a core faculty member of the John P. Hussman Institute for Human Genomics and Executive Director of the UM Brain Endowment Bank, one of six NIH-supported centers in the NeuroBioBank network. Dr. Scott’s research focuses on the identification of gene and environment interactions that influence the risk of complex diseases. Dr. Scott is one of four principal investigators in a multi-center study examining genetic influences on the progression of symptoms in age-related macular degeneration, and one of three lead investigators of a study in Midwestern U.S. Amish communities aiming to identify genetic factors that protect from the development of age-related cognitive impairment. Other research examines genetic factors underlying primary open-angle glaucoma, genetic susceptibility to tuberculosis, and staphylococcal sepsis. He is the program director for the NEI-funded Ocular Genomics Training Program and the Master of Science in Genomic Medicine program and has served as primary mentor to four graduate students and three post-doctoral fellows.
Dr. Joseph Signorile is a Professor of Exercise Physiology in the Department of Kinesiology and Sport Sciences and Director of the Laboratory of Neuromuscular Research and Active Aging. He also has a joint appointment at the Center for Aging at the Miller School of Medicine. He received his BS from Rutgers University, Masters from the University of Florida and Ph.D. from Texas A&M. He recently ended a nine-year joint appointment at the Miami Veteran's Administration Hospital. He has been a pioneer in applying the diagnosis/prescription model for tailored exercise to improve function and reduce falls in older persons and continues to work on new technologies for improving independence. Within the context of prescriptive exercise. He has also developed several assessment tools to assess the physical progression of aging, and most recently has improved the assessment of executive function, through the development of a walking executive function test called the WRIT. His most recent work has concentrated on strength and power training to reduce the neuromuscular symptoms of Parkinson's disease and the impact of visual flow on Parkinsonian gait. He is currently collaborating with researchers from the McKnight Foundation to assess the effectiveness of his new modified yoga programs designed to improve memory and executive function in older persons and examining the impact of circuit resistance training on cognition in this population. Dr. Signorile released his definitive book on aging exercise prescription entitled Bending the Aging Curve in 2011, which has been translated into Cantonese, Korean and Italian.

Dr. Sun started her medical career as a neurologist in China. She obtained her Ph.D. in neuroscience in Japan. She completed her neurology residency training at the Medical University of South Carolina in the United States. She completed a cognitive and behavioral neurology fellowship at the VA Boston Healthcare System in the United States. Her research activities have been primarily focused on Alzheimer's disease and related disorders. Her earlier work includes characterization of biochemical properties of tau protein in the axonal transport and roles of amyloid protein in Alzheimer's disease. She is one of the earliest researchers to establish quantitative amyloid ELISA in the field. Her long-term efforts are dedicated to identifying biomarkers for the diagnosis of Alzheimer's disease. Currently, she is working on the role of CSF synaptic proteins in cognitive function. She has been invited to be a reviewer for multiple journals on Alzheimer's research. Dr. Sun provides clinical care to patients with cognitive disorders at the Memory disorder clinic of the University of Miami. She is also involved in educational programs for medical students, neurology residents, and is the Education Director for the Evelyn F. McKnight Brain Institute at the University of Miami. She is also involved in educational programs for medical students, neurology residents, and is the Education Director for the Evelyn F. McKnight Brain Institute at the University of Miami. She is also involved in educational programs for medical students, neurology residents, and is the Education Director for the Evelyn F. McKnight Brain Institute at the University of Miami.
Dr. Wang, the Scientific Co-Director of Experimental Imaging Laboratory for the Bascom Palmer Eye Institute, University of Miami, is an Associate Professor of Ophthalmology and Electric and Computer Engineering. After MD training in China, Dr. Wang obtained his PhD in vision science at University of Waterloo, Waterloo, Canada. He came to the University of Miami in July, 2006 from the University of Rochester, Rochester, NY. Dr. Wang has established the advanced ophthalmic imaging laboratory at the Bascom Palmer Eye Institute and is working closely with a group of neuro-ophthalmologists to study vasculature in the eye and neurological disorders. His research focuses on imaging microvasculature and microstructure of the eye as a window of the central nerve system. Currently, he and his collaborators in the Evelyn F. McKnight Center for Age Related Memory Loss are working on ocular microvascular dysfunction in age-related dementia. The aim of the study is to determine whether microvascular dysfunction plays a role in age related memory loss.

Dr. Wurtman's long-term goal is to discover safe and effective treatments for brain disease. His research has identified numerous novel mechanisms controlling aspects of brain chemistry in rodents and humans, and shown how these mechanisms may be used to treat brain-based disease. During his career, Dick has published over 1000 papers on diverse topics such as neurotransmitters, neuronal membrane synthesis, nutrition and the brain, neurodegeneration, circadian rhythms, appetite control, and treatment discovery for neurological disease. He received has A.B. in Philosophy and Chemistry from the University of Pennsylvania in 1956, and his M.D. in 1960 from Harvard Medical School. He completed his Clinical Training in Medicine and Endocrinology at Massachusetts General Hospital and postdoctoral training at the National Institutes of Health before joining the MIT faculty in 1970.