

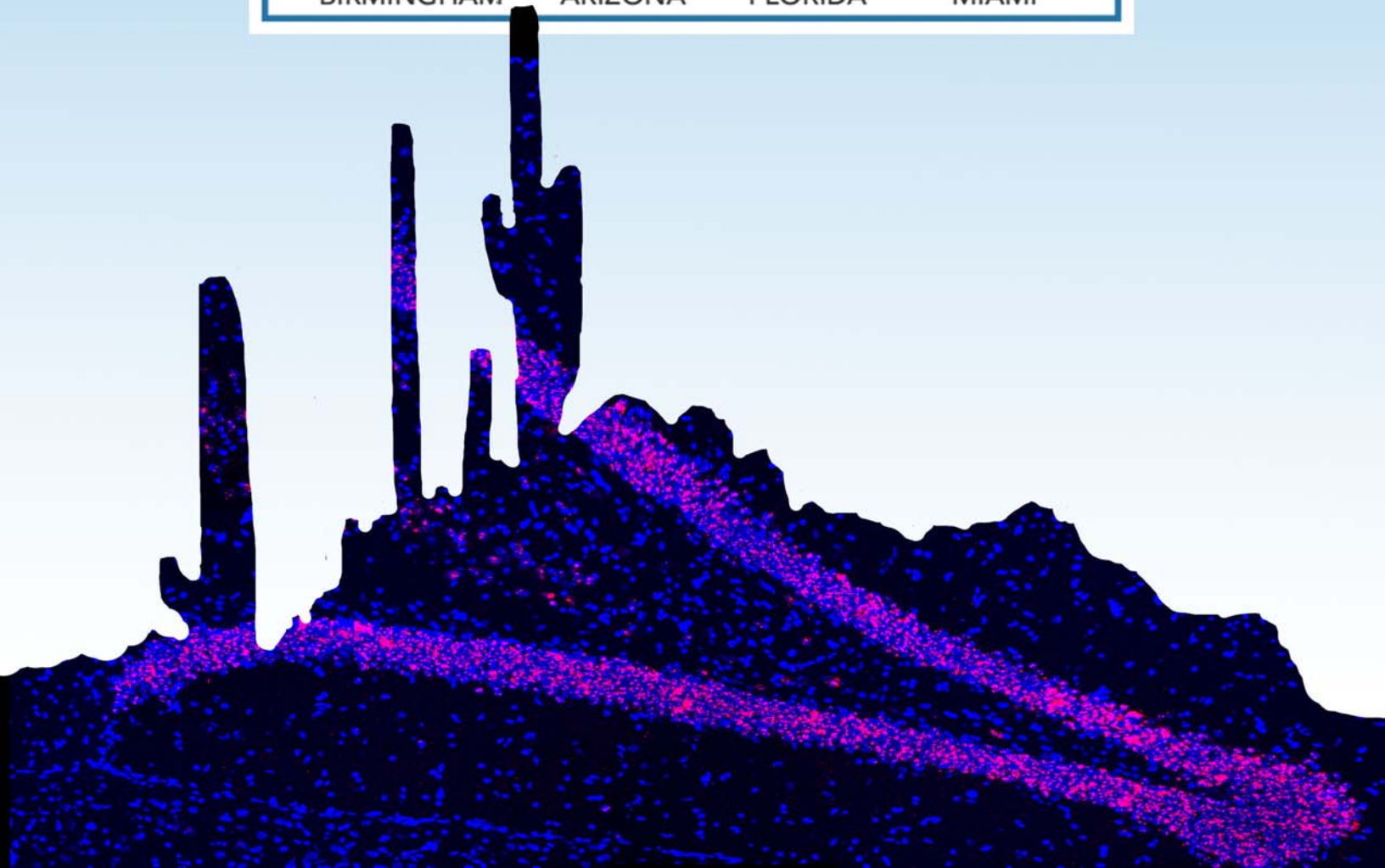
**MCKNIGHT BRAIN RESEARCH FOUNDATION
NINTH INTER-INSTITUTIONAL MEETING
THE UNIVERSITY OF ARIZONA
TUCSON, AZ
APRIL 27-29, 2016**



THE McKNIGHT
BRAIN RESEARCH
FOUNDATION®
Preserving memory, enhancing life

McKNIGHT BRAIN INSTITUTES

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| UNIVERSITY OF ALABAMA AT BIRMINGHAM | • | UNIVERSITY OF ARIZONA | • | UNIVERSITY OF FLORIDA | • | UNIVERSITY OF MIAMI |
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Ninth Annual McKnight Inter-Institutional Meeting Tucson, Arizona

Wednesday, April 27, 2016

1:00pm – 5:00pm **Registration**
Lobby, JW Marriott Tucson Starr Pass
3800 West Starr Pass Blvd., Tucson, AZ

5:00pm – 7:30pm **Reception and Buffet Dinner**
Tash Lawn, JW Marriott Tucson Starr Pass

Thursday, April 28, 2016

7:00am – 8:30am **Breakfast and Registration**
San Luis 1 and 2, JW Marriott Tucson Starr Pass

8:30am – 8:45am **Load Busses for departure to University of Arizona Main Campus**
Starr Circle Primo Doors

8:45am **Depart Starr Pass for University of Arizona ENR2 Building**

Location: Environment and Natural Resources 2 Building, Rm S-107
1064 E. Lowell St., University of Arizona Main Campus

9:30am – 10:00am **Welcome**

9:30am-9:40am **Carol A. Barnes, Ph.D.**
Regents' Professor, Psychology, Neurology and Neuroscience
Director, Evelyn F. McKnight Brain Institute
Evelyn F. McKnight Chair for Learning and Memory in Aging
Director, Division of Neural Systems, Memory and Aging
University of Arizona

9:40am-9:50am **Kimberly A. Espy, Ph.D.**
Senior Vice President for Research
Office of Research and Discovery
University of Arizona

9:50am-10:00am **J. Lee Dockery, M.D.**
Trustee, McKnight Brain Research Foundation

10:00am – 10:05am **Claudia Kawas Introduction**
Carol A. Barnes, Ph.D.

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| 10:05am – 10:50am | <p>“Successful aging: lessons from the oldest old” Claudia Kawas, M.D. Professor, Neurology, School of Medicine Professor, Neurobiology and Behavior, School of Biological Sciences University of California, Irvine</p> |
| 10:50am – 11:00am | Q&A |
| 11:00am – 12:00pm | Talks – MRI Core |
| 11:00am-11:15am | <p>“Magnetic resonance imaging to characterize age cognitive decline in the oldest old” Clinton B. Wright, M.D., M.S. Associate Professor, Department of Neurology Scientific Director, Evelyn F. McKnight Brain Institute University of Miami, Miller School of Medicine</p> |
| 11:15am-11:20am | Q&A |
| 11:20am-11:35am | <p>“Opportunities for defining brain connections in the oldest old” Kristina M. Visscher, Ph.D. Assistant Professor, Evelyn F. McKnight Brain Institute and Department of Neurobiology University of Alabama at Birmingham</p> |
| 11:35am-11:40am | Q&A |
| 11:40am-11:55am | <p>“Understanding brain aging: relationship to health factors” Gene E. Alexander, Ph.D. Professor, Departments of Psychology, Neuroscience, Evelyn F. McKnight Brain Institute Director, Brain Imaging Behavior & Aging Lab University of Arizona</p> |
| 11:55am-12:00pm | Q&A |
| 12:00pm - 1:30pm | <p>Lunch Break (lunch served in two locations) Old Main Silver and Sage Rooms (Blue Name Badge) ENR2 Building, Room S215 (Red Name Badge)</p> |
| 1:30pm – 1:35pm | <p>Scott Small Introduction Carol A. Barnes, Ph.D.</p> |
| 1:35pm – 2:20pm | <p>“Regional vulnerability as a key to cognitive aging” Scott A. Small, M.D. Boris and Rose Katz Professor of Neurology Director, Alzheimer’s Disease Research Center Columbia University</p> |
| 2:20pm – 2:30pm | Q&A |
| 2:30pm | Break |

- 3:00pm - 4:00pm **Talks – Epigenetics Core**
- 3:00pm-3:06pm **Introduction**
J. David Sweatt, Ph.D.
Professor, Department of Neurobiology
Evelyn F. McKnight Endowed Chair
Director, Evelyn F. McKnight Brain Institute
Director, Civitan International Research Center
University of Alabama at Birmingham
- 3:06pm-3:20pm **“What can the transcriptome tell us about regional vulnerability to age and cognitive impairment”**
Thomas C. Foster, Ph.D.
Professor, Department of Neuroscience
Evelyn F. McKnight Chair for Research on Cognitive Aging and Memory
University of Florida
- 3:20pm-3:24pm Q&A
- 3:24pm-3:38pm **“What can the transcriptome tell us about hippocampal subregion differences?”**
Matthew J. Huentelman, Ph.D.
Associate Professor, Neurogenomics Division
Co-Director, Center for Rare Childhood Disorders
Translational Genomics Research Institute
Faculty Affiliate, Evelyn F. McKnight Brain Institute
University of Arizona
- 3:38pm-3:42pm Q&A
- 3:42pm-3:56pm **“Neuroepigenetic regulation of learning and memory”**
Jeremy Day, Ph.D.
Assistant Professor, Evelyn F. McKnight Brain Institute and Department of Neurobiology
University of Alabama at Birmingham
- 3:56pm-4:00pm Q&A
- 4:00pm – 4:15pm **Load Busses for departure to JW Marriott Tucson Starr Pass**
- 4:15pm **Busses depart for JW Marriott Tucson Starr Pass**
- Location: JW Marriott Tucson Starr Pass
 3800 West Starr Pass Blvd., Tucson, AZ*
- 5:15pm – 7:30pm **Reception and Dinner**
Starr Circle and Foyer, JW Marriott Tucson Starr Pass

Friday, April 29, 2016

*Location: JW Marriott Tucson Starr Pass
3800 West Starr Pass Blvd., Tucson, AZ*

6:30am –7:45am **Breakfast for Participants staying at JW Marriott Tucson Starr Pass**
Tucson Salon F, JW Marriott Tucson Starr Pass

6:30am –7:45am **Breakfast for MBRF Trustees and McKnight Leadership Council**
San Luis 1, JW Marriott Tucson Starr Pass

*Location: Tucson Salons H-J
JW Marriott Tucson Starr Pass*

7:55am – 8:00am **Marilyn Albert Introduction**
Carol A. Barnes, Ph.D.

8:00am– 8:45am **“Separating the earliest phase of Alzheimer’s disease from age-related cognitive decline: the BIOCARD study”**
Marilyn S. Albert, Ph.D.
Professor of Neurology
Director of Cognitive Neuroscience
The Johns Hopkins Hospital

8:45am – 8:55am Q&A

8:55am – 9:55am **Talks – Cognitive Aging Core**

8:55am-9:10am **“Independent instrumental activities of daily living (IADL) in successful cognitive aging versus MCI”**
Virginia G. Wadley, Ph.D.
Professor, Department of Medicine and Evelyn F. McKnight Brain Institute
Director, Dementia Research Program, Comprehensive Center for Healthy Aging
Associate Director, Edward R. Roybal Center for Translational Research on Aging and Mobility
University of Alabama at Birmingham

9:10am-9:15am Q&A

9:15am-9:30am **“The role of frailty in normal cognitive aging”**
Bonnie E. Levin, Ph.D.
Bernard and Alexandria Schoninger Professor of Neurology
Director, Division of Neuropsychology
University of Miami, Miller School of Medicine

9:30am-9:35am Q&A

| | |
|-------------------|---|
| 9:35am-9:50am | <p>“McKnight brain aging registry: update and preliminary findings” Ronald Cohen, Ph.D. Professor, Neurology, Psychiatry, Clinical and Health Psychology, Aging and Geriatric Research Director, Cognitive Aging and Memory-Clinical Translational Research Program (CAM-CTRP), Institute on Aging University of Florida</p> |
| 9:50am-9:55am | Q&A |
| 9:55am – 10:15am | Break |
| 10:15am – 10:25am | <p>“Changes in time perception during aging can impair memory: Is no clock better than a bad clock?” Fabian Fernandez, Ph.D. Assistant Professor and BIO5 Fellow, Departments of Psychology, Neurology and Evelyn F. McKnight Brain Institute University of Arizona</p> |
| 10:25am – 10:30am | Q&A |
| 10:30am - 11:30am | Data Blitz Session |
| 10:30am-10:35am | <p>“Preserving brain health: new insights from a prospective study in 1000 individuals from the general population” Asta K. Haberg, M.D., Ph.D. Professor of Neuroscience, Faculty of Medicine Norwegian University of Science and Technology (NTNU) Faculty Affiliate, Evelyn F. McKnight Brain Institute University of Arizona</p> |
| 10:35am-10:40am | Q&A |
| 10:40am-10:45am | <p>“Advance ophthalmic imaging of ocular microvasculature in age-related memory loss” Hong Jiang, M.D., Ph.D. Assistant Professor of Clinical Neuro-ophthalmology & Neurology, Bascom Palmer Eye Institute University of Miami, Miller School of Medicine</p> |
| 10:45am-10:50am | Q&A |
| 10:50am-10:55am | <p>“Preclinical studies of epigenetic mechanisms in accumulative stress effects on age-related memory decline” Victoria Huang, Ph.D. Postdoctoral Researcher, Department of Neurobiology University of Alabama at Birmingham</p> |
| 10:45am-11:00am | Q&A |

- 11:00am-11:05am **“White matter injury and repair”**
Charles H. Cohan, Ph.D.
Post-Doctoral Research Associate
Department of Neurology
University of Miami, Miller School of Medicine
- 11:05am-11:10am Q&A
- 11:10am-11:15am **“A rodent model of medial temporal lobe-dependent
discrimination deficits in the elderly”**
Sara N. Burke, Ph.D.
Assistant Professor, Department of Neuroscience
Evelyn F. and Williams L. McKnight Brain Institute
University of Florida
- 11:15am-11:20am Q&A
- 11:20am-11:25am **“The social determinants of healthy aging”**
David A. Sbarra, Ph.D.
Associate Professor, Psychology and Evelyn F. McKnight Brain
Institute
Director, Clinical Training
University of Arizona
- 11:25am-11:30am Q&A
- 11:30am **Box lunches and depart for airport**
Airport transport vans & sedans at Starr Circle Primo Doors
- (or eat at hotel for those who do not need to depart immediately)
Salon J Foyer South, JW Marriott Tucson Starr Pass

**McKnight Brain Research Foundation
Ninth Inter-Institutional Meeting
Keynote Speaker**

Marilyn S. Albert, Ph.D.

Professor, Neurology, Psychiatry, Neuroscience,
Pathology, Mental Health and Psychology
Director, Division of Cognitive Neuroscience
Department of Neurology
Director, Johns Hopkins Alzheimer's Disease Research
Center
Johns Hopkins School of Medicine
1620 McElderry Street
Reed Hall West, Room 101B
Baltimore, MD 21205
Phone: (410) 614-3040
Email: malbert9@jhmi.edu



Dr. Albert's major research interests are in the area of cognitive change with age, and disease-related changes of cognition, with a particular focus on Alzheimer's disease. This work has frequently incorporated biomarkers of disease, such as measures based on cerebrospinal fluid and brain imaging, including magnetic resonance imaging and positron emission tomography. These research efforts are currently focused on the asymptomatic, preclinical phase of Alzheimer's disease. She has authored over 220 peer-reviewed publications. Dr. Albert is Professor of Neurology at the Johns Hopkins School of Medicine, Director of the Division of Cognitive Neuroscience and Director of the Johns Hopkins Alzheimer's Disease Research Center.

**McKnight Brain Research Foundation
Ninth Inter-Institutional Meeting
Keynote Speaker**

Claudia Kawas, M.D.

Professor of Neurology and
Neurobiology and Behavior
Al and Trish Nichols Chair in Clinical Neuroscience
University of California, Irvine
1121 Gillespie Neuroscience Research Facility
Irvine, CA 92697-1400
Phone: (949) 824-2323
Email: ckawas@uci.edu



Dr. Claudia Kawas's laboratory focuses on the epidemiology of aging and Alzheimer's disease, the determinants of successful aging, clinical pathological correlations and most recently, studies in cognitive and functional abilities of the Oldest Old (over 90 years of age).

Over the past 30 years, Dr. Kawas has published more than 150 papers, and has worked on numerous longitudinal studies of aging and dementia, including the Bronx Aging Study, the Baltimore Longitudinal Study of Aging (NIA), and most recently, *The 90+ Study*, a population based sample of more than 1,700 people aged 90 years and older. She is Clinical Core Director of the UC Irvine Alzheimer's Disease Research Center and serves as Associate Director of the UC Irvine Institute for Memory Impairments and Neurological Disorders.

Dr. Kawas serves on committees for the National Institutes of Health and the Scientific Advisory Board of several organizations, including the Medical and Scientific Advisory Council of the National Alzheimer's Association, The Dana Foundation, and the United States Food & Drug Administration.

**McKnight Brain Research Foundation
Ninth Inter-Institutional Meeting
Keynote Speaker**

Scott A. Small M.D.

Boris and Rose Katz Professor of Neurology
Director, Alzheimer's Disease Research Center
Departments of Neurology, Radiology & Psychiatry
Columbia University
630 W. 168th Street
PH, 18th floor
New York, NY 10032-3725
Phone: (212) 305-1269
Email: sas68@columbia.edu



Dr. Small is the Boris and Rose Katz Professor of Neurology (in the Taub Institute, the Sergievsky Center, radiology, and psychiatry) and director of the Alzheimer's Disease Research Center at Columbia University.

Dr. Small has used his expertise in Alzheimer's disease and cognitive aging to focus his research on the hippocampus, a circuit in the brain targeted by these and other disorders, notably schizophrenia. He has pioneered the development and application of high-resolution functional MRI techniques that can pinpoint parts of the hippocampus most affected by aging and disease. His lab then uses this information to try to identify causes of these disorders. Over the years, his lab has used this 'top-down' approach to isolate pathogenic mechanisms related to Alzheimer's disease, cognitive aging, and schizophrenia. More recently, his lab has used this insight for drug discovery and to develop novel therapeutic interventions, some of which are currently being tested in patients.

Dr. Small has co-authored more than 120 articles and his neuroimaging and molecular work has led to seven patents. Dr. Small has received numerous awards, including the Beeson Scholar Award in Aging Research from the American Federation on Aging, the McKnight Neuroscience of Brain Disorders Award, the Derek Denny-Brown Young Neurological Scholar Award from the American Neurological Association, and the Lamport Award for Excellence in Clinical Science Research from Columbia University.



**McKnight Brain Research Foundation
Ninth Inter-Institutional Meeting Participants
University of Alabama at Birmingham**

Mark Bolding, Ph.D.

Assistant Professor
Departments of Radiology, Neurobiology
and Vision Sciences

Michael Brenner, Ph.D.

Professor Emeritus
Department of Neurobiology

Jeremy Day, Ph.D.

Assistant Professor
Department of Neurobiology

David S. Geldmacher, M.D., FACP

Professor
Department of Neurology

Kimberly E. Hawkins, Ph.D.

Research Associate
Department of Neurobiology

Jeremy H. Herskowitz, Ph.D.

Assistant Professor
Departments of Neurology and
Neurobiology

Victoria Huang, Ph.D.

Postdoctoral Researcher
Department of Neurobiology

Andrew J. Kennedy, Ph.D.

Postdoctoral Fellow
Department of Neurobiology

Robin Lester, Ph.D.

Professor
Department of Neurobiology

Farah D. Lubin, Ph.D.

Associate Professor
Department of Neurobiology

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

Co-Director, Evelyn F. McKnight Brain
Institute
Associate Professor
Departments of Neurology and
Neurobiology

David G. Standaert, M.D., Ph.D.

Chair of Neurology
John N. Whitaker Professor
Department of Neurology

J. David Sweatt, Ph.D.

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

Kristina M. Visscher, Ph.D.

Assistant Professor
Department of Neurobiology

Virginia G. Wadley, Ph.D.

Professor, Division of Gerontology,
Geriatrics and Palliative Care
Department of Medicine

Mark Bolding, Ph.D.

Assistant Professor

Departments of Radiology, Neurobiology, and Vision Sciences

Director, Civitan International Neuroimaging Laboratory

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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 new 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.

Michael Brenner, Ph.D.

Professor Emeritus

Department of Neurobiology

Evelyn F. McKnight Brain Institute

The University of Alabama at Birmingham

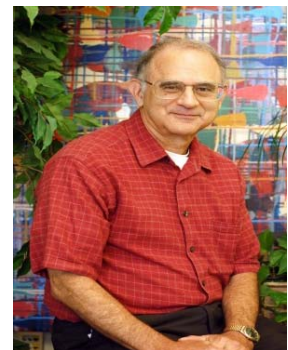
Spain Rehabilitation Center, R144A

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Dr. Brenner's laboratory studies the molecular biology of astrocytes, the most common cell type in the central nervous system (CNS). Astrocytes are responsible for many of the homeostatic controls in the CNS, such as maintaining the blood-brain barrier and proper neurotransmitter levels. Astrocytes serve as precursors for neurons and oligodendrocytes during development, and also serve as stem cells for the production of these cell types in the adult. CNS injury stimulates astrocytes to undergo a reactive response, which contributes to healing but can also lead to further damage. His work focuses on the transcriptional regulation of a gene encoding an intermediate filament protein specific to astrocytes, glial fibrillary acidic protein (GFAP), and on the biological role of this protein. The GFAP gene is of interest because it is turned on as astrocytes mature, and its activity increases dramatically during the reactive response. Thus,

study of GFAP transcription will yield insights into mechanisms governing development, reaction to injury, and cell specificity, ultimately allowing these processes to be manipulated.

Dr. Brenner's laboratory has also discovered that heterozygous coding mutations in the GFAP gene are responsible for Alexander disease, a rare but fatal neurological disorder. Interestingly, although this establishes that the primary genetic defect in this disease is in astrocytes, the infantile form of Alexander disease is marked by massive myelination defects, and the later onset forms by neuronal dysfunction. Thus the study of this disorder not only has direct clinical implications, but also will reveal critical interactions between astrocytes and oligodendrocytes and between astrocytes and neurons that occur throughout the life span.

Jeremy Day, Ph.D.

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Our goal is to understand how experience alters the brain, and how those changes drive future behaviors. We approach this broad topic at diverse levels of analysis that integrate molecular, genetic, and epigenetic tools with techniques that probe the function of single neurons and entire neuronal circuits. A major focus of the Day lab is to investigate the neural mechanisms that regulate addiction-related behaviors. Specifically, we are interested in identifying the neural circuits that signal information about rewards, and dissecting how dynamic transcriptional and epigenetic mechanisms within those circuits contribute to motivated behavior.

David S. Geldmacher, M.D., FACP

Patsy W. and Charles A. Collat Endowed Professor in Neuroscience
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Director, Division of Memory Disorders and Behavioral Neurology
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David S. Geldmacher, MD, FACP is Professor of Neurology and Director of the Division of Memory Disorders and Behavioral Neurology at the University of Alabama at Birmingham, where he has been named the first Patsy and Charles Collat Endowed Professor of Neurosciences. He serves as Medical Director for Neurology at the University of Alabama (UAB) Hospital.

His research has centered on developing new dementia treatments, and ways of measuring the success of treatments. His other research interests include complex visual processing in aging and

neurological conditions. Dr. Geldmacher is the author of *Contemporary Diagnosis and Management of Alzheimer's Dementia*, and has published over 100 research articles, chapters, abstracts and reviews.

Kimberly E. Hawkins, Ph.D.

Research Associate
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Dr. Hawkins received her B.S. in Psychology from Texas A&M University before attending the University of Florida's Interdisciplinary Program in Biomedical Sciences program where she received her Ph.D. in medical sciences with a concentration in neuroscience. She is a research associate at the University of Alabama at Birmingham in the Neurobiology department where she manages Dr. J. David Sweatt's laboratory. She is integral in assisting with preparation and submission of grants, manuscripts, and book chapters. She seeks to understand the business side of science and research and apply what she learns to ensure the lab is as productive and efficient as possible.

Jeremy H. Herskowitz, Ph.D.

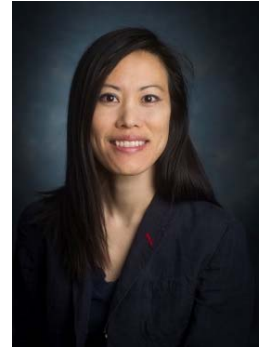
Assistant Professor, Departments of Neurology and Neurobiology
Charles and Patsy Collat Scholar in Neuroscience
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Dr. Herskowitz's lab studies the neurobiology of age-related memory loss with a focus on understanding the underlying cellular and molecular mechanisms that will lead to better treatments. The laboratory applies modern neuroscience approaches to study animal and cellular models of memory loss in aging. They have shown that inhibiting Rho kinase signaling with small molecules reverse structural plasticity abnormalities that are associated with cognitive decline in aging, and they are continuing to use a variety of behavioral, electrophysiological, and biochemical approaches to better understand this protective effect. Other efforts of the lab include basic, fundamental neuroscience research examining how cognition is influenced by structural plasticity of dendritic spines.

Victoria Huang, Ph.D.

Postdoctoral Researcher
Department of Neurobiology
PI: Associate Professor, Farah Lubin
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E-mail: victoriahuang@uab.edu



Victoria (BS–UCLA; PhD–University of Texas) is interested in the variation of life experiences that alter epigenetic mechanisms underlying learning and memory. In the laboratory of Dr. Farah Lubin, Victoria compares histone modification marks associated with memory-related genes in young and old adult animals, as well as those with and without stress experience. Overall her work focuses on understanding the latent effects of stress on learning and memory.

Andrew J. Kennedy, Ph.D.

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Andrew is a postdoctoral fellow in the laboratory of Dr. J. David Sweatt at the University of Alabama at Birmingham. His research focuses on the development of neuroepigenetic therapeutics to treat diseases and disorders of memory. Currently, he studies changes in genome-wide gene expression and DNA methylation in different regions of the hippocampus that occur after learning and in models of Alzheimer’s disease and intellectual disability. Additionally, Andrew studies the basic neurobiology underlying Pitt-Hopkins Syndrome, an ultra rare intellectual disability on the autism spectrum. Decoding the neuroepigenetics that facilitate memory and then engineering therapeutics that act to alter specific epigenetic marks at genes that drive plasticity may open the door to a new generation of treatments for memory-related diseases, which have seen only marginal benefits from traditional therapies.

Robin Lester, Ph.D.

Professor

Department of Neurobiology

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

Farah D. Lubin, Ph.D.

Associate Professor, Department of Neurobiology

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

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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.

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

Director, Alzheimer's Disease Center
Co-Director, McKnight Brain Institute
Co-Director, Center for Neurodegeneration and Experimental
Therapeutics
Associate Professor of Neurology and Neurobiology
Virginia B. Spencer Professor of Neuroscience
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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 UCSF in 2005 and moved to 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 co-directs the McKnight Brain Institute 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.

David G. Standaert, M.D., Ph.D.

John N. Whitaker Professor and Chair of Neurology
Evelyn F. McKnight Brain Institute
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Dr. Standaert graduated from Harvard College in 1982. He received his M.D. and Ph.D. degrees from Washington University in St. Louis. He completed a one-year internship in Medicine followed by a three-year Neurology residency at the University of Pennsylvania. He was appointed a Howard Hughes Medical Institute Physician Research Fellow, and completed a three-year research and clinical fellowship in Neurology (Movement Disorders) at Massachusetts General Hospital in 1995. He subsequently joined the faculty at Harvard Medical School and MGH, where he served as Director of the MGH/MIT Udall Center of Excellence in PD Research.

Dr. Standaert relocated to the University of Alabama at Birmingham in July of 2006 and is now the John N. Whitaker Professor and Chair of the Department of Neurology. He serves as Director of the Division of Movement Disorders, the Director of the APDA Advanced Center for Parkinson Research at UAB, and Director of the UAB Bachmann-Strauss Center for Dystonia and Parkinson Disease. He sees patients in a weekly clinic and oversees many clinical trials for new treatments of Parkinson's disease. He is Chair of the Scientific Advisory Board of the American Parkinson Disease Association, a member of the Scientific Advisory Board of the Michael J. Fox Foundation for Parkinson Research, an Associate Editor of the journal *Movement Disorders*, and a member of the Board of Directors of the American Neurological Association. He is a member of the Board of Directors of the UAB Health System, and Chair of the UAB Health Services Foundation Advisory Committee.

Dr. Standaert's laboratory works on understanding both the root causes of Parkinson's disease as well as the origin of the disabling symptoms that appear after long term treatment of the disease.

J. David Sweatt, Ph.D.

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Dr. Sweatt's research program focuses on molecular mechanisms underlying learning and memory. Dr. Sweatt uses knockout and transgenic mice to investigate signal transduction

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

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Dr. Visscher is interested in characterizing what brain mechanisms underlie the human ability to flexibly process inputs from the environment, and how these mechanisms are modified with experience. We process the same information in different ways at different times. For example, sometimes we pay attention to our chattering friend in the passenger seat, while other times we ignore the chatter and focus on the road. Dr. Visscher uses a variety of tools to better characterize how human brain activity before a stimulus is presented may impact the ways in which that stimulus is processed. Behavioral measurements (psychophysics and eye movements), measurement of electrical activity in the human brain using EEG, and measurement of neural activity through functional MRI allow insight into this question. We are particularly interesting in how these factors change with aging and after experience: including experience with central vision loss, and experience with visual cognitive training paradigms.

Dr. Visscher started at the University of Alabama at Birmingham in April 2009, after a postdoctoral fellowships at Harvard University, with Randy Buckner and Brandeis University with Robert Sekuler. She received her Ph.D. in Neuroscience from Washington University in St. Louis in 2004, where, with Steve Petersen, she studied how techniques of fMRI can be used to examine different timecourses of neural activity.

Virginia G. Wadley, Ph.D.

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Dr. Wadley is a licensed medical/clinical psychologist. She completed her PhD at UAB following an internship in Medical Psychology at Duke University Medical Center, where she also received postdoctoral training in Behavioral Medicine. Her research programs examine the relationship of cognitive function to everyday function in the contexts of normal aging, vascular disease, stroke, and Alzheimer's disease and related dementias, as well as the development of interventions to prevent and treat loss of function. Building on the work of her laboratory on the relationship of visual attention and information processing speed to mobility and driving safety, Dr. Wadley is PI of a 5-year NIA-funded clinical trial that is evaluating a cognitive processing speed training program for persons diagnosed with Mild Cognitive Impairment and identifying neural and genetic biomarkers related to training outcomes. She also serves as an investigator overseeing cognitive and functional assessments within multiple national NIH-funded epidemiological, clinical, and experimental research protocols. Among these, she leads the Cognitive Working Group for the NINDS-funded Reasons for Geographic and Racial Differences in Stroke (REGARDS) study, is vice chair of the MIND sub-study of the NIH-funded Systolic Pressure Intervention Trial (SPRINT), co-chairs the cognitive assessment component of the NINDS-funded Carotid Restenting versus Endarterectomy Trial (CREST-2), and is an investigator and working group member for the CARDIA neurocognitive study that is now conducting its 30-year longitudinal assessments.



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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, and genetic risk to advance understanding on how these multiple factors interact to influence cognitive function as we age. Dr. Alexander's research also includes the application of these techniques to non-human animal models of aging and age-related disease. He is Professor in the Clinical Psychology and Cognition and Neural Systems Programs in the Department of Psychology, and in the Neuroscience and Physiological Sciences Graduate Interdisciplinary Programs. He directs the Brain Imaging, Behavior and Aging Lab in the Department of Psychology and in the Evelyn F. McKnight Brain Institute.

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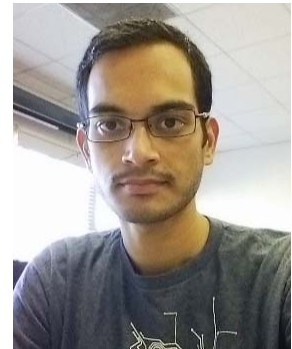


The central goal of Dr. Barnes' research and teaching program is the question of how the brain changes during the aging process and the functional consequences of these changes on information processing and memory in older individuals. Her research program involves studies of behavior and neurophysiology 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.

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Prad Bharadwaj's work is focused on studying the effects of healthy and pathological aging on the brain's structure and function. This involves applying multivariate statistical methods to analyze the data from voxel based analyses of structural, resting state functional and diffusion weighted magnetic resonance imaging, along with genetic risk factors and measures of performance on various neuropsychological tests. Prad is using this approach to better understand how the numerous genetic & lifestyle risk factors interact with each other to produce the detrimental structural and functional changes observed in the brain during the aging process.

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The primary goal of Dr. Chawla's research is the question of how the brain changes during the normal aging process and the functional consequences of these changes on information processing and memory in the elderly. Her research involves behavioral studies of immediate-early genes and neural plasticity mechanisms using spatial and temporal compartmental analysis

in young and old laboratory animals. This work provides a basis for understanding the basic mechanisms of normal aging in the brain and sets a background against which it is possible to assess the effects of pathological changes such as Alzheimer's disease. Dr. Chawla is an Assistant Research Scientist and heads the molecular research team in Dr. Carol Barnes laboratory at the University of Arizona, Evelyn F. McKnight Brain Institute and the Division of Neural Systems Memory and Aging at the University of Arizona.

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

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The human brain is composed of billions of interacting neurons, and the activities of these neurons must be coordinated during decision making, motor control, and learning. How this coordination is achieved is a fundamental question in neuroscience. My research seeks to identify the mechanisms underlying this coordination, and how these mechanisms are altered in normal aging and in Parkinson's disease. Understanding how neuronal coordination is regulated in the brain is important as the breakdown of coordination may underlie disorders such as Parkinson's disease, epilepsy, schizophrenia, and aging. Indeed, results from our analysis of neuronal activity in the hippocampus of aged rats indicates that normal aging is accompanied by a reduction in neuronal coordination between pairs of hippocampal neurons, and that these changes are associated with a decrease in the frequency and rate of occurrence of high-frequency "ripple" oscillations. Taken together, these observations point to a mechanism underlying age-associated memory decline given evidence that ripples play a critical role in memory consolidation. A related question being addressed in our laboratory is how neuromodulators such as dopamine alter neuronal coordination. In this regard, we recently developed novel technologies for combining the measurement of single-cell activity with the measurement of dopamine release in awake and behaving animals. Combining these two methods will allow us to determine how neuromodulators such as dopamine regulate neuronal coordination and plasticity during decision making and learning. We will utilize this technology to investigate aging and Parkinson's disease as both conditions are associated with a significant reduction of dopaminergic activity.

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Mr. De Both is a Bioinformatician in Dr. Huentelman's laboratory within the Neurogenomics Division at TGen and the McKnight Collaborative Informatics Core. Mr. De Both received his B.S. in Genetics from Purdue University and spent two years at the Biodesign Institute at Arizona State University before joining TGen. His responsibilities and experience include the

analysis of genotyping and expression arrays, whole-genome and exome sequencing, and RNA-Seq of single-cell, low input, and highly degraded samples. He also contributes to the analysis of MindCrowd, the lab's crowd-sourced study of healthy cognitive aging.

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Our circadian profile, the relationship across time between our body's internal clock and the natural 24-hour schedule of light produced by the earth's rotation about its axis, shapes our biological fabric: how we develop, thrive, and ultimately decline. My laboratory uses animal models to define individual differences in circadian function that are likely to impact memory performance as people age. Episodic memory loss is one of the earliest features of cognitive, age-related disease and is often correlated with flattening of the circadian activity rhythm (CAR) amplitude and high CAR fragmentation. Based on my findings, I hope to characterize biomarkers that will identify 'midlife' individuals at risk for later memory problems, or Alzheimer's or vascular dementia, the two most common brain diseases affecting the elderly.

A natural bedfellow to these efforts are ongoing ones to understand how the non-visible and visible light spectrum can be exploited to rehabilitate chronic circadian dysrhythmia. The eye uses a photoreceptor system to process circadian timing that is independent of the one it uses for visual perception. Unfortunately, little is known about the logic by which it does so. My laboratory draws from the comparative biology literature to intuit what features of naturally occurring daytime/nighttime light most influence the circadian pacemaker, and—with data we are empirically collecting—are putting together a basic programming language for how to deliver light pulses to *jumpstart* the pacemaker's operation when it has fallen into disrepair. Our long-term goal will be to embody this programming language in a small medical device that can strengthen rhythms and cognition in a person while they are asleep.

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Mary Kathryn Franchetti's research focuses on understanding the neural bases of normal and pathological age-related changes in cognitive function. Her current research involves analyzing the interaction of sleep and physical activity among older adults in order to identify how these factors modify measures of cognition and memory across time. To better understand these effects, she plans to utilize various imaging techniques correlated with behavioral measures of cognitive performance.

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

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Daniel Gray is a third year graduate student at the University of Arizona in the laboratory of Dr. Carol Barnes. For his thesis, Daniel is studying age-related changes in the function of neural networks in the lateral prefrontal cortex of macaque monkeys. This brain region is critical for a wide variety of executive functions such as working memory, attentional control and multitasking. In aged populations, a reduced ability to effectively multitask is a common complaint, and our understanding of the neural changes underlying this deficit is minimal. To get at this question, Daniel and a team of talented animal trainers are teaching young and old bonnet macaques to play simplified computer games that impose multitasking demands on the animals. Using high density extracellular recording techniques to probe the lateral prefrontal cortex of these monkeys, Daniel hopes to uncover some of the changes in these neural networks that underlie age-related multitasking deficits.

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Dr. Matt Grilli's research focuses on uncovering the cognitive and neural bases of memory and understanding how memory supports other aspects of cognition and emotion. Dr. Grilli is particularly interested in understanding how autobiographical memory changes in normal and abnormal cognitive aging, as well as in adults with acquired brain injuries. Ongoing projects are investigating the interdependence of various types of autobiographical memory across the adult lifespan, and how autobiographical memory is utilized to construct a self-concept and engage in future-oriented cognition. The goals of this research are to understand the broader impact of age-related memory changes on cognition, well-being, and everyday functioning; to uncover strategies that promote the adaptive use of memory; and to develop interventions for age-related cognitive deficits.

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Asta Håberg heads Trondheim fMRI group, an interdisciplinary research group with researchers from both the Norwegian University of Science and Technology (NTNU) and St. Olav University Hospital/Trondheim university hospital. She has a very wide research background with a PhD in neurometabolism in animal models of human disease, followed by MRI based research of brain function and structure in neurosurgical and neurological patients and healthy volunteers. Since her PhD she has worked both in research and radiology, and is appointed by the Norwegian health authorities to head the National Norwegian Advisory Unit for functional MRI methods, which among other tasks harmonizes MRI protocols for national and international multisite MRI studies and evaluates new MRI methods for depiction of brain functions. Her present research focuses on individual differences in memory across the lifespan which includes web-based cognitive testing, organization of memory as studied with fMRI, and the effect of acquired brain injury on brain function and structure (e.g., traumatic brain injury, premature birth).

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Daniel is interested in the neurophysiology of learning, reward, and motivation and how it is affected in disease states such as chronic pain and Parkinson's. His research currently focuses on top-down modulation of the basal ganglia by the medial prefrontal cortex (mPFC). The mPFC modulates basal ganglia output indirectly via projections to the midbrain and via direct projections to the basal ganglia. These projections are important in working memory, behavior

acquisition, and motivation in the context of learning. Further, dysregulation of top down modulation (e.g., in chronic pain or Parkinson's) may lead to learning and/or cognitive deficits. Daniel is studying top down modulation of the basal ganglia in both normal and disease models by measuring dopamine release (using fast-scan cyclic voltammetry) and electrophysiologic output in the basal ganglia in conjunction with electrical and optogenetic manipulation of medial prefrontal efferents.

Mingzhu Hou, M.E.

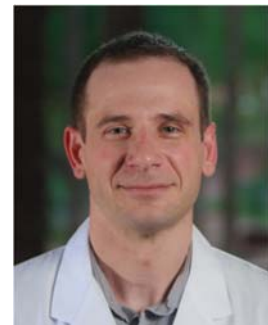
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Mingzhu Hou's current research focus is source memory and aging. Her research involves behavioral studies of memory strategies on source memory in young and older adults. Recent evidence shows that the usage of strategies would benefit memories of older adults. Mingzhu Hou is exploring the influences of different encoding strategies, such as self-reference and generation, on older adults' performances of source memory. Mingzhu Hou is a graduate student in Dr. Elizabeth Glisky laboratory at the University of Arizona.

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

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The central goal of Dr. Koshy’s research and lab is understanding how a common parasite, *Toxoplasma gondii*, is able to cause a life-long, asymptomatic brain infection in mammals such as humans and rodents. We study this interaction for two reasons. First, *Toxoplasma*’s ability to persist in the mammalian CNS underlies the parasite’s ability to reactivate and cause devastating neurologic disease when chronically infected persons become immunosuppressed (e.g., require a bone marrow transplant). Second, *Toxoplasma*’s asymptomatic persistence in the brain suggests the parasite has modified the brain immune response to be less inflammatory. Thus, we can leverage the co-evolution between the parasite and the mammalian brain to gain better insights into modulating the brain immune response. As age-associated changes in the brain immune response have been implicated in the pathophysiology of neurodegenerative diseases such as Alzheimer’s disease and even in normal cognitive decline, these insights may help us find better treatments for neurodegenerative diseases and the cognitive decline associated with normal aging.

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Colin Kyle is a first year graduate student at the University of Arizona in the laboratory of Dr. Carol Barnes. For his thesis, Colin is studying the hippocampal signals underlying

unconstrained primate ambulation and aging. 40+ years of research on freely ambulating rodents has shaped our computational understanding of memory and the hippocampus. Yet, extremely little is known about hippocampal computation in primates. A significant barrier in the search to bridge between species has been that, until recently, it has only been possible to study constrained, “virtual” movement in primates and humans while studies in rodents most often rely on unconstrained real-life navigation. In the first study of its kind, our team is attempting to leverage novel wireless recording methods to produce an apples to apples comparison of rodent and primate hippocampal computation during ambulation and to address how that computation changes with age. Colin hopes this research may someday help inform a hippocampal “rosetta stone” that would translate research of our most beloved model species to the workings of the human hippocampus.

Ashley Lawrence, B.A.

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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 second year graduate student in the Clinical Neuropsychology program at the University of Arizona.

Adam W. Lester, B.A.

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The central goal of Adam Lester's dissertation research is the question of how age-associated changes in neural network processing may contribute to impairments in spatial processing in the elderly. It's been found that certain cells in cortical areas surrounding the hippocampus show increased firing rates when rats are in a specific location in an environment, and that these locations make up a regularly tessellating grid of equilateral triangles. 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.

Molly Memel, M.A.

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Molly Memel's present research investigates age-related changes in visual processing and memory. As the majority of adults age, deficits in associative and source memory arise. This results in a difficulty with the automatic binding of object and context information. As these functions rely primarily on the frontal and medial temporal lobes, my work will investigate changes in functional brain activation and structural connectivity between these regions. Both functional magnetic resonance imaging and diffusion tractography imaging will be utilized.

Suzanne A. Moseley

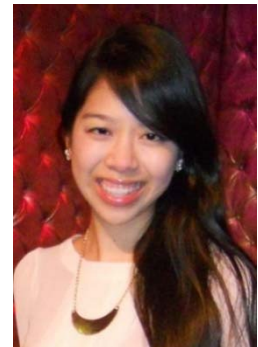
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Suzanne's main research interests include memory disorders associated with aging and brain injury, factors that play into older adults' memory performance, and cognitive rehabilitation. Previous work focused around the effects of stereotypes of aging on memory performance. Currently she is investigating the relationships among hearing impairment, cognition, and psychosocial functioning in older adults. Using a unique observational ambulatory monitoring method called the EAR (Electronically Activated Recorder) she hopes to shed light on how hearing loss affects the everyday functioning of older adults with hearing loss.

Lauren Nguyen, M.A.

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Lauren Nguyen's research focuses on investigating the differences between pathological and non-pathological aging. She has investigated the effects of self-report of memory complaints and blood pressure variability on brain structures and cognition in healthy aging. To understand these effects, she has utilized multivariate statistical methods paired with voxel-based morphometry processing of structural MRIs correlated with behavioral measures of cognitive performance. More recently, she has been investigating the effects of white matter hyperintensities and health-related factors on cognitive aging.

Mary-Frances O'Connor, Ph.D.

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Dr. O'Connor's scientific interest is in emotions, in understanding them at the experiential level and the physiological level. Her work has primarily focused on a bereaved population, because of the wide-ranging emotional responses to this specific event. In particular, she is curious about the neurobiological, immune and autonomic parameters that vary between individual grief responses. Specifically, her techniques have included functional and structural neuroimaging, immune and endocrine analysis of saliva and blood, and psychophysiological assessment of heart rate variability. She is continually interested in novel ways to evoke emotion, especially grief, using personalized stimuli, reaction time paradigms, written emotional disclosure and virtual worlds.

Mary A. Peterson, Ph.D.

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Dr. Peterson investigates how we perceive the world visually. She uses cognitive neuroscience techniques (e.g., ERPs, fMRI, and behavioral methods) to investigate:

- the competitive processes producing object perception, and how they are affected by context;
- the reciprocal relationship between perception and memory;
- feedforward and feedback mechanisms in perception;
- how unconsciously activated knowledge affects attention and perception
- how brain damage and aging affect the perception of, and memory for, objects and faces

Dr. Peterson is a Fellow of the American Association for the Advancement of Science; of the American Psychological Association; and of the Association for Psychological Science. She is an elected member of the Society of Experimental Psychologists and the International Neuropsychological Symposium.

Ignazio S Piras, M.S, Ph.D

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Dr. Piras is a Bioinformatician in Dr. Huentelman's laboratory within the Neurogenomics Division at TGen and the McKnight Collaborative Informatics Core. Dr. Piras received his M.S. in Biological Science and his PhD in Molecular, Human and Animal Biology from University of Cagliari (Italy). After the PhD he worked as Bioinformatician for different government and private research institutions in Italy and France. He joined the Dr. Huentelman's laboratory on August 2015. His main responsibilities include the analysis of genotyping, expression and methylation microarrays, the analysis of whole-genome, exome sequencing and RNA-Seq data, as well as the biological interpretation of data and the manuscripts preparation.

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Angelina is currently a doctoral candidate in Clinical Psychology (Neuropsychology track) at the UA. Her dissertation is investigating the cognitive, emotional, and functional associations of dispositional mindfulness in older adults and the impact of mindfulness training on cognition and daily functioning in this population. She is also developing a theoretically driven and objective measure of daily mindfulness using novel, in vivo, methodologies, including the Electronically Activated Recorder (EAR). The EAR records short snippets of people's acoustic daily lives that we can then transcribe and code to examine behavioral and linguistic markers of mindfulness. Additional research interests include the functions of autobiographical memory, particularly as they relate to emotion regulation and emotional processing in later life, and lifestyle-based activities for improving cognitive functioning.

Eric M. Reiman, MD

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Dr. Reiman is Executive Director of the Banner Alzheimer's Institute, Chief Executive Officer of Banner Research, Clinical Director of Neurogenomics at the Translational Genomics Research Institute, Professor of Psychiatry at the University of Arizona, University Professor of Neuroscience at Arizona State University, and Director of the Arizona Alzheimer's Consortium. He and his Banner Alzheimer's Institute colleague Pierre Tariot also lead the Alzheimer's Prevention Initiative (API), which has helped to launch a new era in Alzheimer's prevention research. Dr. Reiman and his colleagues have made pioneering contributions to brain imaging and genomics research, the unusually early detection and tracking of Alzheimer's disease, and the accelerated evaluation of Alzheimer's prevention therapies. He is an author of more than 300 publications, a principal investigator of several NIH grants, and a recipient of the Potamkin Prize.

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

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Dr. Linda Restifo directs a developmental neurogenetics research program, with an emphasis on how mutations and environmental exposures cause intellectual disability (a/k/a mental retardation) and autism. Her research team uses bioinformatics, molecular genetics, and cell biology, primarily in the fruit fly (*Drosophila*) genetic model system. With funding from NIH and Autism Speaks, Dr. Restifo and colleagues developed a novel cellular bioassay, based on primary culture of developing brain neurons, that reveals defects caused by mutations or toxins. Their published proof-of-concept drug screen identified potential treatments for developmental brain disorders. Such treatments would represent a dramatic improvement in the medical care of

children with cognitive or behavioral delay. Intrigued by the connection between brain aging and brain development, Dr. Restifo is testing the hypothesis that genetic influences on brain maturation can also impact cognitive aging, risks of drug-induced cognitive side effects, or the risk of aging-associated neurodegeneration. Collaborators include human geneticists, computer scientists, computational chemists, mechanical engineers, cancer biologists, pediatricians, and other neuroscientists.

Ruth Robbins, M.A.

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Ruth Robbins' dissertation work is focused on expanding upon previous work by her lab (Myhre, Mehl and Glisky, 2016) by recruiting an isolated older adult population to learn and use Facebook. Isolated older adults are rarely involved in research (Greaves and Farbus, 2006; Nicholson, 2012) and may represent the greatest need for cognitive stimulation and social connection. This study will compare learning and using Facebook (a cognitive and social task) with a social engagement only group. These results will also be compared to the Myhre et al. (2016) study in which a socially-engaging Facebook task provided cognitive benefits relative to a cognitive only group (Penzu.com). A primary goal of the current study is to test whether learning and using Facebook for 7 weeks within an isolated population has beneficial effects on cognitive functioning and perceived social support that exceed those that might be associated with a purely social interaction for the same time period. A secondary goal is to measure if the amount of Facebook use (total number of posts and word count for each participant) has a moderating effect on cognitive and social outcomes.

Lee Ryan, Ph.D.

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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.

Rachel Samson, Ph. D.

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Dr. Samson's research addresses the effects of normal aging on goal-directed behavior and risky decision making in rodents. Thus far, her work has helped further our understanding of the age-related differences in situation of response competition, and in probabilistic decision making. Her current work aims to elucidate how aging impacts amygdala networks during rest and while making decisions. Dr. Samson is an *in vitro/vivo* electrophysiologist and a budding rat behaviorist at the Evelyn F. McKnight Brain Institute at the University of Arizona.

David A. Sbarra, Ph.D.

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Dave Sbarra is an Associate Professor and the Director of Clinical Training in the Department of Psychology at the University of Arizona. He completed his residency in clinical psychology at the University of Wisconsin in the Department of Psychiatry and received his doctoral degree from the University of Virginia in 2004.

Dr. Sbarra's research rests at the intersection of clinical, social and health psychology with a primary focus on close relationships and health. Many of his studies focus on how people recover from the stressful life event of divorce. He is the PI on research and training awards from the National Science Foundation and the National Institutes of Health, and his research has been featured in many popular press outlets, including the NY Times, The Atlantic, and on NPR. Dr. Sbarra maintains a small psychotherapy practice in Tucson, Arizona.

Ashley Siniard, B.S.

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

Anne C. Smith, Ph.D.

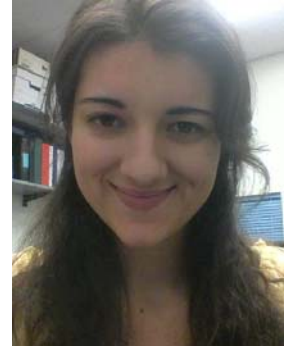
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The central focus of my research is in the understanding of learning and memory. In particular, I am interested in how dynamics in the brain are affected by age, injury, and disease. To this aim, I have been exploring the use of time series models that are capable of accurately quantifying dynamics in both behavior and neural spike data. One class of time series modeling, state-space modeling, is particularly appropriate for neurophysiological data as the observations are often binary (as in the example of a responses in a choice experiment) or point process (as in the example of neural spikes measured in vivo). By employing a state-space modeling framework, it is possible to make concise conclusions about when learning occurs, when neural firing proceeds above a baseline, and also build in features that enable between- and within-group comparison. My ultimate goal is to build tools to help neurophysiologists understand dynamics in their data and apply them to identify how age, injury, and disease affect these important systems.

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Ariana Stickel's research investigates the connections between physical health and brain structure. She is most interested in associations between body fat, brain structure, and cognition in older adults. She uses diffusion weighted imaging and voxel-based morphometry methods to study such processes. Also important to these investigations are interactions with genes (e.g., the fat mass and obesity gene) and other physiological measurements (e.g., hypertension). More recently, Ariana has become interested in characterizing body-brain relationships in Hispanics compared to Caucasians.

Jean-Paul L. Wiegand, B.S., M.S.

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Certain neurodegenerative disorders, such as Alzheimer's and Parkinson's disease, are preceded by sleep disorders such as reductions in REM sleep and hypersomnia, respectively. Accordingly, Jean-Paul Wiegand investigates potentially pathological changes in the electrophysiological sleep patterns of a transgenic mouse model of Parkinson's disease. Moreover, given known memory and sleep disruptions with age, Jean-Paul is also exploring how changes in sleep architecture might affect memory encoding in aged rats.

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



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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 the hippocampal-temporal cortical memory system. 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. 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.

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My research program broadly focuses on uncovering the neural mechanisms that mediate cognitive decline in aging. Our long-term goal is to use this information to develop pharmacological and lifestyle interventions for promoting cognitive health and preserving quality of life among older adults. Our approach integrates sensitive behavioral analyses in rodents with a combination of neuroanatomical, molecular and biochemical methodologies. We have a

particular interest in cognitive functions supported by the prefrontal cortex, which include working memory, cognitive flexibility and decision making. An important aspect of our approach is that it incorporates individual differences in cognitive trajectories. As in the human population, there is considerable variability in cognitive abilities among aged rats, such that some rats demonstrate marked decline whereas others are able to maintain cognitive abilities on a par with much younger subjects. By devising and implementing behavioral approaches that are sensitive to these individual differences, we can better isolate the specific molecular and brain circuit alterations that underlie both the decline and preservation of cognition at advanced ages. My laboratory has found that the normal balance of excitatory and inhibitory signaling in the prefrontal cortex is disrupted in aging and that such changes contribute to impaired prefrontal cortical dependent cognition. In particular, we have discovered a number of age-related biochemical and electrophysiological changes in metabotropic GABA(B) receptors and have found that drugs targeting this receptor significantly enhance cognitive performance in aged rats. Ongoing studies are designed to extend our understanding of inhibitory and excitatory signaling alterations within the aged prefrontal cortex and explore whether psychogenic stress is a modifiable, potentially causative, factor in the age-related dysregulation of inhibitory neural circuits.

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Dawn Bowers is a professor and clinical/research neuropsychologist in the Departments of Clinical and Health Psychology and Neurology at the University of Florida. She directs the Cognitive Neuroscience laboratory at the Center for Movement Disorders and Neurorestoration, is the Neuropsychology Area head, and coordinates the clinical neuropsychology post-doc program. 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. Current research focuses on psychophysiological signatures of apathy and depression, emotion regulation and executive function, and the interactive effects of mindfulness, cognitive training, and novel therapies on mood and cognition. One ongoing emphasis has involved development of hypothesis driven methods for enhancing emotional reactivity in blunted Parkinson patients; results from a recently completed NINDs funded study indicate that non-demented PD patients can use intentional regulation strategies to increase ERP-LPP reactivity to emotional pictures though this is moderated by executive function. A second line of research involves uncovering the mechanisms that account for poor performance of individuals with cerebellar abnormalities (essential tremor) on classic emotional neuroscience tasks. Dr. Bowers has been continuously funded by NIH since 1981, has over 200 publications, 1 book, and 1 affect

measure. She serves on NIH and VA review panels. She currently directs (MPI), along with David Vaillancourt), the only pre-doctoral T32 in the country that is devoted to Interdisciplinary Training in Movement Disorders and Neurorestoration. She was recently funded by the State of Florida to examine the validity of novel NIR stimulation methods for enhancing memory in normal adult adults and those with early amnesic MCI.

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Although a large proportion of elderly people experience memory decline that interferes with their quality of life, understanding the neurobiology of memory impairments in advanced age remains elusive. A significant barrier to uncovering the neurobiology of age-related cognitive decline is that memory 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.

Ronald Cohen, Ph.D., ABPP, ABCN

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

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

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

Steven T. DeKosky, M.D., FACP, FANA, FAAN

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Dr. Steven DeKosky is the Aerts-Cosper Professor of Alzheimer's Research at the UF College of Medicine, the Interim Executive Director of the McKnight Brain Institute, and serves as Associate Director of the Florida Alzheimer's Disease Research Center. From 2013-2014, he was a Visiting Scholar in Medical Ethics and Health Policy at the University of Pennsylvania, then Visiting Professor of Radiology at the University of Pittsburgh/UPMC. He was Vice President/Dean of the University of Virginia School of Medicine from 2008-2013 and served as Physician-in-Chief of the University of Virginia Health System.

His research centers on changes in the human brain in aging/dementia and effects of traumatic brain injury; his clinical work: genetics, neuropsychiatric symptoms, neuroimaging, and treatment/prevention of AD.

He received his A.B. from Bucknell University, and his MD from the UF College of Medicine. He completed an internship in internal medicine at The Johns Hopkins Hospital, a residency in Neurology at UF, and a Postdoctoral Fellowship in Neurochemistry at the University of Virginia. He joined the faculty of the University of Kentucky, College of Medicine in 1979-1990, co-founded the Alzheimer's Disease Research Center and served as Interim Chair of Neurology (1985-1987).

He moved to the University of Pittsburgh in 1990 as Professor of Psychiatry/Neurology, and from 1992-2000 directed the Division of Geriatrics and Neuropsychiatry (Department of Psychiatry/Western Psychiatric Institute/Clinic). In 2000, he became Chair of Neurology and directed Pitt's ADRC from 1994-2008. He served as Chair of the Geriatrics Section of the AAN. In 2004, he was elected to the Neurology Council of the American Board of Psychiatry and Neurology (ABPN); in 2010 he was elected President of the Neurology Council and Vice President of the ABPN. He continues to chair the ABPN's Part B Examination Committee.

Dr. DeKosky has served on/led numerous NIH reviews/advisory committees, was a member of the FDA Peripheral and Central Nervous System Drugs Advisory Committee, and served on NIH Councils: NCCAM, Council of Councils. He has served on the Board of Directors of the Alzheimer's Association (Vice Chair 2001-2002) and chaired their Medical and Scientific Advisory Council. He has received numerous awards for contributions to AD research and advocacy, and has been listed in "The Best Doctors in America" and "America's Top Doctors" for over a decade. He has over 400 peer-reviewed articles/book chapters and serves on the editorial boards of several leading neurology and Alzheimer's journals.

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Dr. Natalie Ebner is Assistant Professor in the Department of Psychology in the College of Liberal Arts and Sciences at University of Florida (UF). She also holds an adjunct faculty position in the Department of Aging and Geriatric Research in the College of Medicine at UF and is affiliated with the Institute on Aging and the McKnight Brain Institute on campus. She received her Ph.D. in 2005 in Psychology with a particular focus on lifespan development and aging from the Free University of Berlin in Germany. She completed post-doctoral fellowships at the Max Planck Institute for Human Development in Berlin, Germany, and at Yale University, where she also worked as Associate Research Scientist before joining the faculty at University of Florida. Dr. Ebner's research adopts an aging perspective on affect, motivation, and social cognition. In particular, her research program focuses on examining the extent to which emotional (e.g., faces displaying different emotion expressions, positive and negative personality traits) and self-relevant information (e.g., related to one's own age, personal goals and agendas, age stereotypes) affect attention, decision making, and memory, how these effects change across the adult lifespan, and what the consequences are for health, emotion regulation, and well-being. She conducts experimental research using a multi-methods approach that combines convergent measures, including self-report, behavior observation, eye tracking, genetics, hormonal markers, and functional neuroimaging techniques, with the aim to integrate introspective, behavioral, and neurobiological data. Some of Dr. Ebner's recent work is interventional with a specific orientation towards improvement of emotional, motivational, and social functioning in aging such as via medicinal products (e.g., oxytocin administration) as well as neurofeedback training.

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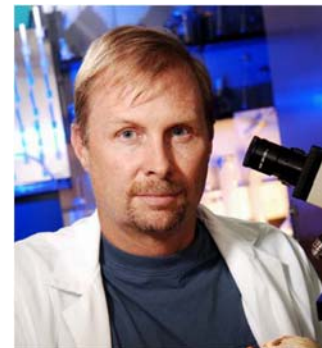
Dr. Fieo received a BSc from Drexel University in Philadelphia Pennsylvania. Shortly after graduating Dr. Fieo worked as a clinician at the University of Pittsburgh's, Western Psychiatric Institute and Clinic. Also in Pittsburgh, Dr Fieo acted as director of a functional behavior

assessment program, which provided cognitive ability and psychosocial testing for the Pittsburgh Court of Common Pleas. In 2008, Dr. Fieo began his PhD degree at the University of Edinburgh in Scotland (Center for Cognitive Epidemiology), receiving a funding award from the United Kingdom Medical Research Council. During this time his research focused on the relationship between fluid intelligence and disability in older adults. Also during this time, he received specialized training in psychometrics and modern test theory. After his PhD (2011), Dr. Fieo received a National Institute of Health (NIH), Ruth L. Kirschstein National Research Service Award (NRSA-T32) to examine the relationship between cognition and functional status in the pre-symptomatic phase of dementia. This postdoctoral fellowship appointment was in the Department of Neurology at Columbia University (Taub Institute for Research on Alzheimer's disease and the Aging Brain). While here, he received additional training in psychometrics and constructed the Columbia IADL-Extended scale of functional status. After his postdoctoral fellowship he took a position as a research scientist in the Mailman School of Public Health, Columbia University (Columbia Aging Center). At this time he acted a Co-PI for an intervention study (partnering with Verizon) on the impact of technology use in older adults.

In September, Dr. Fieo received an appointment of Assistant Professor within the Department of Aging and Geriatric Research, Center for Cognitive Aging and Memory. Dr. Fieo's current focus is on how cognitive enrichment activities in older adults serve to attenuate cognitive decline, as well as reducing the risk of pathological cognitive aging. He is seeking to translate decades-long epidemiologic evidence (cognitive reserve and leisure activities) into experimental models and clinical trials.

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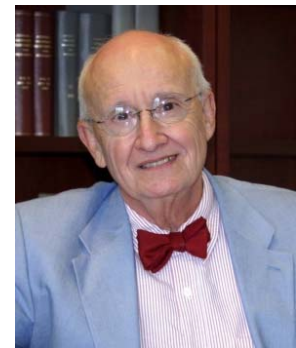


Dr. Thomas Foster is the Evelyn F. McKnight Chair for Research on Cognitive Aging and Memory and Professor of Neuroscience at the University of Florida. Dr Foster's research program utilizes a combination of behavioral characterization with biochemical, molecular, and electrophysiological techniques to obtain a vertically integrated perspective on neural aging, from the molecular to the cognitive level. Electrophysiological recording, next generation sequencing, and enzyme activity assays are employed to identify biological markers of cognitive decline and examine the mechanisms for age-related changes in synaptic plasticity and signaling cascades that are thought to mediate memory. In addition, Dr. Foster's lab employs pharmacological and behavioral treatments and gene therapy in an attempt to rejuvenate the brain and preserve cognitive function. This work has provided evidence for a model linking inflammation to an age-related shift in oxidative stress. In turn, altered redox state affects synaptic plasticity mechanisms resulting in impairment of memory and attention. A second area

of research is directed at examining the therapeutic window for beneficial effects of hormone replacement on memory function. Estrogen has effects on the hippocampus that are diametrically opposite to changes observed in aged memory impaired animals; however, estrogen responsiveness declines with advanced age and the duration of hormone deprivation. Finally, ongoing studies examine the regulation of transcription during aging due to altered cell signaling associated with neural activity and epigenetic mechanisms. He has been continuously funded through NIH as a principle investigator since 1992 and his work includes over 100 publications on memory mechanisms and the aging brain. He is currently the principle investigator on three grants from the National Institute of Aging, which includes a MERIT award and he is a member of the NIH Learning and Memory study section.

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Research in our laboratory includes studies on the neurological basis and disorders of cognition including memory, emotion, language, frontal-action-intentional systems, and creativity. Along with my co-investigators I have been an author-co-author of over 600 journal publications, more than 100 chapters and editor-author of 15 books. Since the McKnight foundation major interest is in memory I will mention some of our work in this topic. A search on PubMed with the terms memory and Heilman K has revealed 114 papers published on this topic. In regard to helping define the anatomy of amnesia, we were one of the first to demonstrate that lesions in several areas of the brain, beside the hippocampus, can cause disorders of episodic memory including: the fornix (Heilman KM, Sypert GW. Korsakoff's syndrome resulting from bilateral fornix lesions. *Neurology*. 1977 May; 27(5):490-3); portions of the left thalamus (Speedie LJ, Heilman KM. Amnesic disturbance following infarction of the left dorsomedial nucleus of the thalamus. *Neuropsychologia*. 1982; 20(5):597-604) as well as the right thalamus (Speedie LJ, Heilman KM. Anterograde memory deficits for visuospatial material after infarction of the right thalamus. *Arch Neurol*. 1983; 40(3):183-6); the basal forebrain (Morris MK, Bowers D, Chatterjee A, Heilman KM. Amnesia following a discrete basal forebrain lesion. *Brain*. 1992 Dec; 115 (Pt 6):1827-47); and the retrosplenial cortex (Valenstein et al., Retrosplenial amnesia. *Brain*. 1987 Dec; 110 (Pt 6):1631-46). We have also written paper about other causes of memory loss (e.g., Tsao JW, Heilman KM. Transient memory impairment and hallucinations associated with tolterodine use. *N Engl J Med*. 2003. 349(23):2274-5) as well as possible treatments (e.g., Ghacibeh GA, Shenker JI, Shenal B, Uthman BM, Heilman KM. The influence of vagus nerve stimulation on memory. *Cogn Behav Neurol*. 2006 Sep; 19(3):119-22). Our research is currently funded by grants from NIH, Veterans Affairs Merit Review, State of Florida and The National Science Center, Poland (Narodowe Centrum Nauki). We are now also

investigating what cutaneous vagal nerve stimulation can do to reverse a decline in episodic memory and have submitted a proposal to NIH.

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The goal of the current research I am involved in is to understand how executive functions decline with age. The prefrontal cortex contains the neural substrates for executive function and is the primary brain region of interest in these studies. I use mice and rats as animal models for cognitive aging by running subjects through working memory and behavioral set-shifting tasks. The focus of my study is to determine the role of interneuron subtypes in the context of working memory and set-shifting tasks. I want to use optogenetics as a tool to regulate specific interneuron subtypes in order to determine their contributions to these behavioral tasks as a function of age. To do so, I will transduce medial prefrontal cortical neurons of mice expressing Cre under interneuron-specific promoters with channel rhodopsin 2 packaged into AAV. This will allow the control of interneuron subtypes with great temporal specificity during working memory and set-shifting tasks. In addition, I am interested in the excitatory and inhibitory genetic differences between the prelimbic and infralimbic medial prefrontal cortices as a function of age. In order to study these differences, RNA will be extracted from these subregions in behaviorally characterized rats and RT-qPCR will be carried out with a focus on glutamatergic and GABAergic genes. I have a background in molecular biology and biochemistry, and an increasing understanding of behavioral assays that should facilitate the establishment of the techniques required for these studies.

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Lara Ianov graduated *summa cum laude* with a bachelor's degree in a concentration of molecular biotechnology from the University of Arkansas at Little Rock in May of 2012. She is a fourth year doctoral student in the Genetics & Genomics program from the University of Florida. Lara joined Dr. Thomas C. Foster's lab in 2013 with the interest of understanding the role of

epigenetic and genetic factors involved in age-related memory decline. Her work involves next-generation sequencing and bioinformatics of the transcriptome, small RNA sequencing and the DNA methylome.

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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.

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Dr. Lamb earned his PhD in Neuroscience from Emory University, where he applied his broad background in computer science, computer engineering and mathematics to detailed biophysical and systems level models of neuronal networks responsible for critical autonomic functions. His long term goal is to bridge cutting edge basic science and clinical/treatment focused research. He currently applies his computational and mathematical skills to create and develop models of complex phenomena, from subcellular neuronal processes through network and systems scales, particularly in the context of the allocation of attention and cognitive function. These models both test our current understanding of neurophysiology as well as provide insights and hypotheses for future research. He also is developing high performance computing research tools to facilitate his own work as well as the neuroimaging thrusts within the CAM-CTRP.

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Throughout my scientific career, I have been focused on trying to understand the mechanisms that govern information propagation and communication across the neural networks of the brain. As a graduate student, I worked with Dr. Bruce McNaughton, acquiring skills in the acquisition and analysis of high-density single-unit electrophysiological recordings from awake-behaving rats. Much of my research focus was on combining neuron spiking data with local-field potentials in order to determine how spike timing is altered as a consequence of both location and time (i.e., theta phase precession). This research track was extended under the supervision of Dr. Carol A. Barnes, a leader in the field of age-related cognitive decline, in which I continued to develop and implement high-level analyses to reveal novel computations of the CA1 subregion of the hippocampus. Moreover, in collaboration with my spouse, Dr. Sara Burke, we have developed novel neuroanatomical methods that will enable us to visualize which neurons are active during behavior. These methodological approaches are central to the current application.

Dr. Burke and I have collaborated for over a decade. Although we have recently moved to the University of Florida, we have already published multiple papers since establishing research independence. My current research is an innovative extension of my previous research experience, combining high-density recording methods, the analysis of large datasets and aging with a novel examination of the cross-regional brain interactions that support decision-making as well as learning and memory.

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Dr. McQuail is a Postdoctoral Fellow working in the laboratory of Dr. Jennifer Bizon 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 and Mary and his Ph.D., also in Neuroscience, from Wake Forest University. Broadly, his work seeks to determine how aging alters neurotransmitter receptor expression and function and to link these changes to specific forms of cognitive impairment. Currently, he is investigating age-related changes to executive functions in relation to imbalanced excitatory/inhibitory dynamics within the prefrontal cortex and whether targeting NMDA and GABAB receptors can reverse cognitive decline. Dr. McQuail's education and training has been supported by two individual fellowships from the National Institute on Aging and one from the McKnight Brain Institute.

Lucia Notterpek, Ph.D.

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Dr. Lucia Notterpek is the William T. and Janice M. Neely 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 65 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. 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.

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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, behavioral and affective research methods with measures the autonomic nervous system, genetics (oxytocin receptor polymorphism), salivary endocrine measures (cortisol and testosterone) and in vivo measurement of γ -Aminobutyric acid (GABA), the principal inhibitory neurotransmitter concentrations using magnetic resonance spectroscopy (MRS).

Recent work of mine extends the previous use of MRS to measure cortical GABA concentrations into a healthy aging population and is the first exploration of cortical GABA concentrations relationship to general cognitive function. Previous published reports provide evidence for 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. Recent work of mine (now under peer-review) demonstrates 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 continue into advanced age in a healthy cohort.

These finding 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.

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Abbi Hernandez is currently a graduate student in the laboratory of Dr. Sara N 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. One of the major challenges in treating age-related cognitive decline is that distinct brain regions manifest deficits in different ways. For example, both hyperactivity and declines in excitation of neurons are observed across the aged brain. Thus, effective therapeutic strategies need to be able to globally tune brain networks. Abbi's dissertation project 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. Abbi is evaluating the efficacy of the ketogenic diet at multiple levels of analysis that include behavior and the quantification of gene expression.

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Dr. Setlow is an Associate Professor in the Departments of Psychiatry, Neuroscience, and Psychology at University of Florida. His research employs a combination of behavioral, pharmacological, and electrophysiological techniques in rodent models. Current projects in his lab are investigating the neural mechanisms of executive functions and decision making, and how these aspects of cognition are altered by aging and chronic exposure to drugs of abuse. Dr.

Setlow's research is funded by the National Institute on Aging and the National Institute on Drug Abuse. He has mentored or co-mentored numerous students, and serves on the editorial boards of several journals, including *The Journal of Neuroscience*, *Behavioral Neuroscience*, and *Cognitive, Affective, and Behavioral Neuroscience*.

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Dr. Adam J. Woods is an Assistant Professor in the Department of Aging and Geriatric Research and the Assistant Director of the Center for Cognitive Aging and Memory in the Institute of Aging at the University of Florida, as well as a member of the McKnight Brain Institute. His active program of research investigates 1) precursors and neuroimaging-based biomarkers of cognitive impairment in older adults and 2) novel interventions for combating cognitive aging. Dr. Woods has a strong background using multi-disciplinary neuroscience methodologies (MRI/fMRI, electrophysiology, non-invasive brain stimulation), extensive experience with aging-related disorders, and past research with neurological diseases. One arm of his research program investigates the value of non-invasive brain stimulation for treating cognitive decline in older adults. For example, one project uses transcranial direct current stimulation (tDCS) to augment cognitive training effects in older adults, with multimodal neuroimaging, comprehensive cognitive and functional assessment, and electrophysiology providing insight not only into the benefits of adjunctive tDCS, but also the neural mechanisms underlying these benefits. In this vein of his research program, Dr. Woods recently led and completed a field consensus paper on methods and application of transcranial electrical stimulation (tES)-based non-invasive brain stimulation. In addition, he is currently working on a book titled "A Practical Guide to tDCS," to be published by Springer in 2017. The second major arm of Dr. Woods research focuses on understanding the contribution of neuroinflammation to cognitive decline in older adults with and without co-morbid medical illness. For example, one ongoing project uses state of the art neuroimaging based markers of neuroinflammation (1H-MRS, DWI-derived freewater), in conjunction with blood biomarkers of systemic inflammation and blood brain barrier (BBB) integrity, to probe the role of BBB integrity in presentation of neuroinflammation during aging, acute infection states (urinary tract infection), and delirium. This work is aimed at identifying not only the underlying factors contributing to cognitive decline in older adults, but also novel intervention strategies for preventing future decline, as well as novel predictors of future decline and treatment response.



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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 hydrocephalous 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.

Ahmet Murat Bagci, Ph.D.

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

Susan Halloran Blanton, Ph.D.

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

Charles H. Cohan, Ph.D.

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Dr. Cohan received his B.S. from the University of Michigan in 2009. He recently completed his Ph.D. at the University of Miami Miller School Of Medicine under the guidance of Dr. Miguel Perez-Pinzon and Dr. Clinton Wright. His graduate work focused on investigating cognitive decline after aging and cardiac arrest. Additionally, his graduate studies investigated protein

kinase C epsilon-mediated synaptic mechanisms that protect against ischemic injury. Currently, he is working as a post-doctoral research associate in the lab of Dr. Perez-Pinzon exploring potential treatments to reduce cognitive decline following white matter injury.

Kunjan R. Dave, Ph.D.

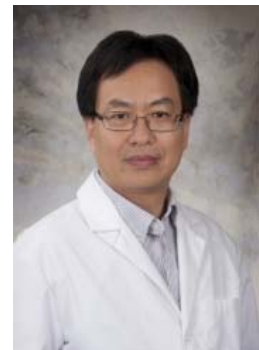
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Dr. Dave received his Ph.D. in Biochemistry in 2000 from the M. S. University of Baroda, India. During his Ph.D. training he worked on several research projects including secondary complications of diabetes, Alzheimer's disease and drug toxicity among others. From 1999 to 2000 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.

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Dr. Dong is Research Associate Professor of Neurology and Biostatistician for the McKnight Brain Institute. Dr. Dong's research focus is on the independent and interactive effects of social-demographic, environmental, behavioral, metabolic and genetic factors on the risk of complex diseases such as metabolic disorders, depression, cognition, drug response to clinical treatment, subclinical and clinical cardiovascular diseases. He is a member of the American Heart Association, the American Statistical Association, the International Genetic Epidemiology Society and the American Association of Human Genetics.

Susan Fox-Rosellini, M.B.A.

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

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

Hannah Gardener, Ph.D.

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Hannah Gardener, ScD, Assistant Scientist in the Department of Neurology at the University of Miami, is an epidemiologist with a particular interest in neuroepidemiology and the epidemiology of aging. She received her doctorate in Epidemiology in 2007 from the Harvard School of Public Health. She has been conducting research on risk factors for clinical and subclinical vascular outcomes in the Northern Manhattan Study for over seven years. She is particularly interested in dietary behavior and other modifiable vascular risk factors in relation to vascular events, carotid disease, and age-related changes in brain structure and cognitive decline.

Joyce Gomes-Osman, P.T., Ph.D.

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Dr. Joyce Gomes-Osman is a clinical neuroscientist with extensive experience in non-invasive brain stimulation approaches (transcranial magnetic stimulation [TMS] and transcranial direct current stimulation [tDCS]) and task-specific training approaches to restore locomotion and upper extremity function. Dr. Gomes has a publication record that includes studies utilizing non-invasive brain stimulation to characterize the neurophysiology and induce neurostimulation (as a potential therapeutic approach) in individuals with neurologic impairments from spinal cord injury. Her experience in clinical trials is a result of 6 years working at the Miami Project to Cure Paralysis, University of Miami, where she was a project coordinator for two R01 grants, while working on her doctoral studies. Dr. Gomes has expanded her knowledge in advanced forms of TMS-based evaluation of intracortical inhibitory and excitatory pathways and neuroplasticity, during her postdoctoral fellowship with Dr. Alvaro Pascual-Leone, an internationally recognized leader in this field, at the Berenson-Allen Center for Non-Invasive Brain Stimulation at Beth Israel Deaconess Medical Center, Harvard Medical School. She remains affiliated as a research scholar, and is currently conducting studies to investigate the effects of aerobic exercise on neuroplasticity, cognitive function and postural control in healthy individuals. In addition, she is a lecturer at the “Intensive Course in Transcranial Magnetic Stimulation” organized at the Center. Dr. Gomes recently re-joined the University of Miami, as an Assistant Professor at the Departments of Physical Therapy and Neurology.

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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 and was recently awarded a pilot grant to study the "Retinal microvascular alteration as a possible biomarker in Alzheimer's disease" funded by the North American Neuro-Ophthalmology society (NANOS).

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).

Bonnie E. Levin, Ph.D.

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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.

Katalina Fernández McInerney, Ph.D.

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Dr. McInerney's research focuses on intervention and rehabilitation strategies for neurologically compromised individuals. She is currently involved in several research studies examining neuropsychological and affective changes following DBS in Parkinson's disease. She has developed a guided relaxation intervention for individuals as they undergo the DBS procedure. She is also interested in markers of competency in healthy cognitive aging. She is currently 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 dissertation focused on the neurocognitive correlates of hazard perception in active driving older adults.

Stacy S. Merritt, M.A., CCRP

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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 the post-mortem DBS brain bank. She is the Project Manager for the Evelyn F. McKnight Brain Institute at the University of Miami. As the Project Manager for the Evelyn F. McKnight Brain Institute, she works with

research projects involving normal cognitive and memory changes in aging as well as pathological changes.

Miguel A. Perez-Pinzon, Ph.D.

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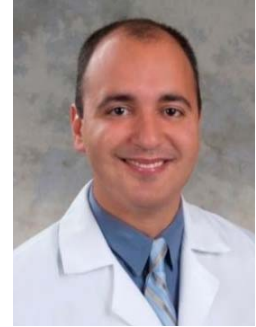


A major emphasis in our group is directed towards understanding the mechanisms of neuroprotection by ischemic preconditioning (IPC) against cerebral ischemia (as elicited by a stroke or cardiac arrest). We have demonstrated in brain that IPC is mediated by two key signaling pathways. One of these pathways is a protein kinase C isozyme epsilon. Another signaling pathway involves the NAD⁺-dependent class III histone deacetylase SIRT1. Our laboratory is fully engaged in defining how these signaling pathways protect neurons against cell death. We are currently studying how these pathways alter synaptic plasticity and ameliorate mitochondrial function.

Another area of emphasis in our group is defining mechanisms by which some signaling pathways alter synaptic function following cardiac arrest. Cardiopulmonary arrest remains one of the leading causes of death and disability in the U.S.A. The chances of survival following cardiac arrest are poor, despite fast emergency responses and better techniques of defibrillation. Cardiac arrest with its consequent disruption of blood flow sets in motion a cascade of cellular derangements that result in brain damage.

A third area of emphasis in our group is the definition of the mechanisms of mitochondrial dysfunction following cerebral ischemia. It has been postulated that delayed cell death after brain ischemia may result from two different mechanisms: apoptosis and/or necrosis. In both pathways however, mitochondrial dysfunction appears to play a pivotal role. We are currently investigating the signaling pathways that lead to mitochondrial dysfunction following cerebral ischemia.

Alberto Ramos, M.D., MSPH, FAASM
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Dr. Ramos' research focus is on sleep and cerebrovascular disease. Dr. Ramos was the recipient of a Research Supplement in Health Related Research - an NIH/NINDS funded supplement grant to the ongoing Northern Manhattan Study, to study the relationship between sleep and risk factors for stroke. Dr. Ramos is the site Principal Investigator for the Sleep Patterns as a Risk Factor for Disease in the Hispanic Community Health Study – Field Center at the University of Miami which is an NHLBI funded ancillary study to the Hispanic Community Health Study to evaluate sleep patterns and cardiovascular risk in Hispanics. Dr. Ramos is also the recipient of Mentored Translational Research Scholars Program (K12) from the CTSI at the Miller School of Medicine. The K12 research study evaluates cerebral hemodynamics and impaired cerebral vasomotor reactivity in obstructive sleep apnea utilizing the Hispanic Community Health Study. He is a member of the American Academy of Sleep Medicine and the Sleep Research Society.

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Dr. Tatjana Rundek is a Professor of Neurology, Epidemiology and Public Health with tenure, Vice Chair of Clinical Research, and Director of the Clinical Translational Research Division in the Department of Neurology of the University of Miami, Miller School of Medicine. She holds a secondary faculty appointment at the Department of Neurology at Columbia University in New York. Dr. Rundek is a stroke neurologist, clinical researcher and principal investigator of several NIH/NINDS funded R01 grants on genetic determinants of carotid atherosclerosis and stroke. Dr. Rundek is a recipient of a NINDS K24 Midcareer development award. She participates in large stroke genetic consortia including the NINDS Stroke Genetic Network and International Stroke Genetic Consortium. Dr. Rundek was a Fulbright Scholar and the recipient of the research awards from the Hazel K. Goddess and the Dr. Gilbert Baum Funds. Dr. Rundek serves on the

editorial boards of several scientific journals including Stroke, Neurology, Journal of Ultrasound in Medicine and Cerebrovascular Diseases. She has published over 210 scientific publications, editorials, reviews, and book chapters. She is a fellow of the American Neurological Association, a member of the American Heart Association and American Academy of Neurology. She is past President of the Neurosonology Communities of Practice of the American Institute in Ultrasound in Medicine, the largest professional medical ultrasound organization in the U.S. Dr. Rundek serves on the Intersocietal Accreditation Commission (IAC) Vascular Testing Board of Directors, a national organization that accredits clinical echocardiography, nuclear/PET, MRI, CT and Dental laboratories and carotid stenting programs.

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

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

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

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

the NINDS Javits Award in Neuroscience. He has lectured extensively at national and international meetings.

Dr. Sacco is a fellow of both the Stroke and Epidemiology Councils of the American Heart Association, the American Academy of Neurology, and the American Neurological Association, and currently serves as President-elect of the American Academy of Neurology. He is also a member of the American Association of Physicians. Dr. Sacco has been a member of the World Stroke Organization since 2008. He currently chairs the Research Committee - 2012-2016, and is on the Board of Directors - 2012-2016.

He was the first neurologist to serve as the President of the American Heart Association, 2010-2011, and is the past Co-Chair of the American Heart Association's International Committee.

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Dr. Segalà is a postdoctoral fellow at the University of Miami, Department of Neurology, Division of Neuropsychology, working with Drs. Bonnie Levin and Gustavo Rey. She provides comprehensive neuropsychological assessments to patients from the Memory Disorders Center referred for age-related neurological conditions that affect memory. Dr. Segalà has scientific and clinical interests in memory disorders, effects of chronic drug use, multiple sclerosis, and Parkinson's disease. She is currently working on a clinical data bank from patients seen at the Memory Disorders Center with the objective of understanding the early markers of age related cognitive change in the elderly. Dr. Segalà has published in the areas of addiction and multiple sclerosis.

Holly M. Stradecki

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Holly Stradecki is an MD/PhD candidate in her third year of the Neuroscience Graduate Program at the University of Miami Miller School Of Medicine. Her thesis project examines the ability of exercise to augment cognition after cardiac arrest. In the United States, over 300,000 people experience a cardiac arrest and the majority of these victims are over the age of 65. Survivors are left with detrimental cognitive deficits and few avenues to regain the cognitive abilities they lost. While exercise is thought to have a positive role in augmenting cognition in the “healthy” brain, its ability to do so in the post-ischemic brain is controversial. To examine the role of exercise in restoration of cognitive function after cardiac arrest, Holly is using behavioral tests to analyze restoration of cognitive function in Sprague-Dawley rats. She will link these behavioral changes to other biochemical, morphological, and electrophysiological differences (specifically in the hippocampus) between exercised and non-exercised animals to better understand how plasticity is affected. The goal of her project is to elucidate the beneficial changes that occur with exercise after cardiac arrest to find alternative therapeutic targets to augment cognition.

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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. She has been invited to be a reviewer for multiple journals on Alzheimer’s research. Currently, she provides clinical care to patients with

cognitive disorders, develops and oversees educational programs for medical residents and is the Education Director for the Evelyn F. McKnight Brain Institute at the University of Miami.

Eduard Tiozzo, PhD

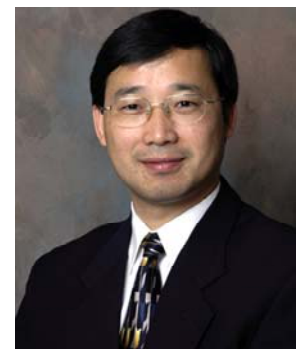
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Dr. Tiozzo is an American Heart Association Fellow, involved in a randomized clinical trial with stroke patients, funded by the American Stroke Association and Bugher Foundation Centers for Excellence in Stroke Collaborative Research for Regeneration, Resilience, and Secondary Prevention. The trial implements a 3-month combined aerobic and resistance exercise training, with or without a cognitive training, among stroke survivors with mild to moderate disability. The primary goal of the trial is to examine its feasibility and tolerability. Dr. Tiozzo is an author and co-author on several manuscripts of the Northern Manhattan Study, a collaborative effort between Columbia University and University of Miami in analyzing stroke risk factors in whites, blacks and Hispanics. He teaches undergraduate and graduate courses and moderates sessions with medical student in the area of physical activity and nutrition.

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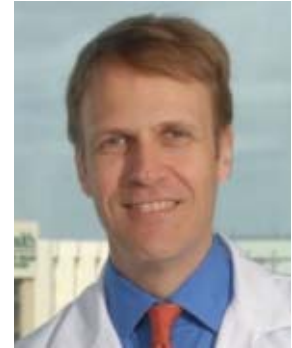


Dr. Wang, the Scientific Co-Director of Experimental Imaging Laboratory for the Bascom Palmer Eye Institute, University of Miami, is an Associate Professor of Ophthalmology and Electric and Computer Engineering. After MD training in China, Dr. Wang obtained his PhD in vision science at University of 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.

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Dr. Wright, the Scientific Director for the Evelyn F. McKnight Brain Institute is an Associate Professor of Neurology, Epidemiology and Public Health, and Neuroscience at the University of Miami. He is Chief of the Division of Cognitive Disorders in the Department of Neurology and Co-Director of the Florida Department of Elder Affairs funded University of Miami Memory Disorders Center. Dr. Wright's research focus is on the effects of vascular risk factors and vascular damage on brain structure and function, with an emphasis on subclinical damage such as covert infarcts, white matter lesions, and brain atrophy. His research also focuses on vascular cognitive impairment with an emphasis on early cognitive changes and the interaction between aging, vascular damage, and Alzheimer disease. Dr. Wright has steered the scientific program at the U.M. McKnight Brain Institute since 2008, developing programs in keeping with its mission and that of the McKnight Brain Research Foundation, including development of a memory clinic registry, funding of an animal behavior core dedicated to translational research related to cerebrovascular disease, and epidemiologic studies involving large cohorts. Current and past research funding include a grant from the National Heart, Lung, and Blood Institute to study mineral metabolism in relation to vascular disease and cognition, separate grants that examine the risk factors for cognitive disorders among blacks, latinos, and whites, and a phase 2B clinical trial as part of the University of Miami Bugher Foundation/American Heart Association Center of Excellence, to study the effects of exercise and cognitive training on recovery post-stroke. In the past, a National Scientist Development Grant from the American Heart Association, as well as an Independent Scientist Award from the National Institute of Neurological Disorders and Stroke have funded Dr. Wright's work. He is a member of the American Heart Association, the American Academy of Neurology, and the Alzheimer's Association.

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