



"Enhancing McKnight Institute Collaborations for Translational Programs on Age Related Memory Loss"

MCKNIGHT BRAIN RESEARCH FOUNDATION

8TH INTER-INSTITUTIONAL MEETING

UNIVERSITY OF MIAMI, MIAMI, FLORIDA

APRIL 29TH, 2015 – MAY 1ST, 2015

**EVELYN F. MCKNIGHT BRAIN INSTITUTE
AT THE UNIVERSITY OF MIAMI**



WELCOMES

THE MCKNIGHT BRAIN RESEARCH FOUNDATION BOARD OF TRUSTEES

**THE EVELYN F. MCKNIGHT BRAIN INSTITUTE
AT THE UNIVERSITY OF ALABAMA AT BIRMINGHAM**

THE EVELYN F. MCKNIGHT BRAIN INSTITUTE AT THE UNIVERSITY OF ARIZONA

**THE EVELYN F. AND WILLIAM L. MCKNIGHT BRAIN INSTITUTE
AT THE UNIVERSITY OF FLORIDA**

Eighth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

Wednesday, April 29th 2015

- 4:30 p.m. - 6:00 p.m.** **Registration Opens**
Hyatt Regency Miami
400 SE 2nd Ave,
Miami, FL 33131
Hotel Lobby
- 6:00 p.m. - 6:15 p.m.** **Load Buses for departure to University of Miami
Miller School of Medicine**
Hyatt Regency Lobby
- 6:30 p.m. - 9:00 p.m.** **Welcome Reception and Dinner**
University of Miami Miller School of Medicine
Life Science & Technology Park,
1951 NW 7th Ave,
Miami, FL 33136
6th Floor
- 7:00 p.m.** **Welcome**
- Ralph L. Sacco, M.D., M.S., F.A.A.N., F.A.H.A. - Introductions**
Executive Director, Evelyn F. McKnight Brain Institute
Professor and Olemberg Chair of Neurology
Chairman, Department of Neurology
University of Miami Miller School of Medicine
- Donna Shalala, Ph.D.**
President
University of Miami
- J. Lee Dockery, M.D.**
Trustee, McKnight Brain Research Foundation
- Clinton B. Wright, M.D., M.S. – Program Preview**
Evelyn F. McKnight Chair for Learning and Memory in Aging
Scientific Director, Evelyn F. McKnight Brain Institute
University of Miami Miller School of Medicine
- 7:30 p.m.** **Dinner**
- 9:00 p.m. - 9:30 p.m.** **Load Buses for return to the Hyatt Regency**

Eighth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

Thursday, April 30th 2015

*Hyatt Regency Miami
400 SE 2nd Ave,
Miami 33131*

7:00 a.m. - 8:30 a.m.

Buffet Breakfast
Lower Level Promenade Terrace

8:00 a.m. - 8:30 a.m.

Registration
Lower Level Promenade Terrace

8:30 a.m. - 8:40 a.m.

Welcome
Jasmine Room

Ralph L. Sacco, M.D., M.S., F.A.A.N., F.A.H.A.
Executive Director, Evelyn F. McKnight Brain Institute
Professor and Olemberg Chair of Neurology
Chairman, Department of Neurology
University of Miami Miller School of Medicine

Pascal Goldschmidt, M.D.
Senior Vice-President for Medical Affairs and Dean
University of Miami Miller School of Medicine
Chief Executive Officer, University of Miami Health Systems

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

8:40 a.m. - 8:45 a.m.

Opening Remarks
Clinton B. Wright, M.D., M.S.
Evelyn F. McKnight Chair for Learning and Memory in Aging
Scientific Director, Evelyn F. McKnight Brain Institute
Department of Neurology
University of Miami Miller School of Medicine

8:45 a.m. - 9:45 a.m.

Keynote Address
"Cognitive aging: A review of the Institute of Medicine Report"
Daniel G. Blazer, M.D., M.P.H., Ph.D.
J.P. Gibbons Professor of Psychiatry and Behavioral Sciences Emeritus
Professor of Community and Family Medicine, Duke University
Adjunct Professor in Department of Epidemiology,
School of Public Health,
University of North Carolina

9:45 a.m. - 10:00 a.m.

Break
Lower Level Promenade Terrace

Eighth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

SESSION 1 - Jasmine Room

EPIGENETICS- THE MCKNIGHT INTER-INSTITUTIONAL EPIGENETICS OF AGING INITIATIVE –

Chair: J. David Sweatt, Ph.D.

- 10:00 a.m. – 10:15 a.m.** *“Overview of the Epigenetics Core, data generated at UF and UA on aged animals, samples prepped, and general experimental design for the entire project”*
Tom Foster, Ph.D., Professor
Evelyn F. McKnight Chair for Research on Cognitive Aging and Memory
Evelyn F. and William L. McKnight Brain Institute
University of Florida
- 10:15 a.m. – 10:30 a.m.** *“Identification of “Memory Genes”*
David Sweat, Ph.D., Professor
Department of Neurobiology
Evelyn F. McKnight Endowed Chair
Director, Evelyn F. McKnight Brain Institute
University of Alabama
- 10:30 a.m. – 10:45 a.m.** *“Numbers and Neurons: Initial Bioinformatic Analysis of the McKnight Collaborative Data”*
Matt Huentelmen, Ph.D., Associate Professor
Neurogenomics Division
Co-Director of Center for Rare Childhood Disorders
University of Arizona
- 10:45 a.m. – 11:00 p.m.** *“What the Core can do for you, translational potential”*
Juan Young, Ph.D., Assistant Professor
The John T. MacDonald Department of Human Genetics
University of Miami
- 11:00 a.m. – 11:15 a.m.** Questions/Answers- holding all questions until the end

SESSION 2 - Jasmine Room

MRI IMAGING- INTER-INSTITUTIONAL NEUROIMAGING CORE AND BRAIN AGING REGISTRY UPDATE –

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

- 11:15 a.m. – 11:30 a.m.** *“Brain networks defined by functional connectivity: relating cortical thickness to executive function performance in older adults.”*
Kristina Visscher, Ph.D., Assistant Professor
Department of Neurobiology
Evelyn F. McKnight Brain Institute
University of Alabama at Birmingham

Eighth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

- 11:30 a.m. – 11:45 a.m.** *"Influence of health factors on cognitive and brain aging"*
Gene Alexander, Ph.D., Professor
Director, Brain Imaging Behavior & Aging Lab
Department of Psychology
Evelyn F. McKnight Brain Institute
University of Arizona
- 11:45 a.m. – 12:00 p.m.** *"Cerebral metabolic factors associated with cognitive aging"*
Adam Woods, Ph.D., Assistant Professor
Department of Aging and Geriatric Research
University of Florida
- 12:00 p.m. – 12:15 p.m.** *"Imaging methods to understand the impact of cerebrovascular damage
in age related cognitive decline"*
Clinton Wright, M.D., M.S., Associate Professor
Evelyn F. McKnight Chair for Learning and Memory in Aging
Scientific Director, Evelyn F. McKnight Brain Institute
Department of Neurology
University of Miami Miller School of Medicine
- 12:15 p.m. – 12:20 p.m.** *"Summary and links to cognitive core"*
Ronald A. Cohen, Ph.D., ABPP, ABCN, Professor
Director, Cognitive Aging and Memory Program, CAM-CTRP
Institute on Aging, Evelyn F. and William L. McKnight Brain Institute
University of Florida
- 12:20 p.m. – 12:30 p.m.** Questions/Answers- holding all questions until the end
- 12:30 p.m. – 1:30 p.m.** *Lunch*
Lower Level Promenade Terrace and Hibiscus

SESSION 3 - Jasmine Room

**TRANSLATIONAL THERAPIES; BENCH TO BRAIN –
Chair: Ronald A. Cohen, Ph.D.**

- 1:30 p.m. – 1:45 p.m.** *"Cardiovascular influences on cognition in the aging brain: An
Introduction"*
Ralph L. Sacco, M.D., M.S., F.A.A.N., F.A.H.A., Professor
Executive Director, Evelyn F. McKnight Brain Institute
Olemborg Chair of Neurology
Chairman, Department of Neurology
University of Miami Miller School of Medicine

Eighth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

- 1:45 p.m. – 2:00 p.m.** *“Global cerebral ischemia and cognitive decline in aged animal models”*
Miguel Perez-Pinzon, Ph.D., Professor
Director, Cerebral Vascular Disease Research Center and the Peritz
Scheinberg Cerebral Vascular Laboratory
Vice-Chair Basic Science
Department of Neurology
University of Miami Miller School of Medicine
- 2:00 p.m. – 2:15 p.m.** *“Acute vs. chronic effects of cerebral hypoperfusion with aging: animal models”*
Tara DeSilva, Ph.D., Assistant Professor
Physical Medicine and Rehabilitation
Evelyn F. McKnight Brain Institute
University of Alabama at Birmingham
- 2:15 p.m. – 2:30 p.m.** *“Combined anti-inflammatory therapy and memory training to improve cognitive function in patients with heart failure”*
Lee Ryan, Ph.D., Associate Professor
Associate Head, Department of Psychology
Evelyn F. McKnight Brain Institute
University of Arizona
- 2:30 p.m. – 2:45 p.m.** *“Heart failure: Effects of chronic cerebral hypoperfusion on cognitive aging”*
Ronald A. Cohen, Ph.D., ABPP, ABCN, Professor
Director, Cognitive Aging and Memory Program, CAM-CTRP
Institute on Aging, Evelyn F. and William L. McKnight Brain Institute
University of Florida
- 2:45 p.m. – 3:00 p.m.** Questions/Answers- holding all questions until the end
- 3:00 p.m. – 3:15 p.m.** **Breaks**
Lower Level Promenade Terrace
- BREAKOUT SESSIONS – Jasmine, Hibiscus A & B**
Collaborative Potentials
- 3:15 p.m. – 5:30 p.m.** **Epigenetics**
Chair: J. David Sweatt, Ph.D.
Facilitator: Susan Blanton, Ph.D., Associate Professor
Director, Hussman Institute for Human Genomics
University of Miami Miller School of Medicine

Eighth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

3:15 p.m. – 5:30 p.m.

Translational

Chair: Ronald A. Cohen, Ph.D.

Facilitator: Tatjana Rundek, M.D., Ph.D., Professor

Department of Neurology

Vice-Chair Translational Research

University of Miami Miller School of Medicine

3:15 p.m. – 5:30 p.m.

Cognitive/MRI

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

Facilitator: Bonnie Levin, Ph.D., Professor

Bernard and Alexandria Schoninger Professor of Neurology

Director, Neuropsychology Division

University of Miami Miller School of Medicine

6:15 p.m. - 6:30 p.m.

Board Ship & Set Sail

Lower Level Promenades Terrace

6:30 p.m. – 9:00p.m.

Cocktail Reception and Dinner

“Biscayne Lady” – touring Miami Bay

Eighth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

Friday, May 1, 2015

*Hyatt Regency Miami
400 SE 2nd Ave,
Miami 33131*

6:30 a.m. - 8:00 a.m.

Buffet Breakfast
Lower Level Promenade Terrace

8:00 a.m. - 8:15 a.m.

**Trustees, McKnight Directors, Endowed Professors and Endowed
Chairs** (please check out of hotel – those driving please leave luggage at
Bell Desk)
**Load Bus for departure to University of Miami
Miller School of Medicine**
Hyatt Regency Lobby

8:15 a.m. – 9:15 a.m.

Private Meeting
*University of Miami
Clinical Research Building
Department of Neurology
1120 NW 14th Street,
Miami, FL 33136
Conference Room 1381*

8:30 a.m. - 9:00 a.m.

(All guests please check out of hotel – Those driving please leave
luggage at Bell Desk)

9:00 a.m. – 9:15 a.m.

**Load Buses for departure to University of Miami
Miller School of Medicine**
Hyatt Regency Lobby

9:30 a.m. – 10:40 a.m.

BLITZ SESSIONS
*University of Miami
Lois Pope Life Center
1095 NW 14th Terrace,
Miami, FL 33136
7th Floor Auditorium*

Moderator: Carol A. Barnes, Ph.D., Professor
Regents' Professor, Psychology, Neurology and Neuroscience
Evelyn F. McKnight Chair for Learning and Memory in Aging
Director, Evelyn F. McKnight Brain Institute
Director, ARL Division of Neural Systems, Memory & Aging
University of Arizona

Eighth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

- 9:30 a.m. – 9:40 a.m.** *“Linking executive function and transcription in the medial prefrontal cortex”*
Lara Ianov, B.S.
Department of Neuroscience
Evelyn F. and William L. McKnight Brain Institute
University of Florida
- 9:40 a.m. – 9:50 a.m.** *“Opening the therapeutic window for estrogen treatment through hippocampal ER-alpha overexpression”*
Linda Bean, B.S.
Doctoral Candidate/Graduate Assistant
Department of Neuroscience
Evelyn F. and William L. McKnight Brain Institute
University of Florida, College of Medicine
- 9:50 a.m. – 10:00 a.m.** *“Long-Lasting Epigenetic Therapeutics to Improve Cognition”*
Andrew J. Kennedy, Ph.D.
Postdoctoral Fellow
Department of Neurobiology
University of Alabama at Birmingham
- 10:00 a.m. – 10:10 a.m.** *“Epigenetic control of neuronal systems: A potential avenue for cognitive therapeutics”*
Jeremy Day, Ph.D.
Assistant Professor
Evelyn F. McKnight Brain Institute
Department of Neurobiology
University of Alabama at Birmingham
- 10:10 a.m. – 10:20 a.m.** *“The Influence of Aging on the Variability of Neuronal Activity”*
Stephen L. Cowen, Ph.D.
Assistant Professor
Department of Psychology
Evelyn F. McKnight Brain Institute
University of Arizona
- 10:20 a.m. – 10:30 a.m.** *“Measuring brain plasticity using non-invasive brain stimulation--a potential tool for the study of aging.”*
Joyce Gomes-Osman, P.T., Ph.D.
Assistant Professor
Departments of Physical Therapy and Neurology
University of Miami Miller School of Medicine

Eighth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

10:30 a.m. – 10:40 a.m. *“Accelerated brain aging in diabetics: impact of recurrent hypoglycemia”.*
Kunjan R. Dave, Ph.D.
Research Associate Professor
Department of Neurology
University of Miami Miller School of Medicine

10:40 a.m. – 10:45 a.m. **Break**

BREAKOUT SESSION REPORTS

10:45 a.m. – 11:10a.m. **Epigenetics**
Chair: J. David Sweatt, Ph.D.

11:10 a.m. – 11:35 a.m. **Translational**
Chair: Ronald A. Cohen, Ph.D.

11:35 a.m. – 12:00 p.m. **Cognitive/MRI**
Chair: Clinton B. Wright, M.D., M.S.

12:00 p.m. – 12:10 p.m. **Future Directions and Meeting Close**

12:10 p.m. – 12:20 p.m. **Box Lunch**

12:20 p.m. **BUSES DEPART TO AIRPORT AND HOTEL**

**2015 McKnight Brain Research Foundation
Inter-Institutional Meeting
Keynote Speaker**

DAN GERMAN BLAZER, M.D., M.P.H., PH.D.

J.P. Gibbons Professor
Psychiatry and Behavioral Sciences Emeritus
Professor of Community and Family Medicine at Duke
Adjunct Professor in the Department of Epidemiology,
School of Public Health, University of North Carolina
Box 3003, Duke University Medical Center,
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Email: blaze001@mc.duke.edu
Phone: 919-684-4128
Fax: 919-684-8569



Dr. Blazer is former Dean of Medical Education and currently J.P. Gibbons Professor of Psychiatry Emeritus at Duke University Medical Center. He is a Professor of Community and Family Medicine. He also serves as Adjunct Professor in the Department of Epidemiology, School of Public Health, University of North Carolina. He received his MD degree from the University of Tennessee and his MPH and PhD degrees from the University of North Carolina at Chapel Hill.

He was selected for the Distinguished Alumni Award at the School of Public Health, University of North Carolina in 1989, the Rema LaPouse Award from the American Public Health Association in 2001, the First Annual Geriatric Psychiatry Research Award from the American College of Psychiatrists in 2004, the Kleemeier Award from the Gerontological Society of America, the Distinguished Faculty Award, Duke Medical School in 2005, and the Oscar Pfister Award for the integration of religion and psychiatry from the American Psychiatric Association. He was elected to the Institute of Medicine (IOM), National Academy of Sciences in 1995 where he chaired the membership committee for two years (2005-2007) and now chairs the Board of Special Populations. He received the Walsh McDermott Award for distinguished service to the IOM in 2014 as well as the lifetime distinguished service award from the American College of Psychiatrists in 2014. He currently serves on the editorial board of the *Archives of General Psychiatry*. He has published over 450 peer reviewed papers and either author or edited 36 books.

2015 McKnight Brain Research Foundation Inter-Institutional Meeting Special Guest

Molly V. Wagster, Ph.D.

Chief, Behavioral & Systems Neuroscience Branch
Division of Neuroscience
National Institute on Aging
Gateway Bldg. Suite 350
7201 Wisconsin Ave.
Bethesda, MD 20892-9205
Phone: 301-496-9350
Email: wagsterm@nia.nih.gov



Dr. Molly V. Wagster, Ph.D. is Chief of the Behavioral and Systems Neuroscience Branch in the Division of Neuroscience at the National Institute on Aging (NIA), National Institutes of Health (NIH) in Bethesda, Maryland. Dr. Wagster oversees administration and development of research in cognitive and emotional change with age and in sensory and motor disorders of aging. She directly manages a portfolio of research in mechanisms of cognitive (memory, learning, attention, language) and affective (emotion) change with age that spans research from molecules to behavior. She serves as the NIH Project Officer for the development of the NIH Toolbox for Assessment of Neurological and Behavioral Function (contract supported by the NIH Blueprint for Neuroscience Research) and leads an NIA working group devoted to the exploration of evidence-based measures to assess cognitive impairment in the primary care provider setting.

Dr. Wagster came to the NIA from the Department of Pathology, Division of Neuropathology, at The Johns Hopkins University School of Medicine. For over a decade, Dr. Wagster investigated neural mechanisms of learning and memory changes with age in animal models and studied changes in neuroreceptor mechanisms in relation to cognitive decline in neurodegenerative diseases such as Alzheimer's disease and Huntington's disease. Her research interests centered on individual differences with age in cognitive domains. Dr. Wagster also held a joint appointment in the Department of Psychology at The Johns Hopkins University.

Dr. Wagster received her M.S. and Ph.D. in Biopsychology from Tulane University and completed a postdoctoral fellowship in Neuropathology at The Johns Hopkins University School of Medicine.

McKnight Brain Research Foundation Inter-Institutional Meeting Participants



University of Alabama at Birmingham

Steve Austad, Ph.D.

Distinguished Professor & Chair
Department of Biology
Evelyn F. McKnight Brain Institute

Jeremy Day, Ph.D.

Assistant Professor
Evelyn F. McKnight Brain Institute
Department of Neurobiology

Tara M. DeSilva, Ph.D.

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

Cristin Gavin, Ph.D.

Research Associate
Department of Neurobiology
University of Alabama at Birmingham

David S. Geldmacher, M.D., F.A.C.P.

Patsy W. and Charles A. Collat Endowed
Professor in Neuroscience
Evelyn F. McKnight Brain Institute
Director, Division of Memory Disorders and
Behavioral Neurology
Department of Neurology

John J. Hablitz, Ph.D.

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

Andrew J. Kennedy, Ph.D.

Postdoctoral Fellow
Department of Neurobiology

Robin Lester, Ph.D.

Professor
Department of Neurobiology
Evelyn F. McKnight Brain Institute

Farah D. Lubin, Ph.D.

Assistant Professor
Evelyn F. McKnight Brain Institute
Department of Neurobiology

Lori McMahon, Ph.D.

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

Kazu Nakazawa, M.D., Ph.D.

Associate Professor
Department of Psychiatry
Evelyn F. McKnight Brain Institute

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

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

J. David Sweatt, Ph.D.

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

Kristina M. Visscher, Ph.D.

Assistant Professor
Evelyn F. McKnight Brain Institute
Department of Neurobiology

Steven N. Austad, Ph.D.

Distinguished Professor & Chair
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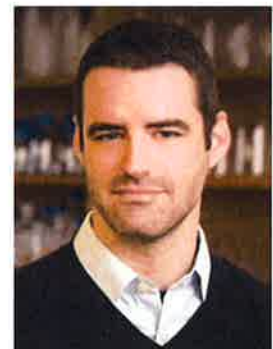
Dr. Austad joined the Department of Biology in 2014. A multi-award winning researcher, his scientific interests concern many aspects of the biology of aging and the evolution of life histories, from molecular processes to evolutionary demography. He investigates aging in a number of species. He is interested in aging, all aspects, including age-related cognitive decline, mouse models, protein aggregation, and techniques for defining mouse healthspan.

Aging is a major puzzle in biology. It is also arguably the most important health problem facing humans today, underlying all major causes of death and disability in the developed world. Why do animals age at all? Why do some species live short lives, physically decaying rapidly and others live exceptionally long and healthy lives? Attempting to identify the underlying cellular and molecular mechanisms that account for such species differences is the basis of Dr. Austad's research in comparative biogerontology. A second interest of his laboratory is in development methods for the assessment of animal healthspan, so that the impact on health (as well as longevity) of potential senescence-retarding therapies can be investigated.

<http://www.uab.edu/cas/biology/facultystaff/faculty/29-faculty-staff/faculty/275-steven-austad>

Jeremy Day, Ph.D.

Assistant Professor
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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, and understand how these processes govern our capacity to learn and make decisions about outcomes in our environment. We are interested in understanding how neurons within these brain regions signal information about rewards, and dynamic transcriptional and epigenetic mechanisms respond to rewarding stimuli.

Tara M. DeSilva, Ph.D.

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

Cristin Gavin, Ph.D.

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

David S. Geldmacher, M.D., F.A.C.P.

Patsy W. and Charles A. Collat Endowed Professor in Neuroscience
Professor

Evelyn F. McKnight Brain Institute

Director, Division of Memory Disorders and Behavioral Neurology

Department of Neurology

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David S. Geldmacher, M.D., F.A.C.P. 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.

John J. Hablitz, Ph.D.

Professor

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

New studies, in conjunction the laboratory of Dr. David Sweatt, are examining the role of DNA methylation in homeostatic plasticity. Normal development of neocortical circuits is dependent on coordinated activity of excitatory and inhibitory neurons. Alterations in the balance of excitation and inhibition (E/I balance) has frequently been suggested as a factor in several neurological disorders. Hebbian plasticity, including long-term potentiation (LTP) and long-term depression (LTD), has long been regarded as important for local circuit formation. Circuit development additionally relies on non-Hebbian, homeostatic forms of plasticity, which are induced by chronic increases or decreases in neuronal activity. Studies are aimed at understanding how epigenetic mechanisms contribute to homeostatic plasticity and if they can be modulated in cognitive disorders.

Andrew J. Kennedy, Ph.D.

Postdoctoral Fellow

Department of Neurobiology

University of Alabama at Birmingham

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

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.

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

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

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Schizophrenia is a complex psychiatric disorder with a strong genetic component. To date, the diagnosis of schizophrenia relies solely on the presentation of an array of clinical symptoms, which encompasses positive attributes (delusions, hallucinations, catatonia), negative attributes (avolition, anhedonia, social withdrawal), and cognitive deficits (in attention, decision making, and working memory). In particular, hallucinations are a cardinal feature of schizophrenia and one of the main diagnostic criteria for the illness. Although underlying mechanisms of these symptoms' emergence are poorly understood, converging experimental and clinical evidence suggests that NMDA receptor dysfunction in GABAergic neurons and the consequent cortical disinhibition with impaired synchronized activity may underlie at least part of the pathophysiological process of schizophrenia. We have tested this idea by generating and analyzing conditional transgenic mouse lines with selective NMDA receptor (GluN1) deletion in cortical/hippocampal interneurons. We found that several cellular, physiological, and behavior phenotypes similar to that manifest in schizophrenia. This finding has driven our current and future research focus. Our first research goal is to delineate the downstream pathways of NMDAR deletion in GABAergic neurons, which may be responsible for positive, negative, and cognitive symptoms, through genetically dissecting the changes in the molecular and cellular processes. Our second goal is to identify the specific dysfunctions which occur during embryonic development that lead to the NMDAR hypofunction in the cortical interneurons. In turn, these studies may uncover the physiological mechanisms by which normal cortical network refinement occurs during development. Overall, our research aim is, relying on a multidisciplinary approach, using the techniques of mouse genetics, immunocytochemistry, slice physiology, cellular neurobiology, in vivo tetrode recording, and mouse behavioral analysis, to create and use mouse models to address these key questions with the ultimate goal of identifying objective neurobiological markers for human schizophrenia.

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

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Dr. Roberson is a Associate Professor of Neurology and Neurobiology and Co-Director of the Center for Neurodegeneration and Experimental Therapeutics at the University of Alabama at Birmingham (UAB). 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 is Co-Director of the Center for Neurodegeneration and Experimental Therapeutics, which is dedicated to developing new therapies for age-related cognitive disorders and neurodegenerative disease. Dr. Roberson also cares for patients with memory disorders and dementia at the Kirklin Clinic and directs clinical trials related to tauopathies.

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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 also examine how these factors change with aging and after experience: including experience with central vision loss, 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.

McKnight Brain Research Foundation Inter-Institutional Meeting Participants



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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 focus also includes the application of these techniques to non-human animal models of aging and age-related disease. He is Professor of the Clinical Psychology and Cognition & Neural Systems Programs in the Department of Psychology, and in the Neuroscience and Physiological Sciences Graduate Interdisciplinary Programs. He directs the Brain Imaging, Behavior & Aging Labs 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 the elderly. 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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Prade 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 and resting state functional magnetic resonance imaging, along with genetic risk factors and measures of performance on various neuropsychological tests. Prade 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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Joe's current research interests lie in the areas of perirhinal cortex, object discrimination and aging. Previous research has found older rats to be significantly different to younger rats in their ability to discriminate similar looking objects. In their experiment, they predict that older adults will have decreased performance in an ambiguous object discrimination task and will show differences in fMRI activation in the perirhinal cortex. Activation and volume analysis will be used to compare both groups. With this project, they hope to learn more about the differences between younger and older adults and the role that the perirhinal cortex plays in aging

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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 ARL Division of Neural Systems Memory and Aging at the University of Arizona.

Paul D. Coleman, Ph.D.

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

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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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Margie Puerta Edson, CFRE, is the Director of Development for Evelyn F. McKnight Brain Institute at the University of Arizona and is also Associate Faculty at the ASU Lodestar Center for Philanthropy and Nonprofit Management Institute. Margie is currently engaged in a \$10 million dollar endowment campaign for the McKnight Brain Institute.

Previously she held the position of Executive Director for the Catholic Foundation for the Diocese of Tucson where she provided strategic leadership and accountability for all fundraising activities which included coordinating a \$28 million dollar Diocesan wide capital campaign that exceeded goal to raise \$34 million while also raising \$5.4 million annually for diocesan ministries and providing oversight and management for over \$20 million in endowed assets.

Margie has over 20 years of experience in fund development, public relations, and communications and is a frequent speaker on fund raising and nonprofit management. She is active in the community, serving on the board of directors for several organizations including Kore Press and the Kino Border Initiative. A Certified Fund Raising Executive (CFRE) since 2003, Margie received the Outstanding Fundraising Professional Award from the Association of Fundraising Professionals Southern Arizona Chapter in 2007.

An Arizona native, Margie has a Bachelor's Degree in Fine Art from Arizona State University and continues to paint and exhibit her mixed media artwork. She is a dedicated supporter of the arts, education and environmental causes.

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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 second 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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Asta Håberg, is currently a Fulbright scholar in Professor Carol A. Barnes lab. Usually she 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. She has a very wide research background with a PhD in neurometabolisms 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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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 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 first year graduate student in the Clinical Neuropsychology program at the University of Arizona.

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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.

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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 primarily rely on the frontal and medial temporal lobes, my work will investigate the neural correlates of these changes through an analysis of fronto-striatal connectivity and activation. Both tract-based spatial statistics and functional magnetic resonance imaging will be utilized.

Suzanne A. Moseley, BS,

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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 effects of hearing impairment on the cognitive functioning of older adults. Specifically, she is interested in evaluating potential cognitive and psychosocial benefits of hearing aid use. Suzanne hopes to explore how neurological and social factors together influence cognitive performance in older age.

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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 physical- and health-related factors that may influence cognitive aging.

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Mr. Richholt is a Research Associate II in Dr. Huentelman's lab in the Neurogenomics Division of TGen. He has been with TGen since starting as an academic intern in 2011. He went on to complete his undergraduate degree from Arizona State University in Glendale, AZ. He has expertise in tissue culture, DNA/RNA/Protein isolation, next-gen sequencing, and analytical approaches for each. Mr. Richholt is currently researching the genetic basis of age-related cognitive decline using data collected from the MindCrowd cohort as well as bexarotene as a potential approach for treating Alzheimer's disease.

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

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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. 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. 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. 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.

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Dr. Schrauwen received her M.S. in Biomedical Sciences from the University of Antwerp (Belgium) in 2005 with molecular biology and genetics as her specialization. In 2010, she received her Ph.D., in Biomedical Sciences at the University of Antwerp. Her dissertation research focused on identifying genetic factors involved in hearing loss. Dr. Schrauwen currently studies genetic factors involved in age-related hearing loss and other age-related sensorineural disorders. Other topics of research include age-related central nervous system processing defects as markers of presymptomatic changes related to Alzheimer's Disease (Mindcrowd.org) and TREM2-related dementias.

Prabhjot Singh, Ph.D.

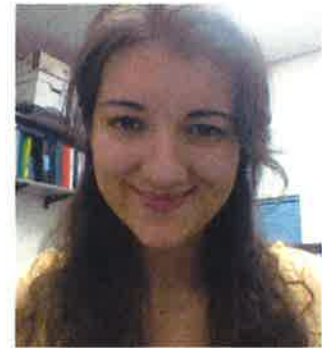
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Prabhjot is a medical graduate. Soon, Prabhjot will be starting his medical residency in Psychiatry. Prabhjot is currently heading a research project on Alzheimer's disease (AD) for Cognition Neuroimaging Lab at UA. The focus of his project is to have a better understanding of impact of family history as a risk factor on developing Alzheimer's disease. For this we are studying changes in gray and white matter volumes in brain in cognitively normal aging individuals with and without family history of AD.

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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.

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Ariana Stickel's present research investigates the relationship between body fat and brain structure in older adults. She is particularly interested in changes in white matter that may result from increased adiposity. Diffusion weighted imaging and voxel-based morphometry methods are being combined to study these processes. Further, the effects of these relationships on cognition will be studied using neuropsychological measures of executive functions, memory, and processing speed. Also important to these investigations are interactions of genes (e.g., the fat mass and obesity gene) and other physiological measurements (e.g., hypertension).

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Ms. Turk is a 4th years Arizona State University Neuroscience (ASU) graduate student in Dr. Huentelman's lab in the Neurogenomics Division at the Translational Genomics Research Institute (TGen) in Phoenix, Arizona. She received her undergraduate degree in Psychology from ASU in Tempe, AZ. The central goal of Ms. Turk's dissertation research is to determine whether Rho kinase (ROCK) inhibitors are a viable candidate as a preventative therapeutic for Alzheimer's disease. Fasudil, a ROCK inhibitor, was shown by Dr. Huentelman's laboratory in 2009 to increase learning and memory in healthy aging rodents. Additionally, Fasudil – and other ROCK inhibitors – were shown to alter hyperphosphorylation of tau protein at residues associated with neuronal tangles that are found in the Alzheimer's disease brain. Recently, TGen created several novel ROCK inhibitors and Ms. Turk is currently investigating their activity in vitro and in vivo in multiple models of cognitive aging and Alzheimer's disease.

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

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Ms. Wolfe is a Research Associate I in Dr. Huentelman's lab in the Neurogenomics Division at T-Gen. She joined T-Gen as an intern in December of 2013. She began working as a Research Associate in June of 2014 after receiving her undergraduate degree in Biology from Arizona State University. She is adept in tissue culturing, cloning, RNA/DNA/Protein isolation, western blotting, genotyping, library preparation, sequencing, and q-PCR assays. Her current work involves the in vitro modeling of age-related changes in the brain through the use of 3D co-cultures of neuronal and glial cells.

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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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Tony Yee's primary research interest investigates the interactions between cortical and sub-cortical regions involved in decision-making. Specifically, he is interested in how the Anterior Cingulate Cortex and the Dorsal Striatum compete and/or share a role in effortful decisions. Both regions have been found to share many similar cognitive functions and processes (e.g., effort/reward anticipation, action selection) yet each region has only been studied independently. Under the advisement of Stephen Cowen, Ph.D., Tony will explore both regions using simultaneous ensemble recordings in rats to see how groups of neurons interregionally linked to drive effortful decision-making.

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Dr. Tetsuo Ashizawa is the Executive Director of the Evelyn F. and William L. McKnight Brain Institute and Melvin Greer Professor at the University of Florida, Gainesville, Florida. Dr. Ashizawa received his medical degree from the Keio University School of Medicine in Tokyo in 1973. He completed his neurology residency training and subsequent clinical and basic science fellowships at Baylor College of Medicine. In 1981 he joined the faculty at Baylor, where he climbed to the academic rank of tenured Professor 1997. In 2002 Dr. Ashizawa was recruited to the University of Texas Medical Branch (UTMB) in Galveston, Texas to chair the Neurology Departments, and then moved to Gainesville, Florida in April 2009 as Chair of the Department of Neurology at UF. He has published over 200 papers including 185 original contributions in peer-reviewed scientific and clinical journals. Dr. Ashizawa's basic science research projects have primarily been focusing on neurogenetic disorders caused by expanded short tandem repeats, under over 20 years of federal grant funding. His current research focus is to investigate the pathogenic mechanism of spinocerebellar ataxia type 10 (SCA10), gene editing of the repeat expansion mutation in patient-derived disease-specific iPS cells and their differentiation, and clinical therapeutic trials of an antisense oligonucleotide for patients with myotonics dystrophy. Dr. Ashizawa also directs a nationwide consortium for clinical research on SCA1, SCA2, SCA3 and SCA6. This consortium has been one of the Rare Disease Clinical Research Consortia (RDCRC) organized and funded by the National Institute of Health (NIH). He is also a founder of the International Myotonic Dystrophy Consortium (IDMC), which has been held every 2 years under supports from NIH (R13), the Muscular Dystrophy Association, Association Française contre les Myopathies since 1997. At the American Academy of Neurology (AAN), Dr. Ashizawa was designated as the lead author of the Evidence Based Guideline for Myotonic Dystrophy, an effort supported by the Center of Disease Control through the AAN.

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Linda Bean is a fifth year graduate research assistant in the department of Neuroscience at the Evelyn F. and William L. McKnight Brain Institute. She graduated summa cum laude with a bachelor's degree in biological sciences from Eastern Illinois University in Charleston, Illinois in 2008, where she also worked as a graduate teaching assistant in a Molecular/ Cellular Biology laboratory before moving to Florida. Linda entered the Interdisciplinary Program (IDP) in Biomedical Sciences at the University of Florida in 2010 where she received the Alumni Graduate Program Award and the Grinter Fellowship Award. Linda subsequently joined the laboratory of Dr. Thomas Foster to pursue her particular interest in the effects of estrogen on memory loss during menopause. Her research investigates the mechanisms by which estrogens are known to provide protection from memory deficits seen with aging with specific attention directed toward the interaction of estrogen receptors with cellular functions and how these interactions alter behavior in aging female animal models.

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Sofia Beas is a Ph.D. graduate student in the department of Neuroscience at the Evelyn F. and William L. McKnight Brain Institute at the University of Florida, Gainesville, Florida. Sofia's research topic involves investigating the neural mechanism that mediate age-related alterations in prefrontal cortex and determining how these changes manifest in executive dysfunctioning. Specifically, she is interested in looking at the changes in the GABAergic and glutamatergic signaling.

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Dr. Jennifer Bizon is an Associate Professor in the Departments of Neuroscience and Psychiatry at the University of Florida, College of Medicine. She received her Bachelor of Science from the University of North Carolina at Chapel Hill (1993) and her Ph.D. in Neurobiology and Behavior from University of California, Irvine (1998). She received postdoctoral training at Johns Hopkins University (1998-2003) and then established her own laboratory at Texas A&M University prior to joining the University of Florida College of Medicine in 2010. Her research program is broadly focused on understanding brain aging and its implications for cognitive functions, including learning, memory, and executive processes. The central approach in her lab involves using animal models to better understand how aging alters corticolimbic inhibitory and neuromodulatory circuits, and how such alterations contribute to decline of function across multiple cognitive domains. A major goal of her NIH-funded laboratory is to determine how age-related shifts in the excitatory/inhibitory dynamics within prefrontal cortex impact executive functions, including working memory, cognitive flexibility, and decision making. Her research approach involves the consideration of individual differences in cognitive aging, which can be leveraged to identify and better understand the neural mechanisms that underlie both impaired and successful cognitive outcomes. The long-term goal of her research program is to develop therapeutic approaches that target effective compensatory strategies in order to facilitate the maintenance of cognitive capacities across the full lifespan. Dr. Bizon regularly reviews for NSF and NIH, is a Section Editor at *Neurobiology of Aging* and serves on the advisory board for the Alzheimer's Drug Discovery Foundation. She also currently serves as the Director of the Neuroscience concentration for the Interdisciplinary Graduate Program at the University of Florida College of Medicine.

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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.

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

Dr. Cohen is principal and co-investigator on multiple R01 grants from NIH over the past 15 years. In addition, he has chaired several NIH study sections, including the recent review group on MCI, and he 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.

Yenisel Cruz-Almeida, MSPH, Ph.D.

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Dr. Cruz-Almeida's research interests are related to the nervous system factors contributing to the observed inter-individual differences in clinical pain phenotypes in older adults and its functional consequences including cognitive and mobility impairments. The main goals of the lab are: 1) to identify CNS mechanisms accounting for the age-related increases in clinical pain; 2) to elucidate CNS mechanisms underlying the relationships between a) pain and physical function and b) pain and cognitive function; and 3) to test mechanism-based treatment approaches to alleviate clinical pain in older adults. We use multiple interdisciplinary and translational approaches including multi-modal neuroimaging, quantitative sensory psychophysics and systemic biomarker measurement. Dr. Cruz-Almeida has over 30 peer-reviewed publications, mostly in the field of pain. Her ongoing research efforts are supported by the National Institute of Aging (*K01 AG048259*), the University of Florida Clinical and Translational Science Institute (CTSI) (*UL1 TR000064*) and the University of Florida Older Adults Independence Center (*P30 AG028740*).

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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 & 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 researches adopts an aging perspective on emotion, motivation, and social cognition and thus is at the intersection of developmental, social, and cognitive psychology. 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 emotion regulation, health, 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.

Thomas C. Foster, Ph.D.

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

Charles J. Frazier, Ph.D.

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My lab is engaged in several projects focused on revealing detailed changes in cellular and synaptic physiology in the aged brain. One project tests the hypothesis that NMDA hypofunctions in individual dendritic spines of aged CA1 pyramidal cells is produced by increased activation of calcium gated potassium channels. Another project is revealing an age related shift in tonic inhibition in the medial prefrontal cortex that may help explain beneficial effects of a GABA_B receptor antagonist on working memory performance in age impaired animals. A third project is revealing cell type specific changes in evoked glutamatergic responses in aged mPFC. These projects have all been supported by our efforts to extend and improve technical approaches to studying single cells or synapses in acute brain slices extracted from aged animals, and most are conducted in collaboration with one or more colleagues at UF.

Amanda Garcia, B.S.

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Amanda Garcia is a fourth year doctoral student, working under the mentorship of Ron Cohen in the Center for Aging and Memory. Ms. Garcia's primary research interests include the cognitive and neural substrates underlying semantic memory in older adults. She is currently utilizing functional and structural MRI to examine semantic networks in this population. She is additionally investigating these networks from a cognitive perspective, using rating scales to study how associative memory contributes to semantic knowledge. This work extends previous research, identifying key semantic hub areas in the brain.

Lara Ianov B.S.

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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 third 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 & genetic factors involved in age-related memory decline. Her work involves Next-Generation Sequencing (NGS) technology and bioinformatics.

Sarah A. Johnson, Ph.D.

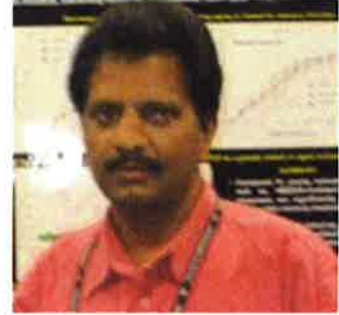
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Sarah Johnson is a Postdoctoral Research Associate in the laboratory of Dr. Sara Burke at the University of Florida. The goal of her research is to determine neural mechanisms underlying memory maintenance and the impact of aging on these processes. In particular, she is investigating the role of dynamic connectivity between the hippocampus and cortex in maintaining adaptive behavioral responses over time in a rodent model of aging. Her approach involves integrating behavioral measures of spatial and olfactory discrimination with multi-site in vivo electrophysiological recordings, complemented by molecular studies assessing gene expression induced by memory retrieval within hippocampal-cortical circuits.

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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 upregulations 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.

Kyle B. Kelly, Ph.D.

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Kyle Kelly is a third year doctoral candidate in the lab of Dr. Charles J. Frazier. We use electrophysiological and pharmacological methods to study changes in the aging rodent medial prefrontal cortex. Proper function of cognitive abilities is dependent upon an excitatory and inhibitory balance in this region, suggesting that there are multiple potential mechanisms behind age-related cognitive deficits, present in many older rats. Currently we are investigating the role of the NMDA and GABAB receptor found on both the pyramidal neurons and interneurons of the mPFC. By using single cell recording methods, we can specifically target the various subpopulations of neurons. This in turn can lead to better mechanistic understanding of age-related synaptic changes.

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I am translating my computational modeling background (research using biophysical models of small neuronal networks which showed how relationships between ionic currents modulated behavioral output) to translational research. I am presently collaborating on several projects, one investigating the relationship between white matter injury in emotional processing, and the other investigating alterations to the allocation of spatial attention by aging and stroke. I am also helping to setup processing pipelines for neuroimaging data leveraging our cluster computing environment.

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Dr. Andrew Maurer is an Assistant Professor at the University of Florida. His present research interests include how anatomical changes associated with normal aging affect neural dynamics and the finding potential targets of therapeutic intervention. Current research involves the development of algorithms for neurophysiological data analysis and novel behavioral apparatuses to assay performance declines across the lifespan.

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

Leonid L Moroz, Ph.D.

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Dr. Leonid Moroz is a Distinguished Professor of Neuroscience, Biology, Chemistry and Genetics at the University of Florida. His interdisciplinary research utilizes a combination of molecular, physiological, computational and comparative approaches to decipher (i) genomic bases of neuronal identity and plasticity in memory circuits, and (ii) the origins neurological impairments during age-related memory loss.

The long-term objective of Dr. Moroz' program is to understand fundamental aspects of mechanisms of integrative activity of genome in neurons as they learn and remember, focusing on individually identified neurons in memory-forming circuits and mechanisms of long-term memory persistence; and the origins and evolution of nervous systems using comparative approaches. To achieve these objectives he develops new tools and methods of single-cell epigenomics to monitor expression and activity of nearly all genes and regulatory elements in any single neuron of a given circuit – an approach that has enabled innovative experimental approaches to long-standing questions in neuroscience and the cellular bases of behavior. In doing so he brings to bear, when necessary, concepts or techniques from other disciplines. Recently, Dr. Moroz performed the first genome-wide DNA methylation profiling at the single-cell level and with single base resolution; he demonstrated that fascillatory transmitters induce active and rapid DNA demethylation via formation of 5-hydroxymethylcytosine (the 6th base in DNA), suggesting a critical role for massive genomic-wide demethylation in neuroplasticity. He also provided evidence for linking age-related memory decline with neuron-specific chromatin remodeling, signifying the role of epigenetic mechanisms in differential aging of neuronal subpopulations.

Dr. Moroz is consistently at the forefront of both genomics and neuroscience, as evidenced by his publications in the prominent journals (*Nature*, *PNAS*, *Cell*, *Neuron*) as well as media coverage of his research. The evolutionary approach, that he promotes, is less developed in modern neuroscience. However, it is crucial to understand how complex networks and brains are formed or to answer “*why*” questions (e.g. why different subsets of signal molecules were selected in distinct neuronal circuits, or why different neurons “come together” to form a given memory-forming circuit). His recent studies strongly suggest that neurons evolved more than once and, surprisingly, complex brains independently formed at least 9 times in evolution. Sequencing at the sea and space genomics are his recent projects.

Dr. Moroz has been continuously funded through NIH as a PI since 1999 with over 120 publications including those on single-neuron genomics of differential aging. He is currently the principle investigator on 5 grants including two NIH, NSF, and NASA awards. Dr. Moroz mentors five Ph.D. students and leads 10 large-scale genome sequencing projects

Lucia Notterpek, Ph.D.

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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 received a B.A. in Anatomy-Physiology from the University of California at Berkeley. She obtained her Ph.D. in Neuroscience at the University of California at Los Angeles in 1994, working with Dr. Leonard H. Rome. Her postdoctoral training was under the guidance of Dr. Eric Shooter at Stanford University. Dr. Notterpek was recipient of the 2004 Jordi Folch-Pi Memorial Award, from the American Society of Neurochemistry, which is awarded to young scientist for research excellence. 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.

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.

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Marco Pahor, M.D., is the director of the University of Florida Institute on Aging, and the founding chairman of the department of aging and geriatric research in the UF College of Medicine. Pahor is an internationally recognized expert on population-based studies, clinical trials and multidisciplinary translational research in the fields of aging and disability. Dr. Pahor has an excellent publication record, having authored or co-authored more than 320 papers in leading peer-reviewed journals. He has an extensive portfolio of grants from the National Institutes of Health and other agencies, and is leader in education, serving as director of faculty mentoring programs of the Claude D. Pepper Older Americans Independence Center.

Pahor served on the Physical Exercise Task Force and the Aging Clinical Trials Advisory Panel of the National Institute on Aging. He has served as an editor for a number of academic journals, including *Aging, Clinical and Experimental Research*, the *Journal of the American Geriatrics Society*, the *Journal of Gerontology: Medical Sciences* and the *Journal of Nutrition, Health and Aging*. He has served on numerous NIH grant and program review panels.

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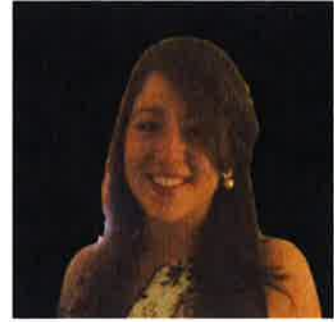


Dr. Porges completed his doctoral training at the University of Chicago, in the field of Integrative Neuroscience, under the mentorship of Dr. Jean Decety. His dissertation focused on individual differences in central and peripheral response to social stressors, with a specific emphasis on functions of the autonomic nervous system in modulating these responses. His research has employed many methods, with intensive training in functional neuroimaging, characterization of autonomic nervous system responses, as well as methods for measuring behavior and affective states and experiences.

Dr. Porges is currently a Postdoctoral Fellow at the Cognitive Aging and Memory Program and Clinical Translational Research Program (CAM-CTRP), in the Institute on Aging, at the University of Florida. His primary mentor is Dr. Ron Cohen. Under Dr. Cohen's mentorship his work utilizes magnetic resonance spectroscopy to explore the contribution of GABA to cognitive aging. Recently his work has extended into a second area, involving the study of cognitive, affective and autonomic modulation via transcutaneous vagal nerve stimulation (tVNPS).

Lindsey Anne Richards, B.S.

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Lindsey Richards is a research assistant and study coordinator in the Cognitive Aging & Memory Clinical Translational Research Program (CAM-CTRP). She is working on her Masters in Mental Health Counseling while conducting The Urinary Tracts Infection/ Thinking and Memory Study (UTRACK). The UTRACK study will investigate potential underlying mechanisms of co-occurring urinary tract infection and cognitive impairment in older adults. This pilot study will be conducted at UF Health Shands Emergency Room and Trauma Center in April 2015. The study will encompass a cognitive battery to assess cognitive ability, intelligent, physical health, and quality of life. The study will gather preliminary data on structural and functional health of the brain. Blood-based protein biomarkers will be collected to identify blood brain barrier integrity, inflammation, and brain injury. The UTRACK research integrates Lindsey's fascination in the brain and compassion for the elder community.

Kimberly T. Sibille, M.A., Ph.D.

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Dr. Sibille's research interests and investigative pursuits are associated with the interactive influences of biological, psychological, cognitive, behavioral, and social factors specific to osteoarthritis and other musculoskeletal chronic pain conditions with a focus on aging, resilience factors, and optimizing treatment response. Chronic pain is taking a toll on individuals, communities, the healthcare system, and is experienced with increased prevalence in older adults. Significant individual variability and lack of pathophysiological targets contribute to poor prevention and clinical treatment interventions. Prior research efforts have investigated individual inflammatory and neuroendocrine measures in response to acute pain; however, the biological consequences of chronic pain and associated psychosocial stress are poorly understood. Identifying biopsychosocial markers associated with chronic pain and aging would have significant clinical and research utility. Her overall research intentions are to elucidate biological markers of system burden in osteoarthritis and other pain-related conditions, delineate resilience and vulnerability targets for prevention and treatment, and establish a composite of biomarkers for evaluating the efficacy of clinical interventions.

John B. Williamson, Ph.D.

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

Adam J. Woods, Ph.D.

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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. Dr. Woods is also the director of the CAM Neurophysiology and Neuromodulation Research Core. His active program of research investigates 1) precursors and neuroimaging-based biomarkers of cognitive impairment in older adults and 2) non-invasive interventions to combat 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. His background, experience, and training include cognitive aging, non-invasive brain stimulation methods (transcranial direct current stimulation [tDCS] and transcranial magnetic stimulation [TMS]), neurophysiology, and human magnetic resonance neuroimaging. His ongoing research includes studies using tDCS to enhance the effectiveness of cognitive training and investigations of the role of neuroinflammation in the development of cognitive frailty.

McKnight Brain Research Foundation Inter-Institutional Meeting Participants



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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 impotent role in a wide range of neurological problems, including hydrocephalous and stroke. Since joining the University of Miami, Dr. Alperin' Advance Image Processing laboratory is working closely with the Evelyn F. McKnight Center for Age Related Memory Loss, using different MRI modalities to characterize and quantify morphologic and physiologic changes in the brain associated with aging as well as the coupling between age related brain tissue volume loss and cerebral blood flow decrease.

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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.

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Dr. Barrientos is interested in the basic processes underlying the biogenesis of the mitochondrial respiratory chain (MRC) and how they bear on human neuromuscular and neurodegenerative disorders and during the aging process. We use yeast and mammalian cell culture models for our research

Three of the research lines in the lab involve:

- 1- We intend to delineate the assembly process of the enzymes composing the MRC, with special emphasis in cytochrome *c* oxidase (COX). COX deficiency is the most frequent cause of mitochondrial neuromyopathies in humans and has been shown to decline with age.
- 2- We are interested in the creation of yeast and neuronal models of age-related human neurodegenerative disorders (including Huntington's disease and Parkinson's disease). This will help us study the alterations in mitochondrial physiology that could be essential for the pathogenic mechanism of such disorders.
- 3- We have created novel yeast models of chronological aging that are being used to explore the role of mitochondrial function in the aging-disease relationship. The results obtained are being validated in mammalian neuronal aging models.

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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 Harlan Cohan, B.S.

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

Elizabeth Crocco, M.D.

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Dr. Elizabeth Crocco received her M.D. from Robert Wood Johnson Medical School/Rutgers University in Piscataway, New Jersey. She then completed her residency training in general psychiatry at The Mount Sinai Medical Center in New York. She specializes in geriatric psychiatry, and completed her fellowship at University of Miami/Jackson Memorial Hospital. Dr. Crocco is currently the Chief of Geriatric Psychiatry in the Department of Psychiatry and Behavioral Sciences at the Miller School of Medicine. As the Medical Director of the University of Miami Memory Disorder Clinic, within the University of Miami's Center on Aging she oversees the coordination of clinical services at the MDC. As a clinical scientist she also participates in research on caregiving and the development of measures to diagnosis MCI and PRE-MCI. She also serves as the geriatric psychiatry training director at Jackson Memorial Hospital and facilitates the primary training and supervision of all geriatric psychiatry fellows, psychiatry residents, medical students and other physicians/health care professionals.

Sara J. Czaja, Ph.D.

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

Dr. Czaja has extensive experience in aging research and a long commitment to developing strategies to improve the quality of life for older adults. Her research interests include: aging and cognition, aging and healthcare informatics, caregiving, older workers, human-computer interaction, training, and functional assessment. She has received extensive funding from the National Institutes of Health as well as other federal agencies and foundations for her research. Dr. Czaja is very well published in the field of aging and has written numerous book chapters and scientific articles. She recently co-authored a book with other members of the CREATE team concerning the design of technology systems for older adult populations and a book on training older adults. She is a fellow of the American Psychological Association, the Human Factors and Ergonomics Society and the Gerontological Society of America. In addition, she is the current president of Division 20 (Adult Development and Aging) of the American Psychological Association. She is also a member of the National Academy of Science/National Research Council Board on Human Systems Integration and is serving on an Institute of Medicine (IOM) Committee on Healthy Cognitive Aging and an IOM Committee on Family Caregiving for Older Adults.

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

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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, Sc.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.

Carolina Gutierrez, Ph.D.

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Dr. Gutierrez obtained her PhD in Neuroscience at Tulane University. Her professional experiences include administrative (grants development and management), and programmatic (project design, implementation, and management) roles. She has worked in basic neuroscience, injury prevention, health promotion, and emergency management. Currently she sits as the Administrative Director in the Department of Neurology at the University of Miami Miller School of Medicine, where the focus of her work is on stroke prevention and rehabilitation, stroke health disparities, physical activity, and translational science.

Hong Jiang, M.D., Ph.D.

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Hong Jiang, MD PhD is an Assistant Professor of Neurology and Ophthalmology at the University of Miami. She earned her undergraduate medical degree from Zhejiang University in Hangzhou, China. She received her PhD at University of Hong Kong in Hong Kong, China. Dr. Jiang completed her Neurology residency training at Jackson Memorial Hospital/University of Miami in Miami, and the 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 the 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 recent awarded a pilot grant to study the "Retinal microvascular alteration as a possible biomarker in Alzheimer's disease" funded by North American Neuro-Ophthalmology society (NANOS).

Dr. Jiang is the member of North American Neuro-Ophthalmology Society (NANOS), American Academy of Neurology (AAN), 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.

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Dr. Lin's main research interest is the study of neuronal control on cerebral blood vessels in the brain to improve cognitive and functional outcomes after cerebral ischemia. He is a trained cardiovascular pharmacologist completing a postdoctoral fellowship at the University of Miami thereupon, joining the faculty in 2013. Dr. Lin is an avid dog lover and is into motorsports.

Teshamae S Monteith, M.D., FAHS
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Dr. Monteith is an Assistant Professor of Clinical Neurology. She is Chief of the Division of Headache in the Department of Neurology. She also has clinics at the Advanced Institute for Pain Management. Dr. Monteith's research focus is on migraine and chronic disease states including chronic migraine and concussion. Her research focuses on neurometabolite distributions of chronic migraine and associations with indicators of clinical severity, including psychosocial impact.

She was awarded a National Institutes of Health (NINDS) supplement award to promote diversity in health-related research to study migraine and vascular risk factors, and complications such as silent brain infarcts, white matter lesions, and stroke. She is also the site PI for clinical trial aimed to investigate the use of CGRP antibodies for the treatment of both episodic and chronic cluster headache. She is a member of the American Headache Society Association, the American Academy of Neurology, and the International Headache Society. She is a board member of the Florida Society of Neurology.

Carlos T. Moraes, Ph.D.
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Carlos T. Moraes, PhD is a Professor in the Department of Neurology with a secondary appointment in Cell Biology at the University of Miami, Leonard M. Miller School of Medicine. During his Ph.D at Columbia University he and other colleagues in the group identified large mitochondrial DNA deletions in patients with ocular myopathies. These initial observations were followed by the identification of several novel mutations in the mitochondrial genome in patients with different clinical phenotypes. Following a short postdoctoral period still at Columbia University he relocated to Miami in 1993 to start an independent research group on mitochondrial genetics. At the University of Miami he continued his work on mitochondrial diseases, developing genetic approaches to treat mitochondrial disorders and expanded to study nuclear mitochondrial interactions and the role of mitochondria in aging and neurodegenerative diseases, including Alzheimer's. Dr. Moraes has and continues to serve on several NIH and The Muscular Dystrophy Association grant review panels. He is currently the chair of the Scientific and Medical Advisory Board of the United Mitochondrial Disease Foundation.

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

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

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. 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. Raval Ami serves as Research Assistant Professor in the Department of Neurology at the University of Miami, Miller School of Medicine. She had previous training in the physiology of reproduction. She coupled her prior knowledge with laboratory research on the pathophysiology of stroke. Her research focuses on (1) understanding the effects of estrogen on neuronal survival after ischemic episode, and (2) the role of nicotine addiction on beneficial effects of estrogen on hippocampal neurons subjected to ischemia. The results of her laboratory research indicate that nicotine addiction makes females more susceptible to ischemic brain damage. The severity of ischemic brain damage is far greater in females simultaneously exposed to oral contraceptives than to nicotine only. Overall her study aim to identify the mechanism of deleterious effects of nicotine that are unique to the female brain and the acquired knowledge will guide us towards novel pharmacological strategies specific for women

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

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

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

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

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

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

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

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

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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 finished Neurology residency from Medical University of South Carolina in United States. She completed cognitive/behavioral neurology fellowship in VA Boston Healthcare System.

Her research activities have 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 effort is dedicated to identify the biomarkers for diagnosis of AD. She is invited to be a reviewer for multiple journals on Alzheimer's research. Currently, she provides clinical care to the patients with cognitive disorders, actively develops educational programs for resident and research assistant in McKnight Brain Institute. In addition, she continues to carry out research projects of Alzheimer's disease.

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

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

Juan Young, Ph.D.

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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.

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I am an epidemiologist and my research focuses on the social and cardiovascular determinants of outcomes as people age. My research also focuses on how to use novel statistical methods to address important research questions while leveraging existing data. To that end, I was trained as a social epidemiologist and graduated in 2011 with my doctorate from the University of Michigan School of Public Health where I received an excellence award from the Center on Social Epidemiology and Population Health. As part of my dissertation work, I examined life course determinants of minorities' health. I later joined the University of California San Francisco (UCSF) where I was awarded a 2-year postdoctoral fellowship jointly funded by the American Heart Association, American Stroke Association, and American Brain Foundation to conduct research on how subclinical cardiovascular disease measures influence outcomes in older age. I am currently an Assistant Professor of Epidemiology at the University of Miami, and I hold a 5-year K01 Award from the National Institute on Aging.



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