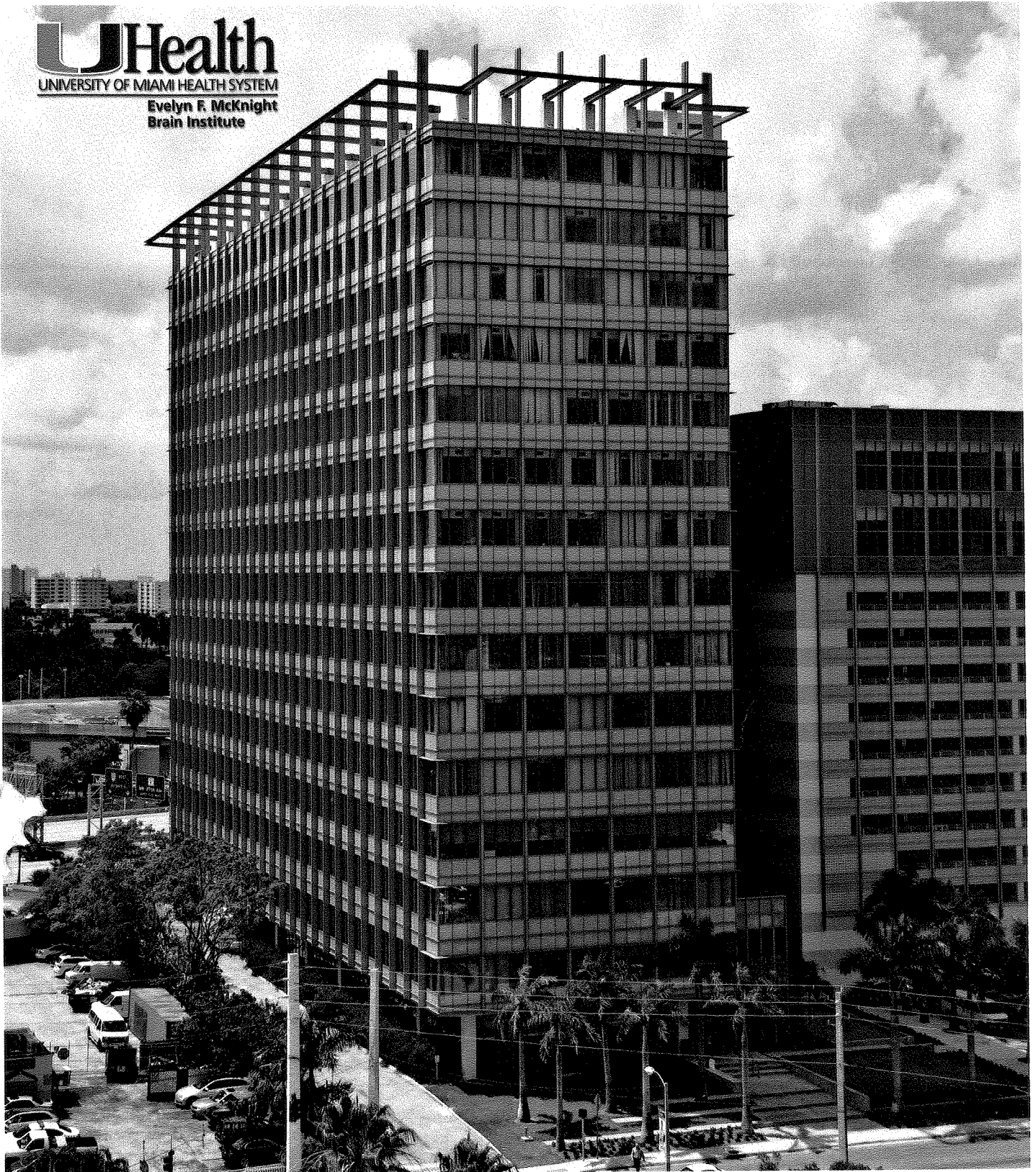


UHealth
UNIVERSITY OF MIAMI HEALTH SYSTEM
Evelyn F. McKnight
Brain Institute



“Reducing the Risk of Age-Related Memory Loss”

**MCKNIGHT BRAIN RESEARCH FOUNDATION
FOURTH INTER-INSTITUTIONAL MEETING
UNIVERSITY OF MIAMI, MIAMI FLORIDA
MAY 1-3, 2011**



Fourth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

“Reducing the risk of age-related memory loss”

Sunday, May 1st to Tuesday, May 3rd, 2011

University of Miami

Sunday, May 1, 2011

3:00 -5:15 p.m.

Registration Opens
Pre-function Area
Mediterranean Center Foyer

5:30 p.m. – 7:00 p.m.

Welcome Reception - located at pool deck
Miami Beach Resort and Spa
4833 Collins Ave
Miami Beach Florida 33140
(305) 532-3600

(Dinner at leisure)

Ralph L. Sacco, M.S., M.D., F.A.A.N., F.A.H.A. - Introductions
Executive Director, Evelyn F. McKnight Brain Institute
University of Miami Miller School of Medicine

Donna E. Shalala, Ph.D.
President, University of Miami

John G. Clarkson, M.D.
Trustee, McKnight Brain Research Foundation
Dean Emeritus, University of Miami Miller School of Medicine

Clinton B. Wright, M.S., M.D. – Program preview
Scientific Director, Evelyn F. McKnight Brain Institute
University of Miami Miller School of Medicine

Fourth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

Monday, May 2, 2011

7:00 a.m. - 8:30 a.m. Buffet breakfast for participants
Grand Promenade Room

8:00 a.m. - 8:45 a.m. Registration
Pre-function Area
Mediterranean Center Foyer

8:55 a.m. - 9:10 a.m. Welcome
Mediterranean Center Ballroom

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

Pascal J. 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 System

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

Opening Remarks
Clinton B. Wright, M.S., M.D.
Scientific Director, Evelyn F. McKnight Brain Institute
Department of Neurology
University of Miami Miller School of Medicine

SESSION I – Speakers **Modifiable Vascular Risks in Cognitive Aging**

9:10 a.m. - 9:30 a.m. *“Ideal Cardiovascular and Brain Health”*
Ralph L. Sacco, M.S., M.D., F.A.A.N., F.A.H.A.
Executive Director, Evelyn F. McKnight Brain Institute
Chairman, Department of Neurology
University of Miami Miller School of Medicine

Fourth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

Monday, May 2, 2011 (continued)

- 9:30 a.m. – 9:50 a.m.** *"Cognitive Correlates of Cardiometabolic Syndrome"*
Bonnie E. Levin, Ph.D.
Schoninger Associate Professor of Neurology
Evelyn F. McKnight Brain Institute
University of Miami Miller School of Medicine
- 9:50 a.m. – 10:10 a.m.** *"The Spectrum of Vascular Cognitive Disorders"*
Michael F. Waters, M.D., Ph.D.
Assistant Professor of Neurology and Neuroscience
William L. and Evelyn F. McKnight Brain Institute, University of Florida
- 10:10 a.m. – 10:30 a.m.** *"Impact of Hypertension and Aerobic Fitness on Cognitive Aging"*
Gene E. Alexander, Ph.D.
Professor, Department of Psychology and
Evelyn F. McKnight Brain Institute
School of Mind, Brain and Behavior, University of Arizona
- 10:30 a.m. – 10:45 a.m.** Panel Discussion
- 10:45 a.m. – 11:00 a.m.** Break
Mediterranean West Ballroom
- DATA BLITZ I: Neurobiology of Memory**
10 minute Mini Talks
- Moderator:** **Thomas C. Foster, Ph.D.**
Professor and McKnight Chair for Research on Aging & Memory
Department of Neuroscience
William L. and Evelyn F. McKnight Brain Institute, University of Florida
- 11:00 a.m. - 11:10 a.m.** *"Basal Forebrain Systems and Age-related Cognitive Decline"*
Jennifer L. Bizon, Ph.D.
Associate Professor, Department of Neuroscience
William L. and Evelyn F. McKnight Brain Institute, University of Florida

Fourth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

Monday, May 2, 2011 (continued)

- 11:10 a.m. - 11:20 a.m.** *"Influence of an active lifestyle on memory and senescent physiology: Rejuvenation through neural activity"*
Ashok Kumar, Ph.D.
Research Assistant Professor, Department of Neuroscience
William L. and Evelyn F. McKnight Brain Institute, University of Florida
- 11:20 a.m. - 11:30 a.m.** *"Loss of astrocyte regulated potassium and glutamate homeostasis in pathophysiology"*
Michelle Olsen, Ph.D.
Assistant Professor, Department of Physiology & Biophysics
Investigator, Evelyn F. McKnight Brain Institute
University of Alabama at Birmingham
- 11:30 a.m. - 11:40 a.m.** *"Klotho Protein in Aging-related Memory Dysfunction"*
Gwendalyn King, Ph.D.
Assistant Professor, Department of Neurobiology
Investigator, Evelyn F. McKnight Brain Institute
University of Alabama at Birmingham
- 11:40 a.m. - 11:50 a.m.** *"Improved Automated Ventricular Segmentation by Combining FreeSurfer and Guided Morphological Filter"*
Ahmet Murat Bagci, Ph.D.
Senior Research Associate, Department of Radiology
Evelyn F. McKnight Brain Institute
University of Miami Miller School of Medicine
- 11:50 a.m. - 12:00 p.m.** *"Prefrontal cortex function and decision making in aging rats"*
Nathan Insel, Ph.D.
Postdoctoral Research Associate
Evelyn F. McKnight Brain Institute
University of Arizona
- 12:00 p.m. - 1:00 p.m.** ***Lunch & Learn***
Mediterranean West Ballroom
- 12:30 p.m. - 1:00 p.m.** *"Education Initiatives in Age-related Memory Loss"*
Richard S. Isaacson, M.D.
Education Director, Evelyn F. McKnight Brain Institute
University of Miami Miller School of Medicine

Fourth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

Monday, May 2, 2011 (continued)

1:00 p.m. – 1:15 p.m.

Shuttles Depart to University of Miami for Tour
Pickup outside lobby area – street level

2:00 p.m. – 2:15 p.m.

**Welcome to McKnight Brain Institute at the University of Miami
Miller School of Medicine**
Clinical Research Building - 6th Floor Executive Center

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

2:15 p.m. – 3:15p.m.

Keynote Speaker
"The science of vascular dementia"
Costantino Iadecola, M.D.
George C. Cotzias Distinguished Professor of Neurology and Neuroscience
Chief, Division of Neurobiology
Department of Neurology and Neuroscience
Weill Cornell Medical College
Attending Neurologist, New York-Presbyterian Hospital

3:15 p.m. – 4:15p.m.

McKnight Brain Institute - Group tours

- Neurology Laboratory & Scheinberg Cerebrovascular Lab (TSL) *
Drs. Moraes, Defazio and Perez-Pinzon
- Hussman Institute for Human Genomics
Drs. Blanton, Hedges and McCauley
- Brain Imaging Tour –Evelyn F. McKnight Brain Institute (CRB) 13th Floor
Conf. room # 1381
Drs. Alperin and Nahab

4:15p.m.

Shuttle service to Hotel
Pickup in front of Clinical Research Building (CRB)

Fourth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

Monday, May 2, 2011 (continued)

- 6:30 p.m. - 7:00 p.m. **Board Ship & Set Sail**
“Biscayne Lady” –docked across the street from hotel
- 7:00 p.m. - 7:30 p.m. Cocktail Reception
- 7:30 p.m. - 10:30 p.m. Dinner – Biscayne Lady
Touring Miami Bay

Fourth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

Tuesday May 3, 2011

- 7:30 a.m. - 8:55 a.m. Buffet Breakfast
Pre-function Area
Grand Promenade Room
- 8:00 a.m. - 9:00 a.m. Private Breakfast & meeting of Trustees, McKnight Directors, Endowed
Professors and Endowed Chairs
Miramar North Conference Room
- 9:00 a.m. Sessions begin - *Mediterranean Center Ballroom*

SESSION II - Speakers Brain Fitness and Targets for Intervention

- 9:00 a.m. - 9:20 a.m. *"The Age-protective Effects of Mindfulness Training on Working Memory and
Attention"*
Amishi P. Jha, Ph.D.
Associate Professor, Department of Psychology
Evelyn F. McKnight Brain Institute
University of Miami Miller School of Medicine
- 9:20 a.m. - 9:40 a.m. *"Visual Cognition in Aging"*
David S. Geldmacher, M.D., F.A.C.P.
Collat Endowed Professor of Neurology
Director of the Division of Memory Disorders and Behavioral Neurology
Investigator, Evelyn F. McKnight Brain Institute
University of Alabama at Birmingham
- 9:40 a.m. - 10:00 a.m. *"Increased mitochondrial metabolism protects cells during aging"*
Carlos T. Moraes, Ph.D.
Professor of Neurology and Cell Biology and Anatomy
Evelyn F. McKnight Brain Institute
University of Miami Miller School of Medicine

Fourth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

Tuesday May 3, 2011 (continued)

10:00 a.m. – 10:20 a.m. *“Project VITAL: Does pre-dosing with exercise affect behavioral plasticity associated with cognitive training?”*

Michael Marsiske, Ph.D.

Associate Professor and Associate Chair for Research
Department of Clinical and Health Psychology
University of Florida

&

Dawn Bowers, Ph.D.

Professor, Department of Clinical and Health Psychology
William L. and Evelyn F. McKnight Brain Institute, University of Florida

10:20 a.m. – 10:35 a.m. Panel Discussion

10:35 a.m. – 11:00 a.m. Break - *Mediterranean West Ballroom*
Check out - *Lobby*

Data Blitz II: Human Cognition **10 minute Mini Talks**

Moderator:

Carol A. Barnes, Ph.D.

Director, Evelyn F. McKnight Brain Institute
Regents' Professor, Psychology and Neurology
Evelyn F. McKnight Chair for Learning and Memory in Aging
University of Arizona

11:00 a.m. - 11:10 a.m. *“Symptom Dimensions of Depression and Working Memory-related Neural Activity in Older Adults”*

Vonetta Dotson, Ph.D.

Assistant Professor, Department of Clinical & Health Psychology
College of Medicine, University of Florida

11:10 a.m. – 11:20 a.m. *“The effects of distraction and interruption forms of interference on recognition memory”*

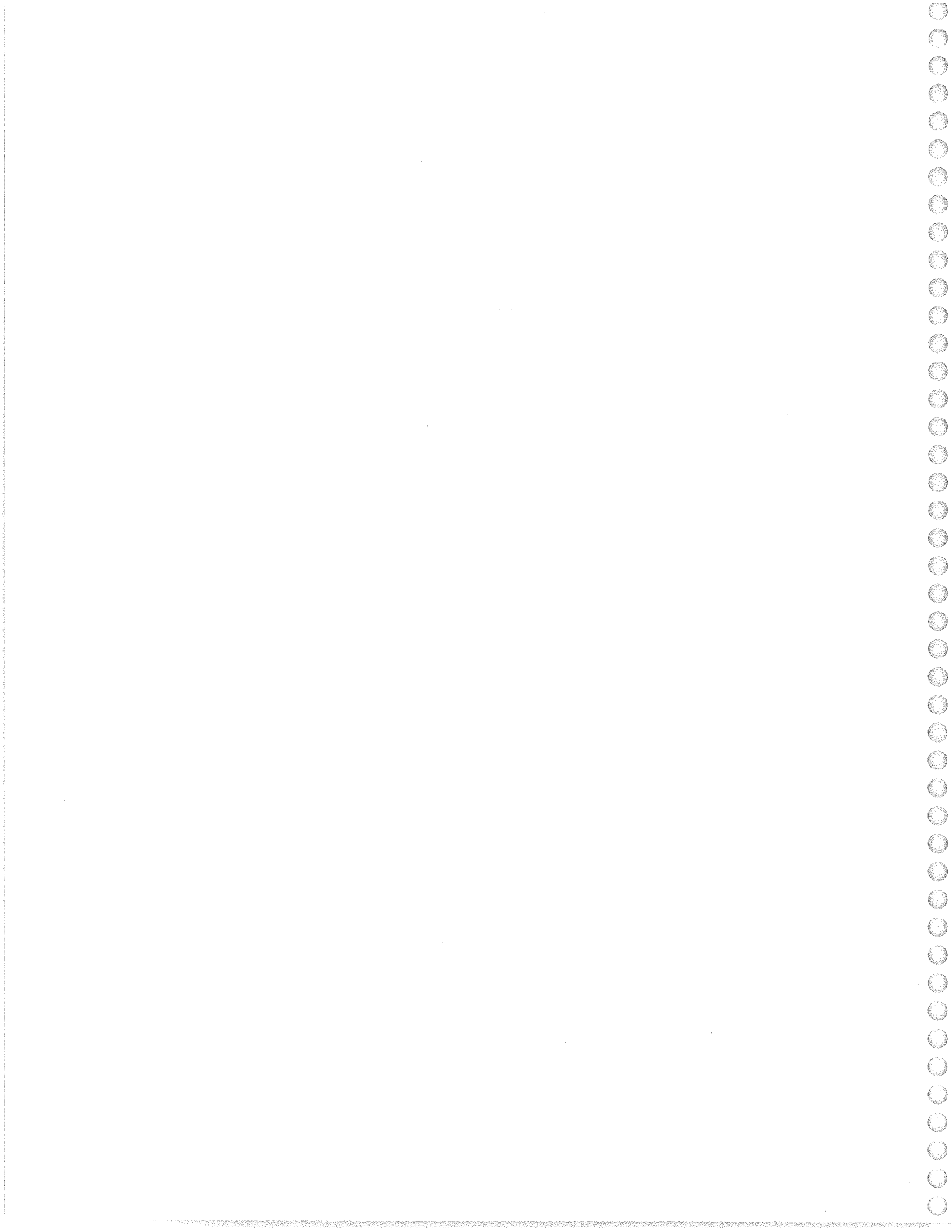
Sara N. Burke, Ph.D.

Postdoctoral Research Associate
Evelyn F. McKnight Brain Institute
University of Arizona

Fourth Annual McKnight Brain Research Foundation Inter-Institutional Meeting

Tuesday May 3, 2011 (continued)

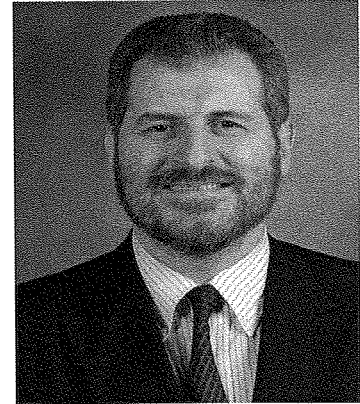
- 11:20 a.m. – 11:30 a.m.** *“Networks of gray and white matter in healthy aging”*
Kaitlin L. Bergfield, B.S.
Graduate Associate
Evelyn F. McKnight Brain Institute
University of Arizona
- 11:30 a.m. – 11:40 a.m.** *“Functional compensation in older adults: Varying task difficulty in an fMRI source memory task”*
Lee Ryan, Ph.D.
Associate Professor, Departments of Psychology and Neurology
Evelyn F. McKnight Brain Institute
University of Arizona
- 11:40 a.m. -11:55 a.m.** Concluding Remarks
- Clinton B. Wright, M.S., M.D.**
Scientific Director, Evelyn F. McKnight Brain Institute
Department of Neurology
University of Miami Miller School of Medicine
- J. Lee Dockery, M.D.**
Trustee, McKnight Brain Research Foundation
- 11:55 a.m. – 12:05 p.m.** *Box Lunch – Pick up at Mediterranean West Ballroom*
- 12:10 p.m.** Departure
- 12:15 p.m. - 5:00 p.m.** Private Board Meeting/Luncheon
Miramar North Conference Room



Keynote Speaker

Costantino Iadecola, M.D.

George C. Cotzias Distinguished Professor of Neurology and Neuroscience
Chief, Division of Neurobiology
Department of Neurology and Neuroscience
Weill Cornell Medical College
Attending Neurologist, New York –Presbyterian Hospital
Phone: 646 -962-8279
Email: coi2001@med.cornell.edu



Dr. Iadecola is a clinician-scientist who is an internationally-recognized expert in the field of cerebrovascular diseases and stroke. His research focuses on the basic mechanisms by which the brain suffers and dies when its blood supply is compromised, leading to stroke and dementia, and in developing new therapies for these devastating conditions.

Biography

Costantino Iadecola is the G. C. Cotzias Distinguished Professor of Neurology and Neuroscience and Chief of the Division of Neurobiology at Weill Cornell Medical College, New York City.

Dr. Iadecola received the MD degree from the University of Rome, Italy, in 1977, wherein he pursued neurology training with Prof. Cesare Fieschi. In 1980, he joined Cornell University first as a post-doctoral fellow with Dr. Donald Reis, and then as Neurology Resident with Dr. Fred Plum. In 1990, Dr. Iadecola was recruited to the Department of Neurology of the University of Minnesota by Dr. Richard Price. He rose through the academic ranks serving as Professor and Vice-Chair for Research from 1997 to 2001. In 2001, Dr. Iadecola was recruited back to Cornell to his current post, previously held by his mentor Dr. Reis.

Dr. Iadecola's research focuses on the mechanisms of normal and abnormal cerebrovascular regulation, and on the molecular pathology of ischemic brain injury and neurodegeneration. A major area of interest deals with the interactions between cardiovascular risk factors, stroke and Alzheimer's disease. His laboratory is a fertile training ground for junior faculty, post-doctoral fellows, graduate and medical students. Dr. Iadecola has published over 200 papers in peer-reviewed journals. He is active in several national and international research organizations and funding agencies. He has served on the Research Committee of the American Heart Association (AHA) and on the Stroke Council. He has chaired the Program Committee of the International Stroke Conference. He participates in focus groups and review committees at the NIH. He is President (Chair) of the Scientific Advisory Committee of the Fondation Leducq and is an advisor to the Canadian Stroke Network, the European Stroke Network, the German Stroke Network and for the Institute of Stroke and Dementia Research. Dr. Iadecola has served as Associate Editor (2000-2010) and is currently Consulting Editor for *Stroke*, the leading journal for cerebrovascular diseases, and Reviewing Editor for the *Journal of Neuroscience*, the official journal of the Society for Neuroscience. He serves as Guest Editor for *Circulation* and for the

Proceeding of the National Academy or Sciences. He is a member of the editorial board of the *Annals of Neurology*, the *American Journal of Physiology (Heart and Circ. Physiol.)*, *Cerebrovascular Diseases*, and the *Journal of Cerebral Blood Flow and Metabolism*. He has received the Laurence McHenry Award from the American Academy of Neurology, the Louis Sklarow Memorial Award, the Established Investigator Award from the AHA, the Jacob Javits Award from National Institute of Neurological Disorders and Stroke, NIH. In 2009, Dr. Iadecola received the Willis Award, the highest honor bestowed by the AHA, in recognition of his outstanding accomplishments in the field of stroke and cerebrovascular diseases. Since the 1980s, his work has been consistently funded by the NIH and the American Heart Associat

Evelyn F. McKnight Brain Institute Meeting Participants

University of Alabama at Birmingham

Michael Brenner, Ph.D.
Professor
Department of Neurobiology
Evelyn F. McKnight Brain Institute

Tara M. DeSilva, Ph.D.
Assistant Professor
Center for Glial Biology in Medicine
Department of Physical Medicine and
Rehabilitation
and Department of Neurobiology

Lynn Dobrunz, Ph.D.
Associate Professor
Department of Neurobiology
Evelyn F. McKnight Brain Institute

David Geldmacher, M.D., FACP
Charles and Patsy Collat
Endowed Professor of Neurology
and Director of the Division of Memory
Disorders and Behavioral Neurology
Investigator, Evelyn F. McKnight Brain
Institute

John J. Hablitz, Ph.D.
Professor and Vice-Chair,
Department of Neurobiology
Evelyn F. McKnight Brain Institute

Felecia Hester, MBA
Research Associate
Department of Neurobiology

Gwendalyn King, Ph.D.
Assistant Professor
Department of Neurobiology
Investigator, Evelyn F. McKnight Brain
Institute

David C. Knight, Ph.D.
Assistant Professor
Department of Psychology

Robin AJ Lester, Ph.D.
Associate Professor
Department of Neurobiology

Farah D. Lubin, Ph.D.
Assistant Professor
Department of Neurobiology and Cell
Biology
Evelyn F. McKnight Brain Institute

Lori McMahon, Ph.D.
Professor
Department of Physiology & Biophysics
Evelyn F. McKnight Brain Institute

James H. Meador-Woodruff, M.D.
Heman E. Drummond Professor and Chair
Department of Psychiatry

Michelle Olsen, Ph.D.
Assistant Professor
Department of Physiology and Biophysics
Investigator, Evelyn F. McKnight Brain
Institute

Erik Roberson, M.D., Ph.D.
Assistant Professor
Department of Neurology and Neurobiology
Evelyn F. McKnight Brain Institute

J. David Sweatt, Ph.D.
Professor
Department: Neurobiology
Evelyn F. McKnight Endowed Chair
Director, McKnight Brain Institute

Lindsey Vedder, B.S.
Graduate Assistant
Department of Physiology and Biophysics

Kristina M. Visscher, Ph.D.
Assistant Professor
Department of Neurobiology
Evelyn F. McKnight Brain Institute

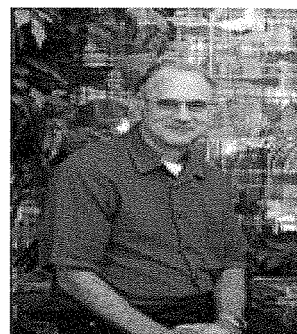
Michael Brenner, Ph.D.

Professor, Department of Neurobiology

Evelyn F. McKnight Brain Institute

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

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

Tara M. DeSilva, Ph.D.

Assistant Professor
Center for Glial Biology in Medicine
Department of Physical Medicine and Rehabilitation
and Department of Neurobiology
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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-glial signaling. One of the emerging molecules in axon-glial signaling is glutamate. Glutamate, as an essential neurotransmitter, exerts its role by activating glutamate receptors on neurons, and is precisely regulated by glutamate transporters. These same constituents of glutamatergic signaling are developmentally regulated throughout the OL lineage. In fact, vesicular release of glutamate from axons induces glutamate receptor mediated currents in postsynaptic OL progenitor cells, underscoring the importance of studying glutamate as a signaling molecule during myelination. Our lab has shown that stimulation of glutamate receptors leads to activation of specific intracellular signaling cascades that enhance myelination and that inflammatory mediators perturb these signaling pathways and disrupt myelination. Using primary cultured cells in an *in vitro* model of myelination as well as *in vivo* animal models, the goal of our lab is to understand the role of glutamatergic axon-glial signaling during myelination and how inflammation and the process of aging dysregulate these pathways.

Lynn Dobrunz, Ph.D.

Associate Professor
Department of Neurobiology
Evelyn F. McKnight Brain Institute
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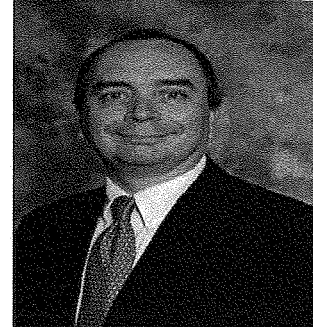


Dr. Dobrunz's research program uses electrophysiological approaches to study synaptic transmission and regulation of presynaptic properties at synapses in the hippocampus. Using hippocampal brain slices and cultured hippocampal neurons from rodents, the lab studies short-term plasticity and the cellular and molecular mechanisms underlying the activity dependent modulation of neurotransmitter release. Projects in the lab include the study of mechanisms and

effects of target-cell specific short-term plasticity, including the role of short-term plasticity in the dynamic balance of excitation and inhibition in hippocampus. The lab also studies the changes that occur in presynaptic function during normal postnatal development and during normal aging.

David Geldmacher, M.D., FACP

Charles and Patsy Collat Endowed Professor
of Neurology and Director of the Division of Memory
Disorders and Behavioral Neurology
Investigator, Evelyn F. McKnight Brain Institute
Phone: 205-975-6761
Email: dgeldmac@uab.edu



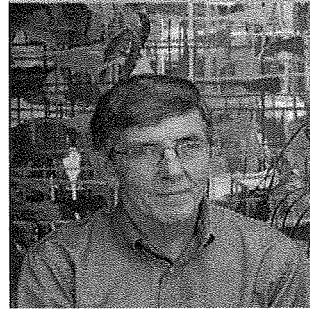
David S. Geldmacher, MD, FACP is the Charles and Patsy Collat Endowed Professor of Neurology and Director of the Division of Memory Disorders and Behavioral Neurology at the University of Alabama at Birmingham. Prior to joining UAB in 2011, he held a Harrison Distinguished Teaching appointment as an Associate Professor of Neurology at the University of Virginia. His research has centered on drug development for dementia, including investigator-initiated clinical trials funded by the NIH and pharmaceutical manufacturers. 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.

His major clinical interests are in the diagnosis and management of dementia, evaluation of behavioral neurologic syndromes, and rational drug treatments of disorders resulting from brain dysfunction.

He is a Fellow of the American College of Physicians and a member of the American Academy of Neurology, American Neurological Association, and the American Society of Neurorehabilitation. Dr. Geldmacher graduated *magna cum laude* from the University of Rochester with his B.A. in Biology and Psychology. He obtained his M.D (with Certificate in Academic Research) from the State University of New York - Health Science Center at Syracuse. He trained in Neurology at Case Western Reserve University and completed a postdoctoral fellowship in Behavioral Neurology at the University of Florida.

John J. Hablitz, Ph.D.

Professor and Vice-Chair
Department of Neurobiology
Evelyn F. McKnight Brain Institute
Phone: 205-934-0742
Email: Hablitz@nrc.uab.edu



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 cortical dysplasia.

Gwendalyn King, Ph.D.

Assistant Professor
Department of Neurobiology
Investigator, Evelyn F. McKnight Brain Institute
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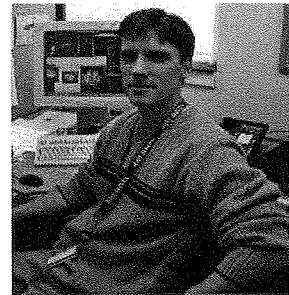


Dr. King received her BS from Purdue University and her MS and Ph.D degrees from the University of Michigan. She did postdoctoral fellowships at Cedars-Sinai Medical Center/UCLA characterizing the immunological mechanisms of tumor regression upon adenoviral expression of TK and Flt3L proteins in rodent models of glioma. She did a second postdoctoral fellowship at Boston University School of Medicine where she identified novel small molecules to elevate Klotho transcription and examined the role of epigenetic modification in the age-downregulation of Klotho protein. She is now an Assistant Professor at the University of Alabama at Birmingham. Work in the King lab will expand upon her postdoctoral work to

characterize the pre and post-transcriptional regulation of Klotho. As well the lab is investigating the role of Klotho at the synapse and as an anti-tumor protein. Klotho knockout animals display a prominent ageing like phenotype and rapidly die from the confluence of syndromes induced by the absence of the protein. Klotho is made mostly in brain and kidney as a transmembrane protein where it functions as a coreceptor. Likewise, it is shed from the membrane and functions as a humoral factor. Although Klotho is generated in the kidney and the brain, the majority of studies have focused on its role in kidney. As Klotho has roles in memory retention, axonal transport, and calcium/phosphate/ Vitamin D homeostasis, understanding its involvement in the brain could impact our understanding of age-related changes that occur in the brain.

David C. Knight, Ph.D.

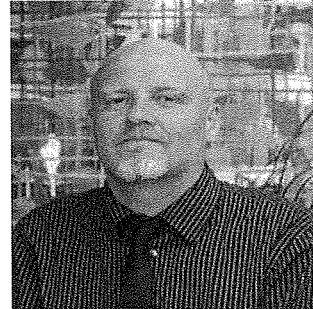
Assistant Professor
Department of Psychology
Phone: 205-996-6344
Email: knightdc@uab.edu



Dr. Knight's research is focused on better understanding the neural substrates of human learning, memory, and emotion using functional magnetic resonance imaging (fMRI). His research employs a Pavlovian fear conditioning paradigm during fMRI to explore changes in human brain activity that occur during this type of associative learning. Findings from these studies are consistent with laboratory animal research in that they indicate the thalamus, amygdala, hippocampus, cingulate, and sensory cortex are important components of the neural circuitry that supports learning and memory of conditional fear in humans. Dr. Knight has been developing methodologies designed to expand the use of autonomic and behavioral measures that are recorded simultaneously with fMRI. The use of such data to extract additional information from functional images may provide more detailed insights into the neural circuitry that mediates certain cognitive processes. Dr. Knight's laboratory is also interested in the role of awareness in the expression of fear-related behaviors, the neural circuitry mediating aware and unaware fear memory processes, and brain regions that process properties of fearful stimuli compared to regions that produce behavioral and autonomic fear responses.

Robin AJ Lester, Ph.D.

Associate Professor
Department of Neurobiology
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The central role of CNS nicotinic acetylcholine receptors (nAChRs) in tobacco addiction drives most of the research in the lab. We would like to increase our understanding of the overall function of these receptors in the brain under both physiological and diseased conditions. Our lab has two major goals. The first is to understand how postsynaptic nAChRs contribute to synaptic transmission in the CNS - a mechanism that has remained largely elusive for over 50 years. We propose that nAChRs can be used to sense the overall changes in the level of ambient transmitter, acetylcholine, through diffusion signaling (*volume transmission*) rather than direct point-to-point synaptic communication. Second, we are interested in the molecular and cellular mechanisms that underlie relapse to nicotine after chronic drug abuse. In particular, we have focused on the hippocampus because of its known role in learning and memory, which may couple secondary drug cues/context to the primary nicotine reward. We propose that persistent changes in the neural circuitry as a result of exposure to nicotine may be at least partially responsible for the lasting incentive (*craving*) for nicotine. In addition these same adaptations may underlie the cognitive deficits known to occur after nicotine withdrawal in adults and in offspring of mothers that smoke during pregnancy. Robin A.J. Lester received his Ph.D. in Pharmacology from the University of Bristol, UK in 1988. Following a Research Assistant Professor position at Baylor College of Medicine, he joined UAB in 1995. He is presently an Associate Professor of Neurobiology.

Farah D. Lubin, Ph.D.

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Dr. Lubin's research is primarily directed towards identifying molecular mechanisms that serve to regulate gene expression changes necessary for learning and memory. Currently, Dr. Lubin's lab is focused on characterizing the role of epigenetic mechanisms, such as histone methylation, DNA methylation, and signaling cascades that mediate the interaction of the

nuclear factor-kappa B (NF-kB) transcription factors to chromatin and determine how they participate in the regulation of gene expression as they relate to learning and memory. Dr. Lubin's research program focuses on neurons and synapses in the hippocampus, an area of the brain that plays an important role in memory formation. She is investigating the epigenetic regulation of brain derived neurotrophic factor (BDNF) and early growth response-1 (EGR1/Zif268) transcripts during memory formation. This has led to the discovery that gene regulation of *BDNF* and *Zif268* transcripts are dynamically regulated by histone methylation and DNA methylation in hippocampus during memory consolidation. Current work also includes an assessment of histone methyltransferase inhibitors and DNA demethylating agents that may be promising in the mitigation or disruption of cognitive disorders.

Lori McMahon, Ph.D.

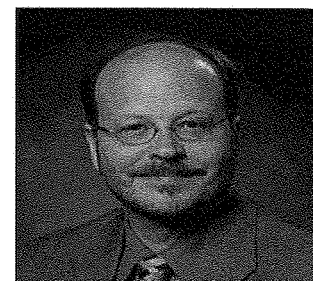
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My lab is currently investigating the role of estradiol in hippocampal synapse density, synaptic plasticity and learning. We are particularly interested in determining how loss of estradiol during aging impacts hippocampal function and whether hormone 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. Furthermore, we find that the period of hormone deprivation rather than chronological age determines the effectiveness of estradiol replacement to increase hippocampal dependent learning and synaptic function. Determining how estradiol and hormone replacement affects hippocampal function could lead to development of therapies to alleviate hormone-dependent memory loss in aging.

James H. Meador-Woodruff, M.D.

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Dr. Meador-Woodruff received his BS in Chemistry from the University of Richmond, and his MD from the Medical College of Virginia. He then moved to Ann Arbor, and completed a

combined residency in psychiatry and a research fellowship at the University of Michigan. After completing his research training, he joined the faculty of the Department of Psychiatry and the Mental Health Research Institute at the University of Michigan where he remained for nearly 22 years. He left Michigan in April 2006 to become the Heman E. Drummond Professor and Chairman of the Department of Psychiatry of University of Alabama at Birmingham (UAB). He moved his lab largely intact to UAB, and his current research focus is on understanding brain abnormalities in schizophrenia. His research has been continuously funded by NIH since 1989. His laboratory's primary research interest is on understanding how different parts of the brain communicate with other parts via a variety of chemical signals, and how this communication is disrupted in schizophrenia. His current focus is on studying the expression of genes associated with glutamatergic neurotransmission within individual cells in the nervous system. He also has a longstanding interest in teaching and mentorship, including serving on the APA Corresponding Committee on Research Training which he chaired in 2006, is a frequent faculty participant at the annual APA Research Colloquium for Junior Investigators, and was the director of the University of Michigan's Psychiatry Residency Research Track, holding one of the first NIH grants designed to fund such programs. Nearly 100 trainees have rotated through his lab. He is Editor-in-Chief of the journal Neuropsychopharmacology.

Michelle Olsen, Ph.D.

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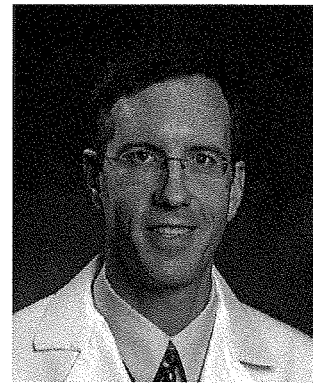
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The focus of Michelle's research is to enhance our understanding of the role of astrocytes in brain and spinal cord function. Astrocytes are the most numerous cells in the central nervous system yet the role of astrocytes in injury, particularly pediatric injury, and neurodevelopmental disorders is highly understudied. Her work focuses on two essential functions of astrocytes; buffering of extracellular K⁺ and glutamate. These functions are thought to be largely mediated by two astrocytic proteins, Kir4.1, an inwardly rectifying potassium channel and excitatory amino acid transporter, GLT-1. These two proteins function to dampen neuronal excitability. Following injury, persistent alterations in the biophysical properties of astrocytes hinder their ability to perform these basic altruistic functions. The resulting dysregulation of extracellular K⁺ and glutamate are associated with increased neuronal excitability and changes in synaptic physiology and plasticity in the adult. In the developing central nervous system, loss of these functions may profoundly impact neuronal development and may contribute to seizures and cognitive impairments following injury. Surprisingly, little is known regarding the regulation of either protein in normal brain, following injury or during abnormal development. The current research projects span from understanding the regulation of Kir4.1 and GLT-1 gene transcription in pathophysiology, examining protein expression, function and activity, to understanding how the loss of extracellular K⁺ and glutamate regulation impact neuronal development.

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

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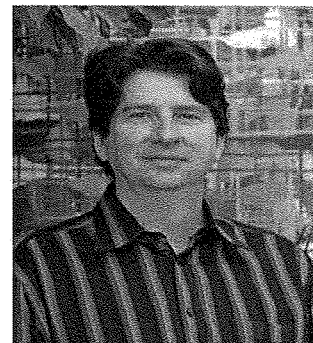


Dr. Roberson received his A.B. with highest honors from Princeton University. He then earned his M.D. and Ph.D in neuroscience at Baylor College of Medicine in Houston where he studied molecular mechanisms of learning and memory using a combination of electrophysiology and biochemistry. He completed a residency in neurology at the University of California San Francisco, where he also served as Chief Resident in Neurology. After residency, he completed a clinical fellowship in behavioral neurology with Dr. Bruce Miller at UCSF and resumed basic research in the laboratory of Dr. Lennart Mucke at the Gladstone Institute of Neurological Disease, initiating his current studies of neurodegenerative disease using mouse models. He was appointed as Assistant Professor of Neurology at UCSF in 2005. In 2008, he moved to UAB to establish his independent research laboratory. Dr. Roberson also cares for patients with memory disorders and dementia at the Kirklín Clinic.

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

J. David Sweatt, Ph.D.

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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.

Lindsey Vedder, B.S.
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Lindsey Vedder is a graduate student under the mentorship of Dr. Lori McMahon. Lindsey's studies investigate the ability of 17β -estradiol (E2) to enhance hippocampal dependent learning and memory and synaptic plasticity in aged rats that have experienced long-term ovarian hormone loss. During her thesis work, Lindsey has found that E2-enhanced hippocampal function, including enhanced long-term potentiation at CA3-CA1 synapses, dendritic spine density, current mediated by NR2B-containing NMDA receptors and object recognition learning, is absent after 19 months of ovarian hormone loss. This loss in E2-enhanced hippocampal function is due to the length of time of ovariectomy as aged-matched ovary intact rats still exhibit the E2-enhanced hippocampal function. The last part of Lindsey's thesis will investigate whether chronic replacement of E2 will protect against the loss of E2-enhanced hippocampal function seen with long-term ovariectomy. These studies will further characterize the window of opportunity during which E2 replacement remains beneficial to hippocampal plasticity and will better inform the clinical community to treat hormone related cognitive decline during menopause.

Kristina M. Visscher, Ph.D.

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

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

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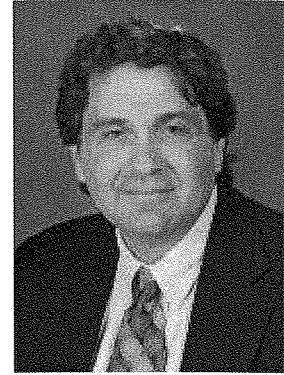
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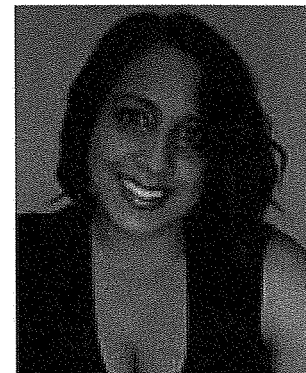
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Dr. Alexander's research interests focus on the study of brain-behavior relationships in the context of healthy aging and age-related, neurodegenerative disease to help elucidate the mechanisms of human cognitive aging. He uses neuroimaging techniques, 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 Alzheimer's disease on the brain. A major focus of his research program includes the use of multivariate network analysis techniques with neuroimaging methods and measures of neuropsychological function, health status, and genetic risk to advance understanding on how these multiple factors interact to influence cognitive function as we age. Dr. Alexander's research also includes the application of these techniques to non-human animal models of aging and age-related disease. He is Professor in the Clinical and Cognition & Neural Systems Programs and directs the Brain Imaging, Behavior & Aging Lab in the Department of Psychology and in the Evelyn F. McKnight Brain Institute.

Elsa Baena

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

Carol A. Barnes, Ph.D.

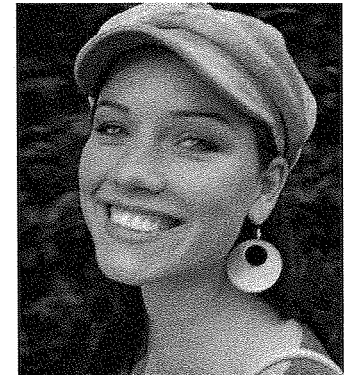
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The central goal of Dr. Barnes' research and teaching program is the question of how the brain changes during the aging process and the functional consequences of these changes on information processing and memory in the elderly. Her research program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

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Kaitlin Bergfield's research focuses on the study of aging, age-related cognitive decline, and Alzheimer's disease, using univariate and multivariate network analysis techniques with structural MRI. Recently, Kaitlin's research showed a network pattern of gray matter volume reductions that differentiated a group of individuals with amnesic mild cognitive impairment (aMCI) who later converted to Alzheimer's disease (AD) from a group of healthy elderly subjects. The results indicate a regionally distributed pattern of MRI gray matter atrophy that precedes the conversion to dementia in individuals with aMCI and includes reductions in brain regions that are known to be affected early in AD.

Sara N. Burke, Ph.D.

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The central goal of Sara Burke's post doctoral research is the question of how age-associated changes in attention may contribute to memory impairments in the elderly. Specifically, Sara is examining how distractions and interruptions impact working memory in a colony of young and aged Bonnet Macaques. In April 2009, Sara completed her dissertation entitled, "A perceptual-mnemonic role for the perirhinal cortex in age-associated cognitive decline". Her thesis work involved examining how functional changes in the aged perirhinal cortex contribute to the impairments in stimulus recognition that have been observed in aged animals.

Christine M. Burns, M.A.

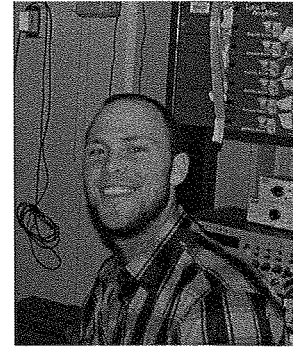
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Christine studies the effects metabolic syndrome or its components may have on brain metabolism, cognition and risk for the development of Alzheimer's disease. Her current research utilizes P.E.T. neuroimaging techniques and neuropsychological testing to investigate the relationship between elevated fasting serum glucose and reduced cerebral metabolic rate for glucose in healthy older adults. Other interests include pharmaceutical, lifestyle and psychosocial based interventions that may alter the development of metabolic risk indicators in mid-life.

Andrew Busch, B.S.

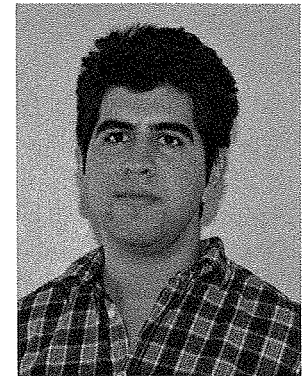
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Mr. Busch attended UC San Diego and Arizona State where he received a B.S. in biology. His current research interests pertain to the mechanisms by which spatial decisions are informed by hippocampal representations of space, and how these might change with age. Specifically he is recording activity from large ensembles of neurons in the CA3 region of young and old rats, while they perform a multiple T-based decision task. At certain points in the maze, place cells have been shown to transiently represent positions forward of the animal, corresponding to alternate spatial decisions. This work may reveal the effect aging has on this relatively recently discovered computational phenomenon, and whether it contributes to an aged rat's spatial impairments.

Joe Cardoza B.A

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I work in the cognition and neuroimaging lab at the University of Arizona. My current project involves studying the performance difference between younger and older adults in an ambiguous object discrimination task. We will be using behavioral measures and fMRI to look at the differences between these two groups. We will focus on differences in the visual streams and the perirhinal cortex. Past animal research has found that lesions to the perirhinal cortex cause decreased performance in object matching and novel-repeat identifications tasks. We hypothesize older adults will have decreased performance in the ambiguous object discrimination task and will also show differences in fMRI activation in the perirhinal cortex. Activation and volume analysis will be used to compare both groups. With this project, we hope to learn more about the differences between younger and older adults and the role that the perirhinal cortex plays in aging.

Monica K. Chawla, Ph.D.

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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.

Elizabeth L. Glisky, Ph.D.

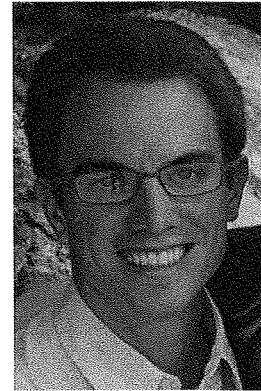
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Betty Glisky's research interests include changes in memory and executive function that occur as a result of normal aging or age-related neurological conditions such as MCI or Alzheimer's disease. Recent collaborative work has focused on tracking longitudinal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

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Matt's main research interests are in memory, memory disorders associated with aging and brain damage, and memory rehabilitation. Principal aims of Matt's current research include accurately characterizing the cognitive and neural mechanisms of effective encoding strategies, and discovering novel methods for enhancing memory in memory-impaired individuals. Specifically, Matt's ongoing research investigates the effect of self-referential processing on different types of memory commonly impaired in older adults and individuals with neurologically-based memory deficits. Matt's Master's thesis investigated the mnemonic utility of a new encoding strategy referred to as "self imagining" – or the imagining of an elaborative event from a personal perspective – on different types of memory. Matt's dissertation is investigating the cognitive and neural mechanisms of self-imagining and potential applications. In future research, Matt hopes to develop memory training programs that provide long-lasting benefits for individuals with memory deficits.

Krista D. Hanson, M.A.

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Krista Hanson's research focuses on investigating the differences between pathological and non-pathological aging, with an emphasis on Alzheimer's disease and pre-Alzheimer's cognitive declines. Her approach to investigating this problem primarily has involved multivariate statistical methods paired with voxel-based morphometry processing of structural MRI's correlated with behavioral measures of cognitive performance. Recently, Krista's research has shown a correlation between a network pattern of gray matter volume reductions associated with a continuum from healthy aging to amnesic mild cognitive impairment to Alzheimer's disease and performance on attentional measures and subsequent conversion to Alzheimer's. Ms. Hanson's dissertation is investigating how physical fitness levels relate to healthy aging in terms of brain structure and cognition.

Kari Haws, B.A.

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

Lan T. Hoang

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The central goal of Lan's research interests lie in investigating factors related to cognitive decline during normative aging. Currently, Lan is exploring the role of hypertension and memory deficits in young and middle-aged animals with an older population to follow. In a collective effort with other McKnight members and affiliates, many methods are being used in multiple species to determine cardiovascular effects on memory systems during aging.

Mays Imad, Ph.D.

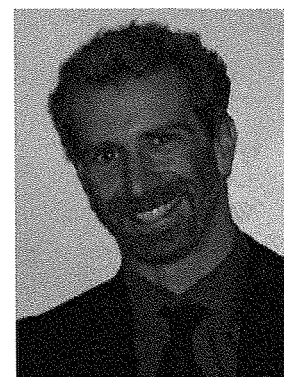
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The central goal of Mays' research is studying the nervous system and the organization of its basic components. Mays uses a multidisciplinary approach to study molecular mechanisms that underlie synaptic function. Experiments are performed on the fruit fly (*Drosophila melanogaster*), an advantageous model system due to the wide variety of genetic tools available in this species. More specifically, she utilizes synapses of genetically modified *Drosophila* as a model system to examine the function of the gene product and its signaling pathways.

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Nathan Insel is a post-doctoral researcher in the Barnes lab, and describes his research with keywords that include aging, medial prefrontal cortex, rat, decision-making, neural computation, and oscillations. Nathan's future interests include implementing the aging process in a robot.

Cortney Jessup, MPA

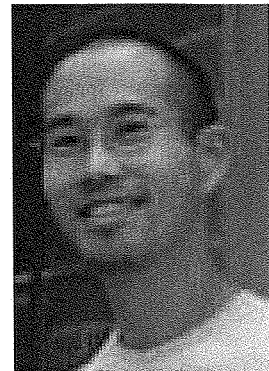
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Cortney Jessup is the Senior Research Administrator for the Brain Imaging, Behavior and Aging Lab at the University of Arizona. The Brain Imaging, Behavior & Aging Lab studies brain-behavior relationships in the context of aging. The lab uses neuroimaging 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 cognitive aging and age-related, neurodegenerative disease. Cortney oversees all day-to-day collaborative research activities with other institutions, departments, staff and the community. She also supervises the Southern Arizona Healthy Aging Registry and coordinates research study logistics for all projects and programs.

Kevin Kawa, M.A.

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

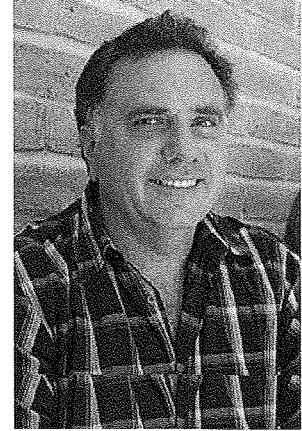
Robert Kraft, Ph.D.

Research Associate

Department of Neuroscience

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Dr. Kraft's research focuses on identifying defects in neuron growth and morphogenesis attributable to mutations in genes implicated in human developmental brain disorders contributing to mental retardation and autism using the model organism *Drosophila melanogaster*, the fruit fly. Along with colleagues in the laboratory of Dr. Linda Restifo and collaborators, he has established a primary neuronal cell culture system and devised methods to quantify the morphology of individual neurons in order to recognize and characterize aberrant cellular phenotypes. Exploiting a phenotype he discovered which was named *filagree* because of the curly appearance of neurons due to a deficiency of the actin-bundling protein fascin, he led a screen of 1040 compounds and identified *filagree* normalizers that restored normal morphology and *filagree* enhancers that intensified the phenotype. These could potentially be useful for improving brain function or blocking tumor invasiveness, respectively. In addition, many drugs were found that inhibited neurite outgrowth, had a range of toxic effects, or induced novel cellular phenotypes. Dr. Kraft received a B.S. in Biology from Yale University, an M.A. in Zoology from Duke University, and a Ph.D. in Molecular Genetics from Albert Einstein College of Medicine.

James P. Lister, Ph.D.

Postdoctoral Research Associate

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Dr. Lister received his doctoral training at Boston University researching the effects of prenatal protein malnutrition on the neuroanatomy of the adult rat hippocampal formation. After studying structure throughout graduate school, he came to NSMA to learn more about function, and is involved in efforts for automating whole brain imaging as well as projects that use the expression of immediate early genes (such as Arc and Homer) to map behavior-induced neural circuits. Current progress on automated brain imaging has focused on work with collaborators at Rensselaer Polytechnic Institute to automate montaging of high resolution confocal images encompassing entire cortical regions. He is also involved in using 3D catFISH to analyze

encoding in the hippocampus and cerebral cortex in young and old animals to assess age-related impairments in the ability of these structures to represent information. 3D catFISH is a technique that combines fluorescent in situ hybridization with high resolution confocal microscopy of immediate-early gene expression to evaluate the exact neural circuits activated by behavior. Behaviorally relevant neuronal activity is known to induce the expression of certain immediate early genes, such as Arc. The localization of Arc mRNA within cellular compartments (nucleus vs. cytoplasm) is consistently time-dependent, allowing the researcher to probe multiple time points within the same animal. Current projects examine the effects of exercise on Arc expression and age-related differences in Arc expression in the hippocampus and entorhinal cortices during behavior.

Andrew Maurer, Ph.D.

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As a graduate student, Drew focused on short time-scale neuronal dynamics in CA1 of the hippocampus during linear track running. He has made a number of important discoveries in his dissertation, and his most recent work has provided the first direct evidence that, as an animal's velocity increases, there is 'sequence compression' of hippocampal cell firing within an individual cell's preferred firing location, suggesting the importance of temporal as well as spatial information in the activity of hippocampal ensembles. Dr. Maurer has recently joined the Barnes laboratory, where the focus of his research will be to investigate the neuronal activity within the primate medial temporal lobe in naturalistic conditions such as random foraging and sleep. This goal will be accomplished through the development of multi-unit, telemetric recording technology.

Erica Minopoli, B.S.

Research Technician

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Erica Minopoli is the Research Technician for the Brain Imaging, Behavior and Aging (BIBA) Lab at the University of Arizona. The Brain Imaging, Behavior and Aging Lab studies brain-behavior relationships in the context of aging using 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 cognitive aging and age-related, neurodegenerative disease. Erica is currently assisting with BIBA's Brain Aging and Memory Study. The goal of this research is to determine how aging affects cognitive abilities and whether differences among people in their health status and genetic risk for cognitive impairment affect structural changes in the brain associated with aging and age-related cognitive decline.

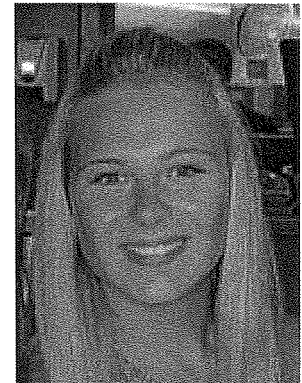
Angelina Polsinelli, B.Sc.

Clinical Psychology Graduate Student

Aging and Cognition Unit

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Broadly, Angelina's research is in the area of emotional memory and aging with a particular emphasis on the positivity bias found in older adults. Her current research focus is on identifying the potential mechanisms through which this positivity bias is maintained, specifically in autobiographical memory. One mechanism that she is currently investigating is the use of *perspective* in recalling autobiographical memories. Since perspective has been shown to play a role in emotional regulation and self-reference in other populations it may be a potential mechanism through which older adults generate a positive bias when recalling their autobiographical memories. A second branch of this study is focused on examining the contributions of cognitive control (e.g., inhibition, working memory) to the positivity bias and use of perspective as cognitive control has been implicated in maintaining this bias in past emotional memory studies. In the future she would like to use neuroimaging and psychophysiological methods in combination with her cognitive procedures to examine emotional memory in aging as well as examine emotional memory in amnesic mild cognitive impairment and Alzheimer's disease. Angelina received her B.Sc. in Psychology at the University of Toronto.

Lee Ryan, Ph.D.

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Dr. Lee Ryan received a Ph.D. in Cognitive and Clinical Psychology at the University of British Columbia in 1992. She is currently a faculty member of the Evelyn F. McKnight Brain Institute at the University of Arizona as well as the Director of the Cognition and Neuroimaging Laboratories, making magnetic resonance imaging (MRI) technology available to cognitive neuroscience researchers on campus. Her research focuses on the neural basis of memory and understanding how age-related changes in brain function affect memory in older adults. She has a special interest in memory disorders such as Alzheimer's Disease, and is currently conducting research using various MRI methods as a tool for detecting subtle markers of change in brains of individuals with risk for Alzheimer's disease prior to the onset of memory impairments. As an associate professor in the Cognition and Neural Systems program and the Clinical Neuropsychology program at the University of Arizona's Department of Psychology, Dr. Ryan teaches undergraduate classes in human memory and graduate level courses such as Human Brain Behavior Relationships, Cognitive Neuroscience, and Principles of Neuroanatomy. As a clinical psychologist, Dr. Ryan works with individuals and families who are coping with chronic and progressive diseases that effect cognitive functioning, including multiple sclerosis, Parkinson's disease, and Alzheimer's disease.

Rachel Samson, Ph. D.

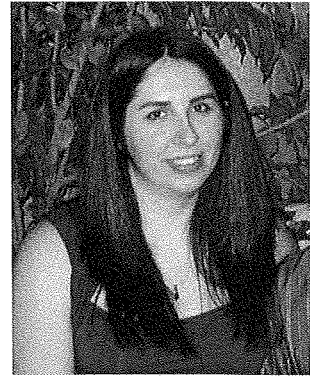
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Dr. Samson's project addresses the effects of normal aging on reward processing and goal-directed behavior. Using appetitive instrumental tasks, she investigates how young and aged rats adapt their behavior to changes in reward value and task contingencies. She is interested in understanding how the network activity of the amygdala and prefrontal cortex mediate incentive learning and how their neurophysiological properties are different in young and aged rats. Results from her project will provide insight into the mechanisms of age-related changes in goal-directed behaviors. Dr. Samson was trained as an *in vitro* electrophysiologist, and is currently a Post-Doctoral Associate at the Evelyn F. McKnight Brain Institute at the University of Arizona.

Lesley A. Schimanski, Ph.D.

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Dr. Schimanski's research focuses on spatial memory and place representations in the hippocampus of aged rats. She is examining whether old and young rats learn differently in a spatial version of classical eyeblink conditioning, and whether there are corresponding age-related changes in "place cell" properties in hippocampal area CA1. Her work shows how hippocampal information processing changes during aging. Dr. Schimanski was trained as an electrophysiologist and behavioral neuroscientist, and is currently a Post-Doctoral Associate at the Evelyn F. McKnight Brain Institute at the University of Arizona.

Janelle Wohltmann, M.A.

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Janelle Wohltmann is pursuing a Ph.D. in clinical psychology with a specialization in neuropsychology. Her research interests include memory, aging, and neuropsychological rehabilitation of age-related cognitive impairments. She is currently examining differences between associative and source memory in aging. She is also interested in characterizing factors that affect the variability of cognitive function in healthy aging adults including health, genetic, and neuroendocrine markers. Specifically, she would like to examine the relationship between cognition, physical fitness, APOE status, and cortisol levels in younger and older adults.

William L. and Evelyn F. McKnight Brain Institute Meeting Participants

University of Florida

Lise Abrams, Ph.D.

Associate Professor and Undergraduate
Coordinator
Department of Psychology

Vonetta M. Dotson, Ph.D.

Assistant Professor
Department of Clinical & Health Psychology

Steve Anton, Ph.D.

Assistant Professor
Department of Aging and Geriatric Research
Department of Clinical and Health
Psychology

Meagan T. Farrell, M.S.

Ph.D. Candidate
Cognition and Aging Laboratory
Department of Psychology, Behavioral and
Cognitive Neuroscience Area

Tetsuo Ashizawa, M.D., FAAN

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

Thomas C. Foster, Ph.D.

Professor and McKnight Chair
for Research on Aging & Memory
Department of Neuroscience
William L. and Evelyn F. McKnight Brain
Institute

Cristina Bañuelos, M.S.

Graduate Assistant
Bizon Laboratory
Department of Neuroscience

Charles J. Frazier, Ph.D.

Associate Professor of Pharmacodynamics
and Neuroscience

Jennifer L. Bizon, Ph.D.

Associate Professor
Department of Neuroscience
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Graduate Student, Alumni Fellow
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Dawn Bowers, Ph.D.

Director, Cognitive Neuroscience Laboratory
Professor and Division Head
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Department of Aging and Geriatrics

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Chair for Research
Department of Clinical and Health
Psychology

Lucia Notterpek, Ph.D.

Chair and Professor
Department of Neuroscience
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Brandi K. Ormerod, Ph.D.

Assistant Professor
J. Crayton Pruitt Family
Department of Biomedical Engineering

Sabra Pelham, M.A.

Graduate Student
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Karienn Souza Montgomery, B.S.

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Bizon Laboratory
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Kelsey Thomas, B.S.

Graduate Student, Training Fellow
Department of Clinical and Health
Psychology

Michael F. Waters, M.D., Ph.D.

Assistant Professor of Neurology and
Neuroscience
Chief, Neurovascular Division
Director, University of Florida Stroke
Program
William L. and Evelyn F. McKnight Brain
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Students in attendance:

Wei-Hua Lee, M.S.

Department of Neuroscience

Xiaoxia Han, B.S.

Department of Neuroscience

Mike Guidi, B.A.

Department of Neuroscience

Gina Prado

Pursuing B.S.
Department of Neuroscience

Lise Abrams, Ph.D.

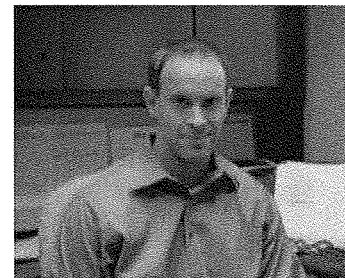
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Dr. Abrams is an associate professor and undergraduate coordinator of the Psychology Department at the University of Florida. As an undergraduate at Pomona College, Dr. Abrams double-majored in psychology and mathematics and went on to earn her Ph.D. in cognitive psychology from the University of California, Los Angeles. She came to the University of Florida in 1997, where she established the Cognition and Aging Laboratory to investigate memory and language processes in younger and older adults, specifically the processes involved in retrieving words and the changes in these processes that occur with normal aging. Specific areas of interest include: (1) memory retrieval failures such as tip-of-the-tongue (TOT) states, which are naturally-occurring retrieval failures characterized by a temporary inability to recall a known word; and (2) language errors such as the production of spelling errors and homophone substitution errors, such as *bear* instead of *bare*. Her research has been supported by the National Institute on Aging and the National Institute of Mental Health, and Sigma Xi awarded her the 2007 Young Investigator Award. Dr. Abrams has also received recognition for her teaching and mentoring, earning a teaching award from the university's College of Liberal Arts and Sciences as well as mentorship awards from the American Psychological Association Division 20, Women in Cognitive Science, and HHMI Science for Life.

Steve Anton Ph.D.

Assistant Professor
Department of Aging and Geriatric Research
Department of Clinical and Health Psychology
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Dr. Anton received his graduate degree in Clinical and Health Psychology from the University of Florida, where he received training in health promotion and the delivery of lifestyle interventions designed to modify eating and exercise behaviors. Following his graduate training, Dr. Anton elected to complete a post-doctoral fellowship at the Pennington Biomedical Research Center to further enhance his knowledge of nutritional and lifestyle-based treatments of obesity and age-related disease conditions. In 2007, Dr. Anton began work as an Assistant Professor with a joint appointment in the Department of Aging and Geriatric Research and Department of Clinical and Health Psychology at the University of Florida. Over the past ten years, Dr. Anton has obtained

multiple grants examining the effects that nutritional and lifestyle-based interventions have on biological and functional outcomes relevant to older adults.

Tetsuo Ashizawa, M.D., FAAN

Melvin Greer Professor

Chairman

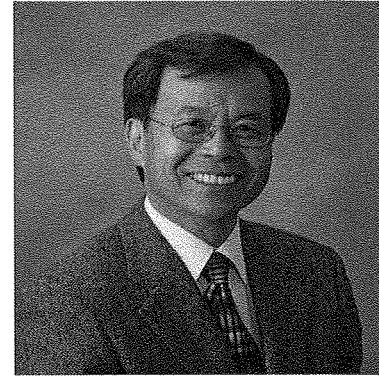
Department of Neurology

Executive Director

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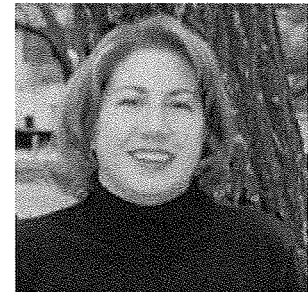
Dr. Tetsuo Ashizawa is Professor and Chairman of the Department of Neurology at the University of Florida, Gainesville, Florida. Dr. Ashizawa also holds the Melvin Greer Professor of Neurology. Dr. Ashizawa received his medical degree from the Keio University School of Medicine in Tokyo in 1973. He completed his neurology residency training and subsequent clinical and basic science fellowships at Baylor College of Medicine. In 1981 he joined the faculty at Baylor, where he climbed to the academic rank of tenured Professor 1997. In 2002 Dr. Ashizawa was recruited to the University of Texas Medical Branch (UTMB) in Galveston, Texas to chair the Neurology Department, and then moved to Gainesville, Florida in April 2009 as Chair of the Department of Neurology at UF. He has published over 180 papers in leading scientific and clinical journals and Books. Dr. Ashizawa's basic science research projects have primarily been focusing on neurogenetic disorders caused by expanded short tandem repeats, including myotonic dystrophy, Friedreich's ataxia and autosomal dominant spinocerebellar ataxias. His current research is to investigate the pathogenic mechanism of spinocerebellar ataxia type 10 (SCA10). Dr. Ashizawa is also the principal investigator of a nationwide consortium for clinical research on SCA1, SCA2, SCA3 and SCA6. This consortium is one of the Rare Disease Clinical Research Consortia (RDCRC) organized and funded by the National Institute of Health (NIH). This consortium will establish the infrastructure and database to prepare for future clinical trials of new therapies for SCAs.

Cristina Bañuelos, M.S.
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Cristina Bañuelos received a BS in Biology from Cornell University and a MS in Biology from the University of Texas at Brownsville. Her Master's thesis explored the effects temporal lobe epilepsy on medial septal neuronal populations in a rodent model. In the fall of 2008, she entered the Behavioral and Cellular Neuroscience Ph.D. program at Texas A&M University in Dr. Jennifer Bizon's aging research laboratory. Her first year project examined the spatial learning abilities of rats in a model of human third trimester binge ethanol exposure. She was also involved in a study in which systemic injections of a GABA_B antagonist was shown to reverse age related learning deficits in aged Fisher 344 rats. Cristina transferred into the Interdisciplinary Program in Biomedical Sciences at the University of Florida College of Medicine with the Bizon laboratory in the fall of 2010. Currently, she is completing a project in which basal forebrain neurons were quantified using design-based stereology in behaviorally characterized aged Fisher 344 rats.

Jennifer L. Bizon, Ph.D.
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Dr. Jennifer Bizon is an Associate Professor in the Department of Neuroscience, University of Florida, College of Medicine. She received her Ph.D. from University of California, Irvine (1998) and received postdoctoral training at Johns Hopkins University (1998-2003). She was a faculty member at Texas A&M University prior to joining the neuroscience department at University of Florida in 2010. Her primary research program uses animal models and a combination of behavioral, anatomical and pharmacological approaches to investigate age-related dysfunction across multiple cognitive domains (learning and memory, executive function). Her laboratory has a particular interest in age-related changes associated with modulatory neurotransmitter systems and how such changes may contribute to medial temporal lobe and prefrontal cortical-dependent cognition. A second theme in Dr. Bizon's laboratory is the early detection of age-related cognitive dysfunction.

Dawn Bowers, Ph.D.

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Dr. Bowers is an Professor of Clinical and Health Psychology in the College of Public Health and Health Professions, a UF Research Foundation Professor, and Division Head of the Neuropsychology area. She directs the Cognitive Neuroscience Laboratory at the McKnight Brain Institute, and holds a joint appointment in the Department of Neurology. She received her Ph.D. from the University of Florida, interned at Boston University/ Veterans Administration Hospital, and completed a post-doctoral fellowship in behavioral neurology at the University of Florida. Dr. Bowers serves on the Editorial Boards of the *Journal of the International Neuropsychological Society* and *The Clinical Neuropsychologist*, provides peer review for various NIH and VAMC research panels, and has been funded by NIH since 1981. She has over 150 research publications, over 200 peer-reviewed research presentations, 1 book, and 1 clinical test (Florida Affect Battery). Current research focuses on emotional and cognitive changes associated with Parkinson disease and aging, predictors of decline and wellbeing, and novel treatment approaches for apathy and executive dysfunction. She and Dr. Michael Marsiske head up the MBR-funded VITAL study examining the trajectory of aerobic and activity pre-dosing on cognitive training in healthy elders.

Lauren E. Crump, MPH

Associate Director, Institute on Aging
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Lauren Crump, MPH is the Associate Director of the Institute on Aging (IOA) and Vice Chair for Administration and Finance in the Department of Aging and Geriatric Research at the University of Florida. Previously she was the Administrator of the Wake Forest University School of Medicine (WFUSM) Claude D. Pepper Older Americans Independence Center (OAIC) from 2000 through January 2005, and was the Administrative Director in the section of Geriatrics serving as administrator over all section budgets, grants and studies since 1998.

During this time, she has managed over 93 independently funded studies, which have resulted in over \$170 million in total costs. Thus, she is very experienced and knowledgeable in her role. Ms. Crump prepares and oversees the sponsored research grant budgets, monitors compliance with budgetary guidelines and human subject and animal care and use provisions. She facilitates internal communication within the IOA, and coordinates communication with other universities and the National Institute on Aging. She is responsible for writing all required reports. In addition to her role as Administrator of the UF OAIC, she works closely with the project managers in our Aging and Rehabilitation Research Center to ensure budgetary compliance with all clinical trials. This helps to assure integration and success of the OAIC and future studies that result from the OAIC.

Vonetta M. Dotson, Ph.D.

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Dr. Dotson is an Associate Professor in the Department of Clinical and Health Psychology (CHP) and an affiliate faculty member in the Department of Neuroscience at the University of Florida. She received her Ph.D. from CHP in 2006 with a specialization in neuropsychology and a certificate in gerontology. She completed her postdoctoral training in the Laboratory of Personality and Cognition in the National Institute on Aging Intramural Research Program under the mentorship of Drs. Susan Resnick and Alan Zonderman. Her research program focuses on studying the underlying neurobiology of late-life depression and its relationship to cognitive changes and functional deficits in the elderly. Currently, work in her lab is aimed at 1) using cognitive and neuroimaging methods to examine the depressive spectrum hypothesis—whether depression is best conceptualized as a continuum, starting with subthreshold depressive symptoms and dysthymia and ending with major depression, 2) investigating whether particular symptom dimensions of depression (e.g., somatic vs. affective symptoms) have distinct cognitive and neural correlates, and 3) examining whether aerobic exercise improves memory functioning and alters memory-related brain functioning in depressed older adults.

Megan T. Farrell, M.S.

Ph.D. Candidate

Cognition and Aging Laboratory

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Neuroscience Area

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Meagan Farrell is a fourth year graduate student in psychology and a member of the Predoctoral Aging Training Program funded by the National Institute on Aging. Her research is focused on the cognitive processes that enable the production and comprehension of language in young and older adults, with an emphasis on age-related changes to speech production and the retrieval of words from memory. One of older adults' most frustrating cognitive problems is an age-linked increase in word retrieval failures, or tip-of-the-tongue (TOT) states. Meagan is interested in identifying specific word characteristics that exacerbate age differences in TOT states, i.e., do older adults have greater difficulty in producing particular types of words or sounds? Her recent work demonstrated that relative to young adults, older adults are more likely to experience TOTs for words beginning with infrequently-used syllables, but not words beginning with a high-frequency syllables. She hopes to expand this line of research to develop more advanced models of why word retrieval processes become more problematic with age. More specifically, Meagan's dissertation will examine how phonological factors influence older adult's most notorious cognitive complaint, the retrieval of proper names. Upon completion of her Ph.D., Meagan will continue investigating age-associated changes to language and memory processes at an academic research institution.

Thomas C. Foster, Ph.D.

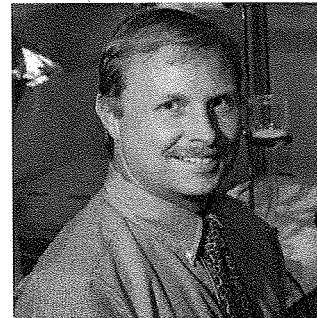
Professor and McKnight Chair for Research on
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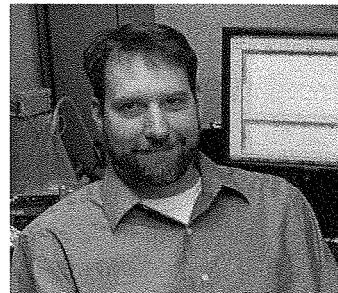


Dr. Foster's research program utilizes a combination of behavioral characterization with biochemical, molecular, and electrophysiological techniques to obtain a vertically integrated perspective on neural aging, from the molecular to the cognitive level. The two main goals of the lab are to identifying 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 Ca^{2+} 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.

Charles J. Frazier, Ph.D.

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I earned a Bachelor's degree in Neuroscience in 1991 at Oberlin College and a Ph.D. in Neuroscience in 1997 at the University of Colorado Health Sciences Center. An early interest in age related memory dysfunction led me to the study of cholinergic systems in the mammalian hippocampus. My graduate work, supervised by Dr. Thomas V. Dunwiddie, used primarily electrophysiological techniques to study nicotinic acetylcholine receptors expressed in area CA1. During my post-doctoral years, I studied cholinergic systems in the hilar region of the dentate gyrus, and also spent some time studying the detailed biophysics of channel gating in specific voltage gated potassium and calcium channels. I joined the faculty in the College of Pharmacy at the University of Florida in 2003. Since that time my lab has used electrophysiological and optical techniques to study the effects of endocannabinoid mediated signaling and ambient GABA in the dentate gyrus. This work is motivated by a broad interest in cellular and synaptic mechanisms that contribute to regulation of cortical excitability, and by a desire to expose specific mechanistic problems associated with aging, drug abuse, or disease. Synaptic mechanisms that promote memory formation and/or prevent epileptogenesis have been of particular interest to the lab. Consistent with these goals and interests, our most recent project seeks to better identify the role of calcium activated potassium channels in geriatric memory dysfunction.

Jacob Jones, B.S.

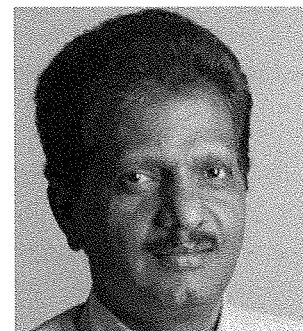
Graduate Student, Alumni Fellow
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Jacob Jones is a first year neuropsychology graduate student in the Department of Clinical & Health Psychology at the University of Florida. Prior to starting graduate school, Jacob received his B.S. from California State University-Channel islands in 2010 where he completed studies on emotion psychophysiology. He currently works in the Cognitive Neuroscience Laboratory of Dr. Dawn Bowers at the McKnight Brain Institute and is a recipient of a 4-year Alumni fellowship. Jacob is actively involved in various research projects including the VITAL study, a project with older adults examining the trajectory of aerobic exercise pre-dosing effects on cognitive training. Other projects include ERP signatures of emotional reactivity in Parkinson patients and the impact of health comorbidities on executive and memory profiles in older adults with Parkinson disease and other movement disorders (master's thesis). After earning his doctoral degree from UF, Jacob would like to continue his research as a faculty member in an academic setting.

Ashok Kumar, Ph.D.

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The central focus of my research program is directed towards understanding how the dysregulation of Ca^{2+} homeostasis during senescence impact synaptic function and cell excitability as well as its influence on age-related memory loss. Aging is associated with a shift in synaptic plasticity favoring long-term depression (LTD) over long-term potentiation (LTP) and we have shown that the magnitude of the Ca^{2+} -dependent, K^+ mediated afterhyperpolarization (AHP) plays a critical role in setting the threshold for induction of synaptic plasticity. Our results demonstrates that Ca^{2+} release from intracellular Ca^{2+} stores and voltage-gated Ca^{2+} channels contribute to the enhanced AHP and regulates the threshold for synaptic plasticity induction. There is a shift in susceptibility to induction of long-term depression during aging; however, the asymptotic level of synaptic modification (LTP/LTD) does not change with age. Rather, induction impairments are observed using weak stimulation parameters. In addition, Dr. Kumar is interested in investigating the impact of environmental

enrichment and exercise on biological markers of brain aging and its effect on cognitive performance during senescence. The AHP, which is enhanced during aging, regulates the induction of LTP, in part by limiting NMDA receptor activation our results suggest that environmental enrichment reduced the increased AHP amplitude in aged animals. Dr. Kumar also study effects of estrogen on hippocampal function across the lifespan, and our results indicate that estrogen rapidly increases neuronal excitability, decreases AHP, and augments the strength of synaptic transmission. Finally, my research will determine the complex interaction of cholinergic transmission on hippocampal synaptic function during senescence and delineate the mechanisms. which contribute to age-related memory loss. The overall broader goal of my research is in pursuit of fundamental knowledge of mechanisms underlying alterations in hippocampal function during aging, as well as the application of that knowledge to extend healthy and successful aging, while reducing the burdens of cognitive aging and age-related neurodegenerative diseases. Dr. Kumar earned his Bachelor and Masters of Sciences and Ph.D. from the University of Lucknow/Central Drug Research Institute, Lucknow.

Sooyeon Lee, Ph.D.

Postdoctoral Associate

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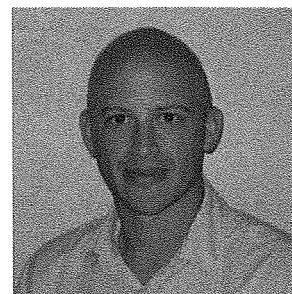


Dr. Lee received an undergraduate degree in biomedical engineering at Columbia University. During graduate student at New York University, she studied the mechanism by which autophagy impairment is a pathogenic process in Alzheimer's disease under the guidance of Dr. Ralph Nixon. Using time-lapse studies in primary neurons to model autophagy defects, she characterized functional, morphological, and biochemical changes that were produced by impaired autophagy. This work established a novel relationship between lysosomal dysfunction and axonal transport deficits in autophagic/lysosomal cargoes. It presented a novel hypothesis for lysosomal dysfunction as a pathogenic process that produces AD-related neuritic pathology.

Recently, Dr. Lee joined Dr. Lucia Notterpek lab to study the role of autophagy in demyelinating peripheral neuropathies with genetic alterations in the PMP22 protein. Her aim is to identify how PMP22-related neuropathies alter autophagy and/or the endo-lysosomal system. Autophagy is a multi-step process that is active in all cell types. How autophagy's concerted activity with the endo-lysosomal system facilitates myelination in Schwann cells, and how this may be disrupted by PMP22, are unknown. Dr. Lee's goal is to combine *in vitro* methods to examine the cell biology of autophagy/endo-lysosomes in Schwann cells and find its relation to myelination, based on explants and *in vivo* studies in neuropathic animals. In addition, she is interested in studying the aging-related changes of the endocytic/autophagic/lysosomal system in Schwann cells that may contribute to loss of myelination that occurs with normal aging.

Todd M. Manini, Ph.D.

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A native of Wintersville, Ohio, Dr. Manini attended Ohio University in Athens, OH where he graduated with honors in Biology, Exercise Science, and Biochemistry. He received his M.S. and Ph.D. as well as a Certificate of Advanced Studies in Gerontology from Syracuse University. He completed a post-doctoral fellowship at the Laboratory of Epidemiology, Demography and Biometry at the National Institute on Aging at the National Institutes of Health in Bethesda, MD. He now resides at the University of Florida in the Department of Aging and Geriatric Research. Dr. Manini has received numerous awards and accolades. The Gerontological Society of America awarded him an Austin Bloch Post-Doctoral Fellow and named him a Clinical Medicine Research Award Honoree. He has contributed his expertise as a reviewer to numerous journals including The Journal of the American Medical Association, American Journal of Clinical Nutrition, The Journals of Gerontology: Biological & Medical Sciences, The Journal of the American Geriatrics Society, and The British Medical Journal. Dr. Manini has received funding from the National Institute on Aging, Claude D. Pepper Older American Independence Center, American College of Sports Medicine/F.M. Kirby Foundation and McKnight Foundation in support of his research on interventions to preserve physical and cognitive function in late-life.

Michael Marsiske, Ph.D.

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Dr. Marsiske's research has four major foci: (1) modifiability of older adults' cognitive performance due to training interventions and practice; (2) older adults' everyday problem solving abilities and their relationship to basic cognitive and intellectual performance, as well as their improvability via cognitive training; (3) understanding short-term variability and fluctuation in elders' cognition, and its relationship to cognitive status and other time-varying predictors; and (4) understanding the inter-relationship of sensorimotor and cognitive function in later life, with a particular focus on balance and locomotion. Dr. Marsiske is a Fellow of the Gerontological Society of America, and is a past recipient of the Springer Award for Early Career Achievement in Research and Adult Development and Aging from Division 20 of the American Psychological Association. Marsiske is a past-Chair of the NIA-S (Behavioral and Social Sciences) Initial

Review Group for the National Institute on Aging, and he currently serves on the Editorial Boards of the Journals of Gerontology: Psychological Sciences and of Aging, Neuropsychology and Cognition. Presently he serves as a principal investigator on the NIH-funded study ACTIVE, which examines long-term cognitive training effects on elders' everyday function, and he is the Recruitment Core leader for the UF NIA-funded Claude Denson Pepper Older Americans' Independence Center. Marsiske is also the Training Director of a NIA-funded predoctoral training program (T32) entitled "Physical, Cognitive and Mental Health in Social Context".

Lucia Notterpek, Ph.D.

Chair and Professor
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Dr. Notterpek investigates how the loss of glial insulation around axons, called myelin, contributes to the pathogenesis of 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 underlying the 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 to identify approaches to restore myelin and neural function. The laboratory is equipped with models and reagents, including small molecule therapeutics and genetic modifications to attain these goals. Other areas of active investigation include the role of gene regulatory mechanisms in peripheral nerve development, and the effects of aging on neuromuscular function.

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 working with Dr. Leonard H. Rome. Her postdoctoral training was under the guidance of Dr. Eric Shooter at Stanford University. Currently, Dr. Notterpek is Professor and Chair in the Department of Neuroscience at the McKnight Brain Institute of the University of Florida. She is recipient of the 2004 Jordi Folch-Pi Memorial Award, from the American Society of Neurochemistry, to a young scientist for research excellence. She has authored and coauthored over forty peer-reviewed publications. She is actively involved in the educational and research missions of the College of Medicine at the University of Florida. Her research efforts are being supported by the NIH, the National Muscular Dystrophy Association and the National Multiple Sclerosis Society.

Brandi K. Ormerod, Ph.D.

Assistant Professor

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Dr. Ormerod obtained a B.Sc. (honors) in Psychology from Queen's University (Kingston, Ontario) where she studied the role of cholinergic systems in recent memory in Dr. Rick Beninger's lab, and a PhD in Neuroscience from the University of British Columbia (Vancouver, BC) where she studied the hormonal regulation and functional role of adult hippocampal neurogenesis in Dr. Lisa Galea's lab. Dr. Ormerod then completed a postdoctoral fellowship with Dr. Theo Palmer at Stanford University in which she studied how neuroinflammation impacts stem cell behavior (both in vivo and in vitro) and hippocampus-dependent behavior in rodents as well as generating several human and non-human primate neural progenitor cell lines. Dr. Ormerod's laboratory at the University of Florida currently asks whether age-related cognitive decline is impacted by age-related changes in hippocampal neurogenesis, whether there are stress- or neuroinflammation-related markers of age-related cognitive decline that can be measured in blood serum or in brain tissue, what factors set up a neurogenic versus non-neurogenic niche (with emphasis on vascular and ECM proteins) and whether transplantable cells impact neural activity in healthy primary cultures or following experimental stroke. The Ormerod laboratory uses a combination of immunohistochemistry and light/confocal microscopy to measure hippocampal neurogenesis, Bioplex multiplex sandwich fluorokine technology to examine biomarkers (such as stress and neuroinflammation), microelectrode array technology to examine how transplanted cells affect neural activity and behavioral testing (typically water maze) is employed in many of our experiments.

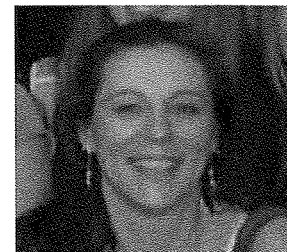
Sabra Pelham, M.A.

Graduate Student

Department of Psychology

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Sabra Pelham is a graduate student in Behavioral and Cognitive Neuroscience in the Psychology Department at the University of Florida. As an undergraduate at the University of Kansas, Sabra double-majored in linguistics and anthropology and then went on to complete her Master of Arts degree in applied linguistics at K.U. Following that, she taught English as a Second Language at Daytona State College where she became an Associate Professor before leaving to pursue her doctoral degree. While teaching ESL, Sabra independently followed up her master's thesis research in first language acquisition and the results of that research were presented at Chicago

Linguistic Society and then published in the Journal of Child Language. During her tenure at Daytona State College, she also became interested in cognitive neuroscience and began taking psychology classes so that she would be prepared to pursue her doctorate in cognitive neuroscience. In 2008, she was accepted into the doctoral program in psychology at University of Florida where she studies under the supervision of Dr. Lise Abrams. Specific areas of interest include: (1) language acquisition (2) language production (3) bilingualism and its effect attention and language production. She is currently completing data collection for a study comparing monolinguals, lifelong bilinguals and late bilinguals on language production and executive function tasks. Her research has been supported by Sigma Xi awarded and The Jacquelin Goldman Scholarship Program in Developmental Psychology.

Karienn Souza Montgomery, B.S.

Graduate Assistant
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Karienn Montgomery graduated with a BS in Biochemistry (2006) from Texas A&M University. She was accepted to the Behavioral and Cellular Neuroscience Ph.D. program at Texas A&M in Dr. Jennifer Bizon's aging research laboratory. Findings from her first year project indicated that prenatal exposure to methylmercury in mice, even at the lowest dose examined to date, can have long-lasting motor and cognitive consequences for adults. Based on this publication, Mrs. Montgomery was selected nationally for a Young Investigator's Award from the American Psychological Association. During her second year of graduate school, she was also involved in the characterization of aged Fisher 344 rats in behavioral tasks with the goal of developing a rodent model of mild cognitive impairment. During this time, she also collaborated with Dr. Barry Setlow's laboratory in a study focused on the long term deleterious effects of cocaine on learning and memory. More recently, Mrs. Montgomery has established a transfer learning task in mice which is analogous to a human clinical test that appears to be an early cognitive assessment for Alzheimer's Disease. This novel task is a promising tool for behavioral characterization of rodent models of neurodegenerative disease, and is well-suited for clinically relevant within-subject intervention studies. Data from this project was submitted for a NRSA fellowship, which Mrs. Montgomery was awarded in the Fall of 2010. Mrs. Montgomery transferred to the University of Florida College of Medicine with the Bizon laboratory in 2010.

Kelsey Thomas, B.S.

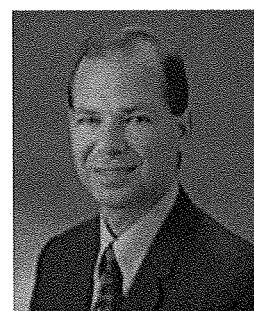
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Kelsey Thomas is a first year neuropsychology graduate student in the Department of Clinical & Health Psychology at the University of Florida. Kelsey completed her undergraduate education at the University of California, San Diego, and graduated in 2008 with majors in biochemistry and psychology. Upon graduation, Kelsey worked at the San Diego VA as a study coordinator for a cognitive intervention and work outcomes study of Iraq/Afghanistan veterans returning with mild to moderate traumatic brain injury. She currently works in the Cognitive Aging Laboratory of Dr. Michael Marsiske and is a recipient of a T32 training fellowship through the National Institute on Aging. Kelsey is actively involved in various research projects including the VITAL study, a project examining the trajectory of aerobic exercise pre-dosing effects on cognitive training in older adults. She is also working on her master's thesis, which will investigate everyday cognition in older adults with mild cognitive impairment (MCI), as well as how verbal prompts effect everyday cognition in both non-impaired and MCI groups. In the future, she hopes to conduct applied clinical neuropsychological research as a faculty member in an academic setting or at a medical center. She is particularly interested in researching cognitive interventions that can be easily implemented to reduce or delay the cognitive decline associated with both normal and pathological aging.

Michael F. Waters, M.D., Ph.D.

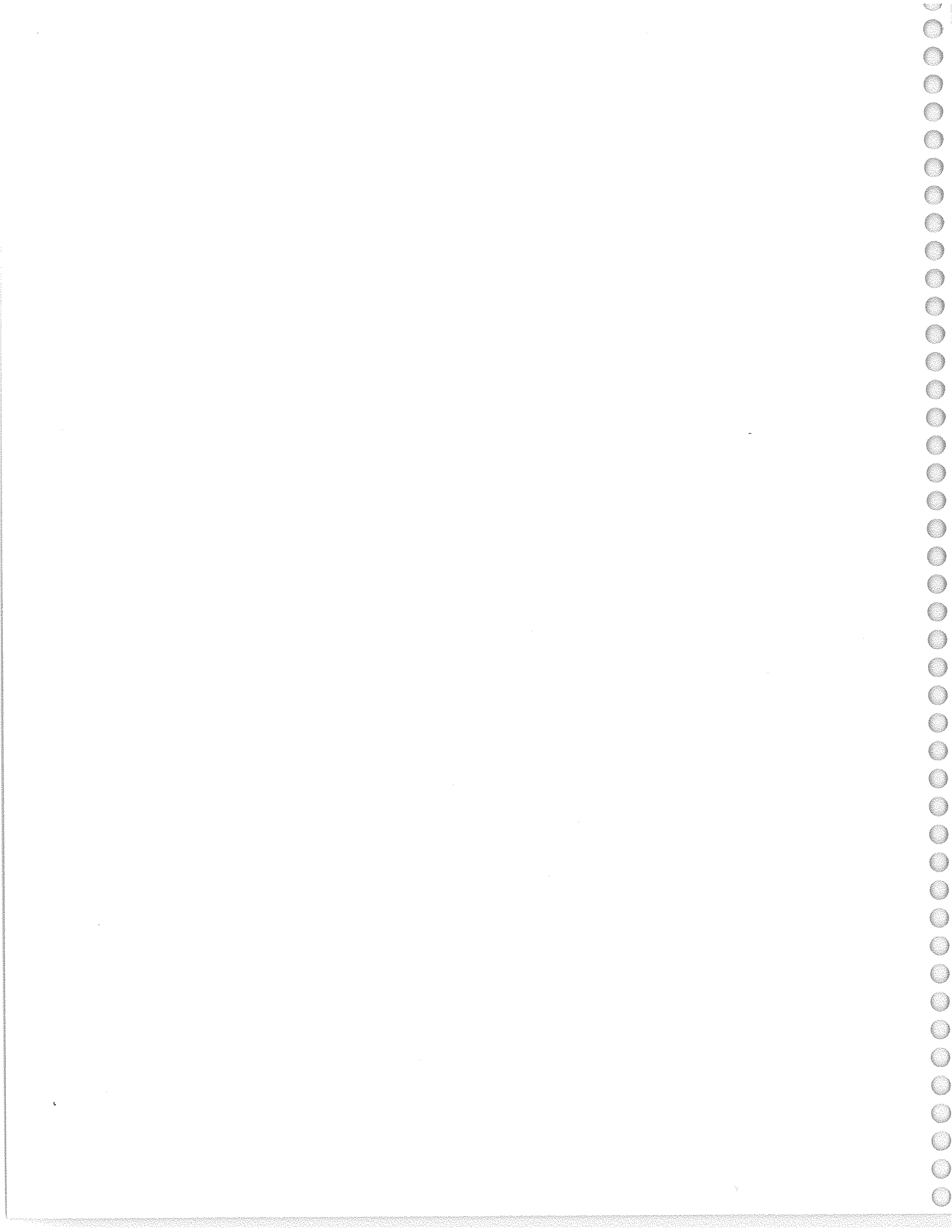
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Michael F. Waters, M.D., Ph.D. is Director of the Stroke Program in the Department of Neurology at the University of Florida & Shands Hospital. He directs the acute stroke team helping to ensure that Shands remains at the forefront of acute stroke care. With other members of the stroke team, he directs the implementation of the American Stroke Association's *Get with the Guidelines* national stroke database and quality assurance program and serves as site principal investigator for clinical trials designed to improve clinical outcomes in stroke.

Dr. Waters received a master's degree in genetics from Penn State University. He attended medical school at the University of Florida, where he also earned his Ph.D. in biochemistry and molecular biology. He received formal neurological training at David Geffen School of Medicine at the University of California, Los Angeles (UCLA) and completed a fellowship in neurogenetics with Dr. Stefan Pulst. Prior to coming to the University of Florida, Dr. Waters served as the director of the Stroke Program at Cedars Sinai Medical Center and Assistant Professor of Medicine at UCLA.

Dr. Waters' research interests include genetic mechanisms of stroke, including cerebral cavernous malformations, CADASIL, and sickle cell anemia. In addition, he has active research in gene discovery and the pathophysiology of dominant cerebellar ataxias. Dr. Waters is a member of the American Academy of Neurology and the American Society of Human Genetics.



Evelyn F. McKnight Brain Institute Meeting Participants

University of Miami

Noam Alperin, Ph.D.

Professor of Radiology
Evelyn F. McKnight Brain Institute

Ahmet Murat Bagci, Ph.D.

Senior Research Associate,
Department of Radiology
Evelyn F. McKnight Brain Institute

Antoni Barrientos, Ph.D.

Associate Professor of Neurology
Associate Professor of Biochemistry &
Molecular Biology
Evelyn F. McKnight Brain Institute

Susan Halloran Blanton, Ph.D.

Associate Professor of Human Genetics
Associate Director of Communications and
Compliance
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Elizabeth A. Crocco, M.D.

Assistant Professor of Clinical Psychiatry
Chief, Division of Geriatric Psychiatry
Department of Psychiatry and Behavioral
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Kunjan R. Dave, Ph.D.

Research Assistant Professor
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Francisca Diaz, Ph.D.

Research Assistant Professor
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Chuanhui Dong, Ph.D.

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Susan Fox Rosellini, MBA

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Department of Medical Development and
Neurology

Hannah Gardener, ScD.

Assistant Scientist
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and Dean, University of Miami Miller
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University of Miami Health System

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Jung-Jiin Hsu, Ph.D.

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Heather Katzen, Ph.D.

Assistant Research Professor of Neurology
Neuropsychology Division
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Evelyn F. McKnight Brain Institute Meeting Participants

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Marsha P. Kegley
Associate Vice President of University
Advancement
Department of Medical Development

Mary Ann Sprinkle
Associate Vice President
Medical Development and Alumni Affairs
Department of Medical Development

Bonnie E. Levin, Ph.D.
Schoninger Associate Professor of Neurology
Evelyn F. McKnight Brain Institute

Clinton B. Wright, M.S., M.D.
Associate Professor of Neurology
Scientific Director, Evelyn F. McKnight
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Carlos T. Moraes, Ph.D.
Professor, Department of Neurology
Evelyn F. McKnight Brain Institute

Students in attendance:

Fatta B. Nahab, M.D.
Assistant Professor of Clinical Neurology
Director, Movement Disorder Research
Evelyn F. McKnight Brain Institute

Nooshin N. Zadeh

Marytery Fajardo

Katherine Nearing
Student – class of 2011
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Ami P. Raval, Ph.D.
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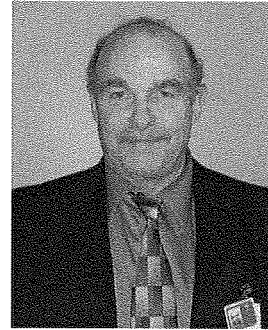
Tatjana Rundek, M.D., Ph.D.
Associate Professor of Neurology,
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**Ralph L. Sacco, M.S., M.D., F.A.A.N.,
F.A.H.A.**
Chairman and Professor of Neurology,
Epidemiology, and Human Genetics
Executive Director, Evelyn F. McKnight
Brain Institute

Donna E. Shalala, Ph.D.
President, University of Miami

Noam Alperin, Ph.D.

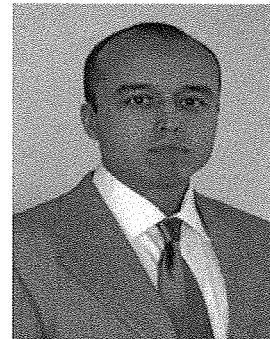
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Noam Alperin came to the University of Miami in May 2009 from the University of Illinois at Chicago. He obtained his undergraduate degree in Physics from Tel Aviv University and his Graduate Degree from the University of Chicago's Medical Physics program. Dr. Alperin's work on the mechanophysiology of the brain and the interplay between blood and CSF flow dynamics is supported by the National Institute of Health. This work has led to the development of a noninvasive method for measurement of Intracranial Pressure using MRI. Since arriving at UM, Dr. Alperin has joined the McKnight Center imaging team and is leading the research effort on quantitative assessment of the brain atrophy rates and its association with Cerebral Blood Flow. In addition Dr. Alperin heads the Advance Image Processing Laboratory which is integrated with the Evelyn F. McKnight Center for Age Related Memory Loss. The lab focuses on using different MRI modalities to characterize and quantify morphologic and physiologic changes in the brain associated with aging.

Ahmet Murat Bagci, Ph.D.

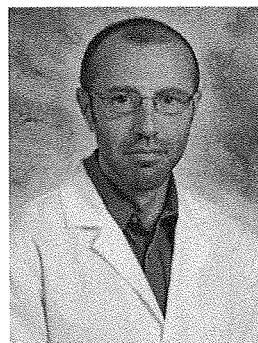
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Murat Bagci joined the Department of Radiology at the University of Miami in May 2009. He received his graduate degree in 2008 from the Electrical and Computer Engineering Department at the University of Illinois at Chicago. Dr. Bagci's area of research is signal and image processing, development of algorithms and methods for segmentation of medical images. He is currently working as a member of Dr. Alperin's Advanced Image Processing Laboratory investigating morphological and physiological changes in brain due to aging using different MRI modalities. He is working closely with the Evelyn F. McKnight Center for Age-Related Memory Loss.

Antoni Barrientos, Ph.D.

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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.

Susan Halloran Blanton, Ph.D.

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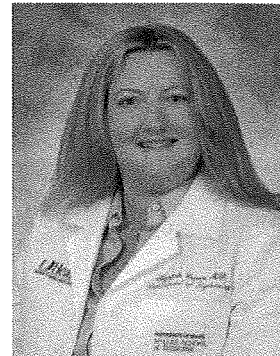


Dr. Blanton received her PhD in Human Genetics from Virginia Commonwealth University/Medical College of Virginia. She obtained post-doctoral training in Biostatistics (University of Pittsburgh) and Population Oncology (Fox Chase Cancer Center). Her primary research has focused on the mapping of genes for Mendelian and complex diseases; she has participated in studies identifying twenty genes/loci for Mendelian disorders. Stroke and the underlying genetics of its risk factors, deafness, retinal diseases, skeletal dysplasias, cleft

lip/palate, and club foot are among the diseases which she currently studies. She has also been involved in developing and implementing genetic education materials for Federal and appellate level judges and science writers in an ELSI sponsored project. Her current research also involves developing methods for integrating genetics into the private practice setting. Dr. Blanton is Associate Director of Communications and Compliance at the HIHG and Associate Professor of the Dr. John T. Macdonald Foundation Department of Human Genetics.

Elizabeth A. Crocco, M.D.

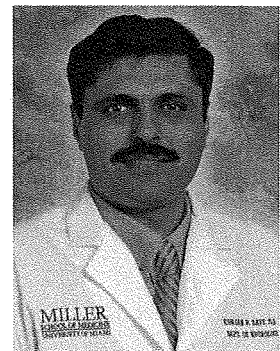
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Dr. Crocco is the Chief of Geriatric Psychiatry in the Department of Psychiatry and Behavioral Sciences at the Miller School of Medicine. In addition, she is Board-Certified in the sub-specialty of Geriatric Psychiatry. As the co-P.I. of the MDC, she oversees the coordination of clinical services at the MDC and participates actively in the overall research efforts of the clinic. 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.

Kunjan R. Dave, Ph.D.

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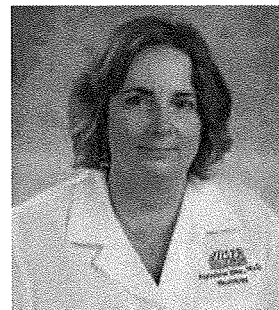


Presently, Dr. Kunjan R. Dave is a Research Assistant Professor of Neurology, University of Miami Miller School of Medicine. Dr. Dave received his Ph.D. in Biochemistry in 2000 from the M. S. University of Baroda, India. During his PhD training he worked on several research projects including secondary 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. Dr.

Dave then joined the Department of Neurology, University of Miami as a post-doctoral fellow with Dr. Miguel A. Perez-Pinzon. Dr. Dave has performed research essential for the understanding cerebral ischemia pathophysiology and Amyotrophic Lateral Sclerosis. The goal of Dr. Dave's 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.

Francisca Diaz, Ph.D.

Research Assistant Professor
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Dr. Francisca Diaz joined the faculty at the University of Miami, Department of Neurology in 2008. She is a member of the Basic Science Division and has extensive training in Biochemistry and Molecular Biology. Dr. Diaz research focuses on the study of mitochondria and how its bioenergetics and functions relate to neurodegenerative diseases. She has created several genetically modified knockout mice with defects in the mitochondrial oxidative phosphorylation system. These mice are been used as models of human mitochondrial myopathies, encephalopathies and hepatopathies and utilized to test new therapies. Dr. Diaz current research interest also includes the study of adaptive mechanisms of neuronal survival in the absence of mitochondrial respiration. Results of her studies could lead to the discovery of new therapeutic targets for neurodegenerative disorders, stroke and aging. Her research is currently funded by the Florida Health Department. Dr. Diaz is part of the Molecular Bioenergetics Group and is actively involved in the training and supervision of graduate students and postdoctoral fellows in Dr. Carlos Moraes' laboratory.

Hannah Gardener, Sc.D.

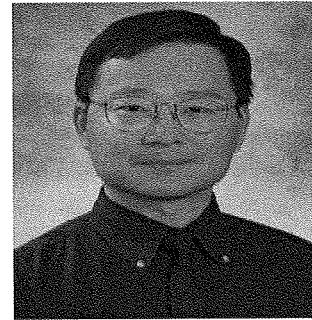
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Hannah Gardener, ScD, Assistant Scientist in the Department of Neurology at the University of Miami, is an epidemiologist with a particular interest in neuroepidemiology and the epidemiology of aging. She received her doctorate in Epidemiology in 2007 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 almost four years. Her current research focuses primarily on dietary behavior and how it relates to the risk of vascular events, carotid disease, and age-related changes in the brain.

Jung-Jiin Hsu, Ph.D.

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Dr. Hsu holds a Ph.D. in physics (University of Pittsburgh) and completed post-doctoral training in medical imaging and brain functional MRI (Stanford University) before joining the University of Miami in 2009 as research assistant professor of radiology. He promotes and supports MR neuroimaging research, and is developing novel MRI methodologies for quantitative characterization of neuronal activity. Current focus of the development is to utilize the longitudinal relaxation rate of the magnetization for clinically feasible applications; the result will be that the relaxation rate and the physiological quantities derived from it can be used as reliable imaging biomarkers. Areas of laboratory and clinical application are functional imaging of the brain, non-invasive tissue oximetry, non-invasive characterization of the tissue composition, quantitative blood perfusion measurement, etc. He has invented a fast MR longitudinal relaxation measurement method which will bring to the neuroscience community a novel, quantitative tool for functional MRI. Before his career in MRI, Dr. Hsu was a theoretical physicist and had published first-authored research papers on atomic structures. During graduate study, he decided to take on physics problems in biomedicine and chose imaging for the dissertation. Dr. Hsu has 14 years of experience in scientific computing, computerization, development of computational strategies and algorithms for signal processing and statistical analysis and to tackle physics problems. In addition to functional MRI, Dr. Hsu's MRI experience includes designing RF and shim coils, MRI of flow velocity, z-shimming, real-time fMRI, CSF oximetry, etc.

funded Mentored Patient-Oriented Research Career Development Award (K23) to study cognitive recovery in Normal Pressure Hydrocephalus. In addition, Dr. Katzen is actively engaged in ongoing projects in the areas of Parkinson's disease, Huntington's disease, and Essential Tremor. Dr. Katzen is also involved in training and has served as a mentor for several undergraduate, doctoral and medical student research projects.



Bonnie E. Levin, Ph.D.

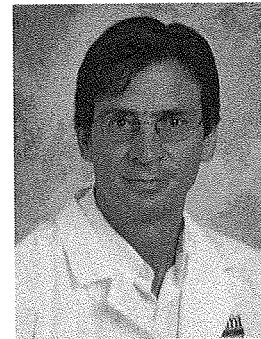
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Dr. Bonnie Levin is the Alexandria and Bernard Schoninger Associate Professor of Neurology and Director of the Division of Neuropsychology in the Department of Neurology at the University of Miami Miller School of Medicine. She received her BS for 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.

Carlos T. Moraes, Ph.D.

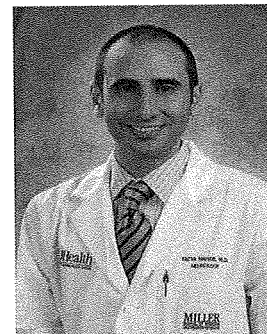
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Carlos T. Moraes, Ph.D. is a Professor in the Department of Neurology with a secondary appointment in Cell Biology & Anatomy at the University of Miami, Leonard M. Miller School of Medicine. He earned his BS and MS in Biomedical Sciences at The Escola Paulista de Medicina in Brazil in 1993. He started his PhD program in Genetics & Development at Columbia University College of Physicians and Surgeons in 1988. During this period he worked with Drs. Salvatore DiMauro (co-Mentor) and Eric Schon (Mentor) on the molecular pathogenesis of mitochondrial disorders. 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. 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.

Fatta B. Nahab, M.D.

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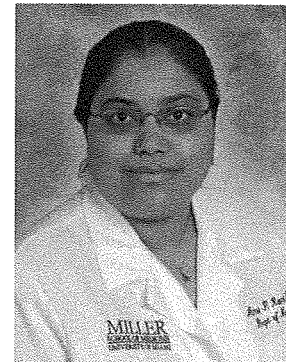
Dr. Nahab completed his medical degree and residency training in Neurology at the Loma Linda University School of Medicine in southern California. He went on to complete a combined 4-

year fellowship in Movement Disorders and Functional Neuroimaging under the direction of Dr. Mark Hallett in the Human Motor Control laboratory at the National Institute of Neurological Disorders and Stroke in Bethesda, Maryland. During his tenure at the National Institutes of Health, he also became Assistant Clinical Investigator and Director of the Botulinum Toxin Clinic.

Dr. Nahab has conducted leading research into the mechanisms of voluntary movement and self-agency using functional MRI, as well as conducting Phase I/II clinical trials for the treatment of essential tremor. Dr. Nahab is the author of numerous peer-reviewed publications, book chapters, and scientific abstracts in both national and international venues.

Dr. Nahab joined the University of Miami Department Of Neurology in 2008 and established the Laboratory for Functional Imaging of Neurodegenerative Disorders. In addition to his own studies exploring the neural mechanisms of tremor and development of fMRI-based methods to track the progression of Parkinson disease, Dr. Nahab has collaborated with colleagues on the neural substrates of healthy cognitive aging, visual rehabilitation, and the development of clinical functional neuroimaging protocols for patients with brain tumors and epilepsy.

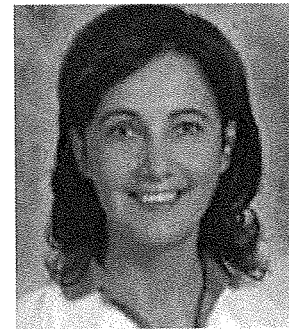
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Dr. Raval Ami serves as Research Assistant Professor in the Department of Neurology at the University of Miami Miller School of Medicine. She has had previous training in the physiology of reproduction, and coupled this knowledge with laboratory research on the pathophysiology of stroke. Her research focuses on (1) understanding the effects of estrogen on neuronal survival after an ischemic episode, and (2) the role of nicotine addiction in compromising the beneficial effects of estrogen on hippocampal neurons subjected to ischemia. The results to this point indicate that nicotine addiction renders 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 aims to identify the mechanism of deleterious effects of nicotine that are unique to the female brain. The knowledge acquired will guide the development of novel pharmacological strategies specific for women.

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

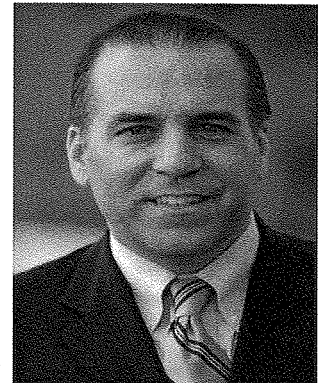
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Dr. Tatjana Rundek is Associate Professor Neurology and a Director of Clinical Translational Research Division in the Department of Neurology of the Miller School of Medicine, the University of Miami. She is Vice Chair of Clinical Research in the Neurology. Dr. Rundek received her medical and PhD degree at the University of Zagreb, and trained in neurology in Munich. She received stroke and epidemiology fellowship training at Columbia University in New York. She was an Assistant Professor of Neurology and Director of Non-Invasive Vascular Laboratory at Columbia University until she relocated to Miami in 2007. Dr. Rundek is a principal investigator of the NIH funded R01s grants on genetics of subclinical atherosclerosis and the recipient of NIH K24 training grant. She is a co-investigator of several large NIH-funded epidemiology studies including the Northern Manhattan Study and Albert Einstein Aging Vascular Ancillary Study in the Bronx. Dr. Rundek was the Fulbright Scholar and the recipient of the research awards from the Hazel K. Goddess Found, the Dr. Gilbert Baum Fund and the American Institute in Ultrasound in Medicine award for best clinical application of ultrasound. Dr Rundek research work is directed toward the genetic and environmental determinants of stroke and atherosclerosis and use of ultrasound imaging for early detection, intervention and prevention of functional and structural changes of arterial wall in inflammation. Dr. Rundek is also dedicated to teaching and promotion of clinical utility and standards of neurovascular ultrasound. Dr. Rundek is a member of the American Heart Association, American Academy of Neurology, and American Institute of Ultrasound in Medicine, serves on the editorial boards of *Neurology and Stroke*, and is *President elect* of the Neurosonology Community Practice of the American Institute of Ultrasound in Medicine.

Ralph L. Sacco, M.S., M.D., F.A.A.N., F.A.H.A.

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Ralph L. Sacco, MD, MS, is the Chairman of Neurology, Olemberg Family Chair in Neurological Disorders, Miller Professor of Neurology, Public Health & Epidemiology, Neurosurgery and Human Genetics at the Miller School of Medicine, University of Miami and Chief of the Neurology Service at Jackson Memorial Hospital. A graduate of Cornell University, and a cum laude graduate of Boston University School of Medicine, he also holds a master's in epidemiology from Columbia University, 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 the Stroke and Critical Care Division, and Associate Chairman at Columbia University.

Principal Investigator of the Northern Manhattan Study (NOMAS), as well as co-investigator of multiple other NIH grants, Dr. Sacco has published extensively in the areas of stroke prevention, treatment, risk factors and stroke recurrence. He has been the recipient of numerous awards including, the Feinberg Award for Excellence in Clinical Stroke, the Chairman's Award from the American Heart Association and the Javits Award in Neuroscience.

Dr. Sacco is a fellow of both the Stroke and Epidemiology Councils of the American Heart Association and the American Academy of Neurology. He is a member of the American Association of Physicians and the American Neurological Association. He is currently serving as President of the American Heart Association for the 2010-11 term.

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

Scientific Director, Evelyn F. McKnight Brain Institute

Associate Professor

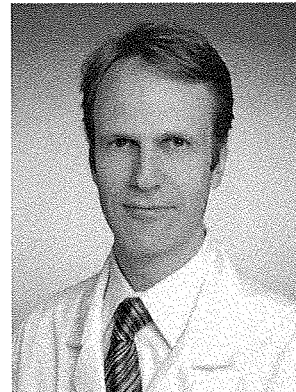
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As Scientific Director of the Evelyn F. McKnight Brain Institute, Dr. Wright is developing a translational research program that examines normal cognitive aging and its distinction from pathological states, with a special emphasis on the role of subclinical cerebrovascular disease.

Dr. Wright graduated from George Washington with honors in psychology, and received his medical degree from the College of Physicians and Surgeons of Columbia University. He completed residency training in neurology at the Neurological Institute of New York and the Columbia University Medical Center. Following residency, Dr. Wright was awarded completed a vascular neurology fellowship as well as a Master of Science degree in epidemiology from Mailman School of Public Health under the NINDS-funded Neuroepidemiology Program (T32).

Dr. Wright is currently funded by the American Heart Association and the National Institutes of Neurological Disorders and Stroke to examine race-ethnic disparities and the effects of vascular risk factors on the brain structure and function, with an emphasis on early cognitive changes. He is Chair of the Neuroimaging and Cognitive studies within the Northern Manhattan Study, an urban multi-ethnic population-based cohort study in New York. Recent studies include the association between longitudinal blood pressure measurements as well as the association between adherence to a Mediterranean Style Diet and white matter lesion load. He is also site PI of the NHLBI-funded Systolic Blood Pressure Intervention Trial (SPRINT) MRI substudy.

Dr. Wright is co-director of the collaborative UM Memory Disorder Center (MDC) along with Dr. Elizabeth Crocco, Chief of Geriatric Psychiatry in the department of Psychiatry & Behavioral Sciences. The MDC has clinical and research aims, as well as community outreach and caregiver support programs. The MDC includes other McKnight Brain Institute members, including neuropsychologists Drs. Bonnie Levin and Heather Katzen, and neurologist Dr. Richard Isaacson. The Center collaborates with Dr. Margaret Pericack-Vance and the Hussman Institute for Human Genomics.





McKnight Brain Research Foundation
FOURTH INTER-INSTITUTIONAL MEETING

UAB EVELYN F. MCKNIGHT
BRAIN INSTITUTE
DEPARTMENT OF NEUROBIOLOGY



Evelyn F. McKnight
Brain Institute

UF UNIVERSITY of
FLORIDA

UHealth
UNIVERSITY OF MIAMI HEALTH SYSTEM

Evelyn F. McKnight
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