Welcome to the launch of “Brainstorms” – the University of Kentucky Sanders-Brown Center on Aging (SBCoA) newsletter. This newsletter is designed to provide you with the latest information about our research, education/outreach, and clinical programs. Because this is the first issue, we have included a summary of the overall research themes of the SBCoA to give you a flavor of some of the exciting areas that our researchers are studying. Every newsletter issue will also profile a faculty member in the Center, cover the latest news and upcoming events, and discuss issues of interest to the community.

The overarching themes that unify all of our efforts are **Transitions** and **Translation**. Our goal is to define disease mechanisms underlying the transitions from normal brain aging to cognitive impairment, and enable translation of this knowledge into effective new therapies.

Since the opening of the SBCoA in 1979, and the federal funding of our Alzheimer’s Disease Center in 1985, the center has been a national leader in efforts to improve the quality of life for the elderly through research dedicated to understanding the aging process and age-related brain diseases such as Alzheimer’s disease and related dementias and stroke. The center also promotes education and outreach, provides clinical and neuro-pathological diagnoses and care of individuals with cognitive impairment, and runs an active clinical trials program to test potential new therapies. These activities are critical because, with the aging of the population worldwide, age-related cognitive disorders such as Alzheimer’s disease and related dementias are reaching epidemic proportions, requiring a concerted effort to identify new knowledge breakthroughs to combat these devastating diseases of the elderly.

We invite you to learn more about our center through the information in this newsletter, and by visiting our website ([www.centeronaging.uky.edu](http://www.centeronaging.uky.edu)).

We welcome your feedback and suggestions for future newsletter content. We want this newsletter to reflect your ideas and needs, so share your BRAINSTORMS with us!
Contributions by the Sanders-Brown Center on Aging fall into four broad categories: research on biomarkers; cellular and molecular level research; risk factors and lifestyle research; and drug discovery/development.

**RESEARCH ON BIOMARKERS**

Changes in the brain consistent with Alzheimer’s pathology can develop 10-20 years before memory problems are evident. This emphasizes the importance of developing new methods to detect very early changes, or biomarkers, in living individuals in the absence of cognitive impairment.

Researchers at SBCoA are exploring several approaches to the development of novel biomarkers, including the use of structural and functional neuroimaging procedures, the detection of novel biomarkers in cerebrospinal fluid (CSF) and blood, and the application of sophisticated computational models. These studies may help us identify individuals likely to benefit from future therapeutic interventions.

**CELLULAR AND MOLECULAR LEVEL RESEARCH**

SBCoA is investigating how abnormal changes and dysregulated mechanisms in the brain can contribute to the progression of neurodegenerative diseases like Alzheimer’s and other dementias and stroke. Some of these important cellular and molecular mechanisms include contributions from amyloid and tau pathology, abnormal aggregations of proteins, brain inflammation and oxidative stress, genetic variants, prior head injury, and vascular problems. Understanding the earliest changes that occur in the brain may help us to develop more effective interventions by targeting these disease mechanisms.

**RISK FACTORS & LIFESTYLE**

Work at SBCoA is defining how Down syndrome, head injury, and vascular problems increase the risk of dementia. We are also studying the importance of lifestyle modifications in reducing the risk of dementia and maintaining a healthy brain with age. Activities that are good for the brain include regular exercise, eating a healthy diet, staying mentally and socially connected, and monitoring blood pressure, blood sugar, cholesterol and body weight.

**DRUG DISCOVERY/DEVELOPMENT**

Researchers at SBCoA are also working with the national Alzheimer’s consortium as well as private foundations and pharmaceutical companies to perform clinical trials of the latest drug candidates, to directly determine if our research volunteers will benefit from promising new therapeutic interventions.

“Research Today, for Tomorrow’s Memories”
Featured Faculty Profile: Jose F. Abisambra, PhD

by Harry LeVine, PhD

After two years of medical school in his native Colombia, Jose (Joe) Abisambra decided that research in neuroscience rather than clinical practice was what intrigued him. His interest in the brain was fostered by his psychiatrist grandfather, but research opportunities in Colombia were limited. At age twenty he took advantage of his dual citizenship and came to the US for his training—undergrad at St. Leo University then a masters and Ph.D. and postgraduate at the University of South Florida in Tampa. He joined the SBCoA in March, 2013.

Joe’s research at the SBCoA focuses on the protein tau and its involvement in both normal brain aging and disease. He says that one of the most attractive things about UK and the SBCoA is the ease of collaboration among researchers working on sometimes unrelated topics. In addition to working with Adam Bachstetter in Linda Van Eldik’s lab on tau in traumatic brain injury in the SBCoA, he is studying changes in tau and other brain cellular proteins and lipids with Andrew Morris and Haining Zhu in the Biochemistry department, and investigating tau as a novel therapeutic target in breast cancer with Kathleen O’Connor and Craig Horbinski in the Markey Cancer Center.

Outside of the lab Joe’s life is currently filled with family—his wife and 8-month old daughter. He loves anything outdoorsy, especially rock climbing and competitive sailing, which of late have been replaced by Saturday morning basketball with some of the Physiology Department members. You would never suspect that this suave, tall (6 foot 4 inch), tasteful dresser was a guitarist/lead singer in a rock band as an undergrad.

NEW GRANTS! Congratulations to the following SBCoA Investigators for their newly funded projects.

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<tr>
<th>Name</th>
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<td>Gregory Bix</td>
<td>National Institute of Neurological Disorders &amp; Stroke</td>
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<td>Gregory Jicha</td>
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<td>A Placebo-controlled, Double-blind, Parallel-group, Bayesian Adaptive Randomization Design and Dose Regimen-finding Study to Evaluate Safety, Tolerability and Efficacy of BAN2401 in Subjects With Early Alzheimer’s Disease: BAN2401-G000-201</td>
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<td>Harry LeVine</td>
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<td>Probes to differentiate AD beta-amyloid from model beta-amyloid systems: R21NS080576</td>
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<td>M. Paul Murphy</td>
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<td>Chris Norris</td>
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<td>Linda Van Eldik</td>
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<td>Role of calcineurin/NFAT signaling in traumatic brain injury</td>
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<td>Scott Webster</td>
<td>National Institute of Neurological Disorders &amp; Stroke</td>
<td>Fellowship: Dysregulated neuroinflammation: a novel target for neurodegeneration after TBI: F32NS084605</td>
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<td>Donna Wilcock</td>
<td>Alzheimer’s Association</td>
<td>Inflammatory biomarkers to predict transition to dementia in Down syndrome</td>
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Dr. Ronan Tynan is truly a modern day “Renaissance Man” — an esteemed Irish tenor, a record-setting, paraplegic athlete and revered physician. Faced with numerous challenges throughout his well-documented life, he has persevered with enormous passion and determination. Introduced to international audiences as a member of the Irish Tenors, Tynan quickly became known for his unique voice and irresistible appeal. Following his mother’s advice to always follow your dreams, Tynan decided to launch a solo career, and has achieved the fame and adoration that could have existed only in the farthest reaches of his dreams. Tynan’s singing offered gentle consolation at the funeral of President Ronald Reagan, when an international TV audience of more than 35 million heard him sing “Amazing Grace” and Schubert’s “Ave Maria,” at the personal invitation of Nancy Reagan. His mother suffered from Alzheimer’s disease, which is the inspiration behind his song, “Passing Through.”
Join us for the 3rd Annual Markesbery Symposium on Aging and Dementia. This two day program will offer sessions for both scientific and community audiences. Clinicians and researchers from the University of Kentucky and other institutions will come together to share current findings, trends and the latest updates on dementia and aging disorders, particularly as related to Alzheimer’s disease.

**SCIENTIFIC SYMPOSIUM & POSTER SESSION**
11:00am–4:00pm  
**Friday, November 15, 2013**  
Albert B. Chandler Hospital  
Pavilion A Auditorium

**COMMUNITY SESSION**
8:30am–12 noon  
**Saturday, November 16, 2013**  
Lexington Convention Center  
Bluegrass Room

**KEYNOTE SPEAKERS**

Frank LaFerla, PhD  
University of California, Irvine

Malú Tansey, PhD  
Emory University School of Medicine

University of Kentucky Presenters:  
Jose Abisambra, Gregory Bix, David Fardo, Brian Gold, Elizabeth Head,  
Gregory Jicha, Peter Nelson, Marie Smart

The symposium is free and open to the public, but registration is required. For more information or to register contact the Sanders-Brown Center on Aging at 859.323.6040, email shmall2@uky.edu or visit www.centeronaging.uky.edu

Registration information is governed by UK’s privacy policy.
Currently, a number of different interventions and drugs are under development at SBCoA that hold great promise for advancements in the field of AD. For example, our basic scientists have discovered a novel microRNA pathway that could lead to an effective prevention strategy for AD. Our clinical and basic science teams in partnership have received a grant from the National Institutes of Health to study this pathway in a clinical trial. Several other studies are underway that evaluate the use of medicines for the prevention and treatment of AD. You can help support these partnerships in translational research through volunteering to be a research participant in one of our studies or supporting our researchers through donations to SBCoA, both of which are vitally needed to accelerate our efforts toward finding a cure for this devastating disease.

COMMUNITY OUTREACH

Help us move our “laboratory bench” science to the “bedside” as we fight for a cure for Alzheimer’s disease!

The strong focus on clinical research at the SBCoA allows us to leverage innovative discoveries from our basic science research programs and directly apply them to the research volunteers who we serve. Moving this type of laboratory bench discovery to patient care research is commonly referred to as “translational research.” This approach creates a two-way bridge that allows the flow of knowledge in the laboratory to be moved, as quickly as possible, toward the development of potential drug and treatment strategies. This is critical in our search for cures for Alzheimer’s disease (AD).