

## SBCOA News Archive

2010

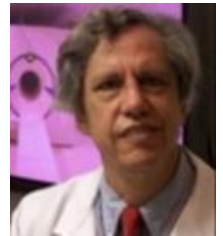
**Paul Murphy**, a UK assistant professor of molecular and cellular biochemistry, has been named the recipient of the prestigious Thomas Maciag Award from the National Institutes of Health's National Center for Research Resources. Murphy received this honor in recognition of his research accomplishments and his ability to mentor young scientists.



Murphy's laboratory investigates the molecular processes underlying the development of Alzheimer's disease.

This is the second consecutive time that the Maciag Award, given every two years, has honored an investigator from UK's Center of Biomedical Research Excellence in the Molecular Basis of Human Disease. Haining Zhu, associate professor of molecular and cellular biochemistry at UK, received the award in 2008. **July 20, 2010**

**Dr. Charles Smith**, a Professor in the Sanders-Brown Center on Aging was quoted recently in a news article for Healthy Aging regarding his opinion on "memory screening". Dr. Smith is an international expert on structural and functional brain imaging in Alzheimer's disease and in people with mild cognitive impairment. [\(click here\)](#) **June 18, 2010**



**Dr. Paul Murphy**, an Assistant Professor at the Sanders-Brown Center on Aging is the recipient of the prestigious Coins for Alzheimer's Research Trust (CART) fund award, a project of the Rotary Club of North Carolina, South Carolina and Georgia. Dr. Murphy, along with co-investigator Dr. Dana Niedowicz, will explore the reasons why type 2 diabetes puts some individuals at risk for developing Alzheimer's Disease. This is the first time in the history of CART that they have given the award to individuals from the same institution on consecutive years (Dr. Harry LeVine of the Sanders-Brown Center on Aging received one last year). **May 10, 2010**



This article on Dr. Mark Lovell appeared in the Berea College Alumni magazine. Dr. Lovell is an Associate Professor at the Sanders-Brown Center on Aging and the UK Department of Chemistry [\(click here for article\)](#) **April 21, 2010**



**Elizabeth Head**, researcher from **Sanders-Brown Center on Aging** at the University of Kentucky, tells [USA Today](#) that "adults with Down syndrome appear to develop the brain plaques and tangles characteristic of Alzheimer's disease very early in life – even as young as 3 or 4 years old. For decades, however, their brains also appear to repair and compensate for the damage." "Their brains may be clearing the plaques," says Head, who is now recruiting Down syndrome patients age 35 and older for the Down syndrome, aging and Alzheimer's disease study. To read the entire story from Monday, March 22<sup>nd</sup> USA Today, go to [http://www.usatoday.com/news/health/2010-03-22-down22\\_CV\\_N.htm](http://www.usatoday.com/news/health/2010-03-22-down22_CV_N.htm) **March 25, 2010**



### **UK Sanders-Brown Researcher Describes New Alzheimer's Findings**

LEXINGTON, Ky. (Feb. 5, 2010) - A University of Kentucky researcher has helped to develop a quick test that could be used by doctors in the clinic to evaluate the treatment response of patients with advanced Alzheimer's disease.

Dr. Frederick A. Schmitt, professor of neurology, psychiatry, behavioral science, and psychology, [UK College of Medicine](#) along with Dr. Judith Saxton, University of Pittsburgh, and other colleagues, published [their findings](#) in the journal *Alzheimer Disease & Associated Disorders*.



"The availability of effective treatments for severe Alzheimer's disease has accentuated the need for brief, simple tools to evaluate treatment response in busy clinical settings for patients with advanced dementia," Schmitt said.

To develop such a tool, Schmitt and his collaborators looked at data from 875 people with advanced Alzheimer's disease from four national and international double-blind-randomized studies of the drug donepezil. Donepezil has been used to treat Alzheimer's symptoms in mild-to-moderate cases for over a decade. Recently, this medicine was approved for use in severe Alzheimer's disease.

The researchers looked at memory and thinking scores from the Severe Impairment Battery (SIB), which was used in these studies to measure drug effects. The goal was to find specific SIB items that are sensitive to change over time and could easily be used in doctors' offices to track response to donepezil in patients with advanced Alzheimer's disease.

Eight of the 51 SIB items were chosen based on effect sizes (how well they detected treatment effects) and relative ease of administration. The resulting SIB-8 was then applied to another patient-derived data set for validation and to characterize its usefulness.

The eight items included were ability to: recall the current month, name all 12 months of year, repeat a sentence, write one's own name, name one's favorite foods (fluency), identify a spoon, demonstrate how to use a spoon, and repeat a sequence of numbers (digit span). Researchers found these items were sensitive to change with treatment and are relatively easy to give.

"Baseline SIB-8 scores were associated with disease severity at the start of the study and provided a good range of test scores in people with advanced disease," Schmitt said.

The researchers concluded that the SIB-8 is a quick (three-minute) assessment for patients with severe Alzheimer's disease that is sensitive to change and able to detect treatment response.

Schmitt can be contacted at [fascom@uky.edu](mailto:fascom@uky.edu) [fascom@uky.edu] or (859) 323-6702. February 5, 2010

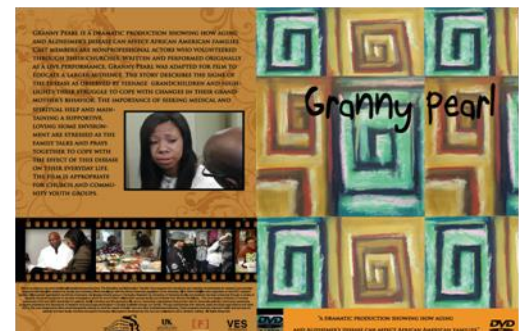
## 2009 News Archive

Adam M. Weidner successfully defended his thesis, "Synthetic and Biological Abeta Oligomers: Biochemical Fractionation and Cellular Activity", on December 3<sup>rd</sup>. Adam came to the Integrated Biomedical Sciences Program at UK with a BS in Biotechnology from the Rochester Institute of Technology in the Fall of 2004, settling in the LeVine lab with Dr. M. Paul Murphy as a co-mentor in the summer of 2005. Adam studied an early stage toxic oligomer form of the amyloid-beta peptide that forms the disease-defining plaque lesions in Alzheimer's disease brain. He developed a sensitive



method for measuring these oligomers and used it to assay extracts of autopsy specimens from different brain regions of subjects at different clinical stages of the disease. He found that the presence of oligomers in the brain regions affected early in the disease was a better predictor of cognitive performance than the presence of plaques which are diagnostic of Alzheimer's disease, suggesting that they could be a causative agent in the disease. He went on to show that the biological effects elicited in cultured cell systems were similar for biologic oligomers and those produced in the laboratory from synthetic amyloid-beta peptide. It is important to show the equivalence of biological and synthetic oligomers because most work in the field is done with synthetic peptides due to limited availability of biological oligomers. Adam will be staying on for a few months to finish up some work for manuscripts and is looking forward to the next stage of his career.

The Sanders-Brown Center on Aging is pleased to announce the video release of a dramatic production showing how aging and Alzheimer's disease can affect African American families called "Granny Pearl". Cast members are nonprofessional actors who volunteered through their churches. The story describes the signs of the disease as observed by teenage grandchildren and highlights their struggle to cope with changes in the grandmother's behavior. The importance of



seeking medical and spiritual help and maintaining a supportive, loving home environment are stressed as the family talks and prays together to cope with the effect of this disease on their everyday life. The film is appropriate for church and community youth groups. For more information contact Caitlin McGuire at 859-257-8971 or [cmcgu2@email.uky.edu](mailto:cmcgu2@email.uky.edu). December 2,

**2009**

Click on the links below for recent articles about the ongoing work at the Sanders-Brown Center on aging, as featured in the Louisville Courier Journal. **November 25, 2009**

<http://www.courier-journal.com/apps/pbcs.dll/article?AID=2009911220317>

<http://www.courier-journal.com/article/20091122/NEWS01/911220316>

<http://www.courier-journal.com/article/20091122/NEWS01/911220318>

<http://www.courier-journal.com/apps/pbcs.dll/article?AID=200991120012>

<http://www.courier-journal.com/article/20091122/NEWS01/91120009>



Dr. William Markesbery was featured on UKNOW's website in a story titled "Building a Legacy of Hope". The article describes Dr. Markesbery's and the Sanders-Brown Center on Aging's accomplishments (<http://uknow.uky.edu/node/5518>). **November 19, 2009**

**On November 14, 2009, the Sanders Brown Center on Aging held their annual Scientific Symposium at the Lexington Downtown Hotel. The event, hosted by Dr. Markesbery, Dr. Jicha and Stephanie Freeman featured lectures by Drs. Scheff, Head, Butterfield and Schmitt. Topics that were covered included:**

- how synapse loss contributes to mild cognitive impairment and dementia (Scheff)
- how a new study of aging in those with Down syndrome can contribute to our understanding of Alzheimer's disease (Head)
- how brain "rust" or oxidative damage can lead to neuropathology and Alzheimer's disease (Butterfield)
- what current clinical trials are ongoing in the field (Schmitt)

In addition to seminars, the audience also interacted with faculty, postdoctoral scholars and graduate students as they presented posters and voted to select the three top presentations. Our winners this year were Jennifer Furman in Dr. Norris's lab (first place), Chris Holler (second place) and Robin Webb (third place) both in Dr. Murphy's lab.





1. Dr. Markesbery introducing the symposium.
2. A wonderful turnout!
3. Dr. Jicha introduces the speakers with Stephanie Freeman and Roberta Davis.
4. Dr. Scheff describes brain changes with aging.
5. Dr. Head presents information about aging in Down syndrome.
6. Dr. Schmitt describes clinical trials.
7. Dr. Butterfield tells the audience about “brain rust”.
8. Erin Abner discusses her poster with attendees.
9. An example of a scientific poster at the symposium. **November 19, 2009**

On November 3, 2009, **Drs. Frederick Schmitt and Stephen Scheff** were invited to participate in a public forum at the Pennington Biomedical Research Center in Baton Rouge, Louisiana. The symposium provided an opportunity for people to “Ask the Experts” questions about dementia and Alzheimer’s disease. This very well attended event shared information regarding the latest news in clinical trials for the treatment and/or prevention of Alzheimer’s disease and an update on the current research in the field as to causes of disease. For a link to the talks given by Drs. Schmitt and Scheff please go to <http://idrp.pbrc.edu/index.htm>. The event was also featured in “the Advocate” online website at <http://www.2theadvocate.com/features/69339682.html>.  
**November 19, 2009**

**Dr. Gregory Jicha** is leading a team of researchers at the Sanders-Brown Center on Aging as part of a national effort to test a new treatment for Alzheimer's disease. The GAP (Gammaglobulin Alzheimer's Partnership) study will examine the effectiveness of using intravenous immune globulin (IGIV) in individuals with mild or moderate Alzheimer's disease. IGIV contains antibodies that may bind to senile plaques in the brains of those with the disease and may help to clear this pathology and slow disease progression. For more information regarding this exciting new clinical trial, please go to [http://news.uky.edu/news/display\\_article.php?artid=5115](http://news.uky.edu/news/display_article.php?artid=5115) or to <http://www.adcs.org/Studies/IGIV.aspx> for information on recruitment. If you are interested in enrolling in the study, please contact Ms. Stephanie Freeman at 859-257-1412 ext 234. **October 26, 2009**



NFATs (nuclear factor of activated T cells) are transcription factors that accumulate in the cell nucleus, where DNA is stored when calcium levels are elevated. Upon entering the nucleus, NFATs stimulate (and sometimes inhibit) the expression of numerous genes; most notably, cytokine genes involved in the orchestration of immune/inflammatory responses. Using postmortem brain samples provided by the University of Kentucky Alzheimer's Disease Center at the Sanders-Brown Center on Aging, **Dr. Hafiz Mohmmad Abdul**, in the laboratory of **Christopher Norris**, discovered that different clinical and pathological features of Alzheimer's disease are associated with elevations in the nuclear accumulation of different NFAT proteins. One of these proteins (NFAT1) showed increased accumulation in patients with very mild cognitive deficits, while another (NFAT3) was selectively elevated in patients with severe Alzheimer's disease. The Norris lab next investigated NFATs' function in astroglia cell cultures. Astroglia are the most abundant cell type in brain and play a critical role in triggering and maintaining deleterious neuroinflammation found in Alzheimer's and other neurodegenerative conditions. Graduate students in the Norris lab, **Michelle Sama** (now a post doc at Dartmouth) and **Jennifer Furman**, found that pathogenic amyloid beta peptides, which are found in the Alzheimer's disease brain, robustly stimulated NFAT in astroglia. Perhaps most importantly, selective blockade of astroglial NFAT signaling reduced the amount of neuronal damage inflicted by amyloid peptides. These observations suggest that NFAT proteins may play an important role in aberrant calcium signaling and neuroinflammation associated with dementia and neurodegeneration. The Norris laboratory is continuing this work and will use novel gene delivery approaches to selectively prevent NFAT activation in astrocytes, with the goal of reducing neuroinflammation and ameliorating neural/cognitive dysfunction due to Alzheimer's-like pathology. This exciting new study was just published in the *Journal of Neuroscience*, Volume 29: 12957-12969. **October 15, 2009**



**On November 14, 2009** we will be holding the **2009 Sanders-Brown Scientific Symposium!** This event will be held at the Lexington Downtown Hotel (369 West Vine Street) and hosted by Dr. Markesbery, Dr. Jicha and Stephanie Freeman. The symposium will feature presentations from scientists at the Center including Dr. Steve Scheff, Dr. Elizabeth Head, Dr. Allan Butterfield and Dr. Fred Schmitt. In addition to talks, there will be a wonderful opportunity for attendees to meet Center scientists one-on-one and browse through posters prepared by our up and coming young researchers. This event also provides us with an opportunity to show you how scientific breakthroughs are not possible without your dedication and generous time contribution. Please RSVP to 859-323-5550. We hope to see you there! **October 12, 2009**

**Dr. Stephen Scheff**, Associate Director of the Sanders-Brown Center on Aging has been awarded a 2 year grant from the National Institutes on Health to study ways in which to treat traumatic brain injury. Dr. Scheff has shown that inflammation and loss of mitochondrial function (tiny batteries that are inside every cell in the body that provide energy) may lead to brain cell loss after trauma. For this study, he will test a new compound, Pycnogenol® in rats that may reduce brain damage after trauma by lowering inflammation and making mitochondria healthier. Based upon the results of his study, this compound may potentially be useful for treating people with head trauma in future clinical trials. **October 2, 2009**



**Drs. Elizabeth Head and Frederick Schmitt** have been awarded a 5-year grant for a dedicated study of aging in adults with Down syndrome. The goals of the project are to follow clinical changes in adults with Down syndrome as they age, to examine brain changes using magnetic resonance imaging and to measure blood biomarkers. In combination, the study hopes to identify early markers of the development of Alzheimer disease in this very vulnerable population. This longitudinal project is a team effort and includes UK and Sanders-Brown Center on Aging faculty: Dr. Gregory Jicha, Dr. Allison Caban-Holt, Dr. Brian Gold, Dr. Richard Kryscio, Dr. William Robertson, Dr. Stephen Scheff, Dr. Peter Nelson, Dr. Harry LeVine and Dr. Christopher Norris. In addition, Dr. Tony Wyss-Coray at Stanford University School of Medicine is a collaborator. **October 1, 2009**

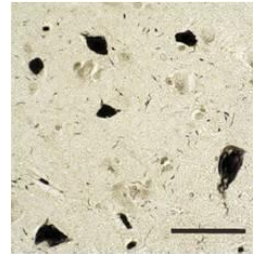


**Dr. Harry LeVine** has just published a new book titled “The Great Explainer. The Story of Richard Feynman”. Richard Feynman approached complex problems in atomic particle physics the same way he fixed radios as a 13-year old during the Depression. He mentally put himself inside the problem, visualizing radio signals coursing through the components of the radio or later subatomic particles traveling backwards and forwards through space and time. A key figure in the development of the atomic bomb by age 24, Feynman decided after the war that he would only work on things that were fun. He conjured up intuitive pictures to replace laborious calculations to solve problems, but once the challenge was gone he moved on. Feynman received the Nobel Prize in 1965 jointly with two other physicists for explaining the forces holding nuclei together, but he also made seminal contributions to superconductivity, quarks, and nanotechnology. His engaging



lectures captivated a generation of physicists, but the public knows him for solving the Challenger shuttle disaster. If you are interested, the book can be found on Amazon and is available to the general public. **October 1, 2009**

**Dr. Peter Nelson** and faculty at the Sanders-Brown Center on Aging including Erin Abner, Dr. Frederick Schmitt, Dr. Richard Kryscio, Dr. Gregory Jicha, Dr. Karen Santacruz, Dr. Charles Smith, Ms. Ela Patel and Dr. William Markesbery published a new article in the *Journal of Neuropathology and Experimental Neurology* (2009, 68: 774-784). In this paper Dr. Nelson noted that there are changes in the brains of some older individuals that resemble Alzheimer's disease in some ways but not in others. In Alzheimer's disease brains, both neurofibrillary tangles and amyloid plaques are present. When evaluating a brain after autopsy, their presence and abundance determine how the definitive diagnosis of Alzheimer's disease is made. Neurofibrillary tangles develop inside nerve cells and seem to kill nerve cells, which leads to the loss of cognitive powers in the disease. Amyloid plaques develop outside nerve cells and nobody knows what they do. Curiously, some persons have tangles but not plaques. What is going on here? Dr. Nelson and colleagues found that persons with those brain changes (tangles, but no plaques) were born during years (1909-1914) when they had the highest tendency to contract influenza during the 1918-1919 flu pandemic that affected some 30% of Americans. This provides a novel hypothesis that the flu can lead to delayed brain changes that overlap with Alzheimer's disease. This also provides insights both into how the flu affects the brain, and the pathways that are aberrantly stimulated in Alzheimer's disease. **October 1, 2009**



Abnormal "neurofibrillary tangles" in the brain (human brain section with the tangles stained black)

**Dr. Paul Murphy** has been invited to give a seminar at the 39<sup>th</sup> Annual Society for Neuroscience Meeting. This internationally attended meeting typically hosts over 30,000 scientists and provides an opportunity to share research ideas ([www.sfn.org](http://www.sfn.org)). Dr. Murphy will speak at an Exclusive Symposium titled "Knockout Rats in Neuroscience Research: Perspectives from the Field" sponsored by SAGE Labs. This year the meeting is in Chicago, Illinois from October 17-21. **September 21, 2009**



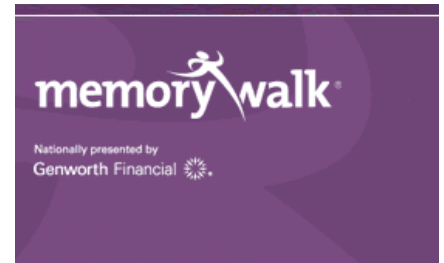
The Sanders-Brown Center on Aging was pleased to accept a donation provided by the American Legion Women's Auxiliary through the dedicated efforts of Ms. Diane Spencer, who serves as the National President. A full description of this award is provided at the University of Kentucky News Website ([Click here](#)). This generous gift will support research efforts into the causes and cures for Alzheimer disease at our Center. Dr. Steven Scheff ([Click here](#)), Associate Director of the Center, accepted the donation on the Center's behalf. All of us at the Center express our sincere appreciation to Ms. Spencer and the American Legion Women's Auxiliary! **August 20, 2009**





## The Alzheimer's Association Memory Walk is coming up!!

Stephanie Freeman at the Sanders-Brown Center on Aging has organized a team and we encourage you to join us. The walk is on Saturday, October 10 at the Masterson Station Park. Registration is at 8:30 am and the walk begins at 9:30 am. Even if you cannot attend the walk - feel free to sponsor our team. This annual event takes place all around the country and raises funds to support families with Alzheimer disease, for education and for research. Our team is at <http://memorywalk2009.kintera.org/lexington/sbcoa>. **August 20, 2009.**



**Dr. William Markesbery** [Click here](#) wins prestigious Zaven Khachaturian Award. Dr. William Markesbery, the Director of the Sanders-Brown Center on Aging was selected this year for a Khachaturian Award. This distinguished award, named in honor of Dr. Zaven Khachaturian, was established to recognize an individual whose compelling vision, selfless dedication and extraordinary achievement has significantly advanced the field of Alzheimer science

([http://www.alz.org/icad/icad\\_awards.asp#markesbery](http://www.alz.org/icad/icad_awards.asp#markesbery))).

Please join us in congratulating Dr. Markesbery for this well-deserved lifetime achievement and honor! **August 18, 2009**



**Dr. Paul Murphy** [Click here](#) was awarded a summer student training grant from the National Institute of Neurological Disorders and Stroke (NINDS). This project, funded as part of the American Reinvestment and Recovery Act (ARRA), was designed to give students and science educators experience doing research in an established laboratory working on Alzheimer's disease or related disorders. **August 18, 2009**



**Dr. Harry LeVine III** [Click here](#) has been awarded a CART grant (<http://www.afar.org/CART.html>) and joins a list of top researchers in the country who have previously won this award. This study will be ongoing for 2 years and will use a PET imaging agent in clinical trials for early detection of Alzheimer's disease, to study why only humans get this dementing disease.

**August 18, 2009**



Dr. Gregory Jicha [Click here](#) was spotlighted by the University of Kentucky for his dedication to reaching out to patients with Alzheimer disease across the State using telemedicine (<http://www.ccts.uky.edu/Spotlights/jicha.aspx>) and ([Memory Disorders Education Program Offered to Rural Kentucky](#)). Dr. Jicha was also invited to describe how researchers, including many at the Sanders-Brown Center on Aging, are developing new ways in which to treat Alzheimer disease. (<http://www.kentucky.com/148/story/867044.html?storylink=pd>).  
**August 18, 2009**



Our newsletter [Click here](#) is now available online! In this issue we discuss how Dimebon might help in the fight against Alzheimer's disease and provide challenging "Brain Teasers" to exercise your brain!  
**August 18, 2009**