Neuroscience Newsletter

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USUHS Neuroscience Program
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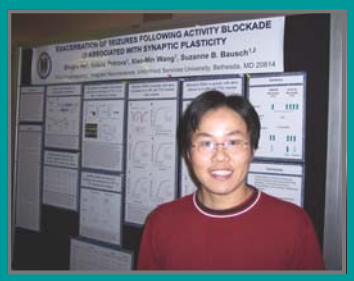
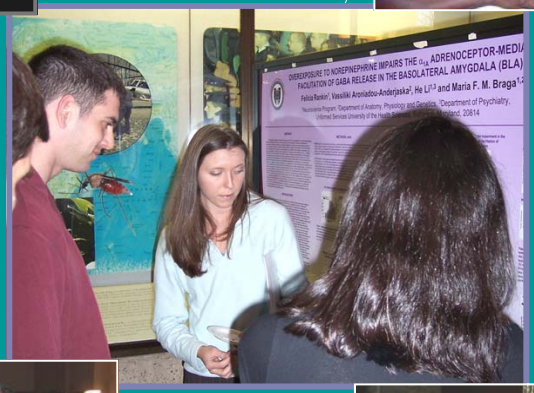
Neuroscience Open House





Five New Faculty Join Neuroscience Program

Dr. Xianglan Yao received her Bachelors degree in Medicine and Masters degree in Pathology from Xinjiang Medical College in China and her Ph.D. in Pathophysiology from the Institute of Basic Medical Sciences, Peking Union Medical College (PUMC) & Chinese Academy of Medical Sciences (CAMS), China. She completed her postdoctoral training at the Critical Care Medicine Department, Clinical Center, NIH in 1999. Dr. Yao was appointed as a Research Assistant Professor in the Dept. of Anatomy, Physiology & Genetics in 2001 and her research goals are to study protein degradation and neuronal survival after traumatic brain injury. Her research projects focus on: 1) determining whether traumatic brain injury alters E3 ligase-Cul-5, ubiquitin in damaged regions of the CNS, and whether these changes are associated with the initiation of cell death; 2) investigating the impact of brain trauma on proteasome expression and activity in injured cerebral cortex and hippocampus; 3) exploring if Diazoxide, a mitochondrial ATP-sensitive K^+ channel-opener exerts its neuroprotective role by up-regulating proteasome expression and activity.

Dr. Martin L. Doughty received his Ph.D. in 1995 from University College London where he trained with Dr. Keith Caddy. His doctoral work focused on the morphological aspects of cerebellar development in normal and *lurcher* mutant mice, a spontaneous mutant model of developmental cell death in the cerebellum. He received postdoctoral training in this field first from Dr. Jean Mariani at the Université Pierre et Marie Curie in Paris and then from Dr. Nathaniel Heintz at Rockefeller University in New York. At that time, Dr. Heintz's laboratory had recently learned that the *lurcher* mutation is a gain-of-function mutation in the delta 2 glutamate receptor subunit. Delta subunits are unlike all other glutamate receptor subunits in that they do not appear to be activated by glutamate and their mechanisms of signaling remain unknown. The *lurcher* mutation converts this 'silent' channel into one that is constitutively active. This breakthrough indicated that delta 2 subunits likely act as channels akin to other glutamate receptor subunits and suggests that unknown associated proteins are necessary for signaling. Dr. Doughty's research focuses on identifying and characterizing the missing signaling components of delta 2 glutamate receptor channels using a variety of molecular techniques such as cDNA cloning, heterologous cell expression and transgenic mouse models. He joined USUHS as an Assistant Professor in the Dept. of Anatomy, Physiology & Genetics in 2006.

Dr. Jennifer Schiltz received her A.B. in psychobiology from Mount Holyoke College in South Hadley, MA. A Bethesda native, she returned to the DC area and worked as a research assistant in the Dept. of Pharmacology at Georgetown University. She then went to University of Pittsburgh and earned a Ph.D. in Neuroscience with Dr. Alan Sved. Dr. Schiltz did her postdoctoral training with Dr. Paul Sawchenko at the Salk Institute in La Jolla, CA and in October 2006, she returned to this area as an Assistant Professor in the Dept. of Anatomy, Physiology & Genetics at USUHS. Dr. Schlitz's research interests focus on the mechanisms and pathways used by the brain to respond to stress. Specifically, as a graduate student she studied the central neural control of cardiovascular regulation and the control of vasopressin and oxytocin release in response to changes in arterial pressure or hemorrhage. And as a postdoc, she studied how another physiological stress, immune system activation, stimulates the hypothalamo-pituitary-adrenal axis. The

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(Continued from page 2, Dr. Jennifer Schiltz)
initial focus in her lab at USUHS will be on the role of the blood brain barrier in mediating the response to circulating immune system messengers. She has recently characterized a specific cell type associated with the blood brain barrier that is not only interesting because of it's role in immune-to-brain communication, but may also participate in inflammatory processes *within* the brain, which has implications for many neurological disorders.

Dr. Yumin Zhang received his M.D. from Binzhou Medical School, China in 1985, and Ph.D. from the Hebrew University of Jerusalem, Israel in 1998. He went to Children's Hospital, Harvard Medical School in 1998 as a postdoctoral fellow and was promoted to Instructor of Neurology in 2003. He became an assistant professor in the Dept. of Anatomy, Physiology and Genetics at USUHS in 2005. The long-term goal of his laboratory is to study the cellular and molecular mechanisms of astroglial and neuronal toxicity and the pathogenesis of neurodegenerative diseases. Nitric oxide and its reaction product with superoxide, peroxynitrite, are the major toxic species released from reactive astrocytes and microglia. Dr. Zhang is interested in elucidating the signaling pathways of peroxynitrite toxicity in oligodendrocytes (OLs). His previous work suggested that activation of arachidonic acid metabolism plays an important role in the toxicity of peroxynitrite to premyelinating OLs and to mature OLs that produce myelin basic protein. However, distinct cell death pathways are involved in these two cell types. His lab is now investigating these cell death mechanisms using pharmacological, biochemical and molecular approaches in culture, and testing whether these signaling molecules are critical in the animal models of cerebral palsy and multiple sclerosis. Dr. Zhang is interested in studying the mechanisms of excitotoxicity and oxidative injury to neurons, and the pathogenesis of amyotrophic lateral sclerosis (ALS). He found that neurotoxicity induced by peroxynitrite is mediated by a novel signaling pathway including intracellular zinc release, 12-lipoxygenase activation and p38 MAPK phosphorylation, and the toxicity is exacerbated by the expression of mutant SOD1. He now wants to investigate how these signaling components can be affected by the expression of mutant SOD1, and whether targeting one or more components of this signaling pathway may be beneficial in the treatment of ALS.

Dr. Fabio Leonessa recently joined USUHS as a Research Assistant Professor of Neurology.

Congratulations

Joseph O'Sullivan, a 4th year Neuroscience student and U.S. Army active-duty nurse anesthetist, was promoted to Lieutenant Colonel on December 1, 2006. At his promotion ceremony, LTC O'Sullivan (center) received his silver oak leaf from his wife, Mary (right), and thesis advisor, Dr. Joe McCabe (left).

2006 Monthly Lunch Group for Graduate Students and Student-run Neuroscience Journal Club

The goals of the monthly lunch group for USUHS Neuroscience graduate students (NSL) are to discuss issues important to graduate students and to facilitate peer support. The Neuroscience Journal Club (JC) aims to keep students abreast of current literature, offers an opportunity to discuss Neuroscience topics and provides an informal setting to practice presenting research. The combination NSL/JC Meetings will be held the 2nd Tuesday of each month. These are informal, student run meetings designed to help graduate students get through their graduate careers. If you have suggestions for a meeting or journal club topic, please contact Jeremy Henriques (jhenriques@usuhs.mil). Topics are subject to change.

May—Applying for Grants & Fellowships
June—Grad School Burnout & Procrastination
July—Thesis Writing
August—Finances
September—Orientation to Grad School: Choosing a Lab, Mentor & Rotations
October—Attending Conferences & Presenting a Poster
November—Writing a Scientific Paper
December—Holiday Luncheon

Your Graduate Student Representative

is currently Tom McFate. Each USUHS graduate program has a Student Program Representative whose role is to serve as liaison between administration/faculty and graduate students through the dissemination of pertinent information. This position also allows students to raise concerns and issues that can then be addressed through more formal channels. If you have any questions, comments or concerns, please contact Tom .

2006 / 2007 Neuroscience Program Executive Committee

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