Winter 2007 SEMINAR SERIES

F21C Bioprocessing & Biosensing Center

• DIVISION OF FOOD SYSTEMS & BIOENGINEERING •

PRESENTER: **Dr. Shinghua Ding**
Assistant Professor, Biological Engineering Department
University of Missouri - Columbia

TITLE: **Study on In Vivo Ca^{2+} Signaling in Astrocytes Using Two-Photon Microscopy**

ABSTRACT:

In the CNS, glial cells outnumber neurons. Astrocytes, the predominant glial-cell type, used to be considered to play a merely supportive role for neurons. Over the last decade, astrocytes were found to play more active roles. One of the most important roles is the Ca^{2+}-dependent chemical transmitter release. The release of glutamate from these glial cells is called gliotransmission. Gliotransmission in turn regulates information processing in CNS by modulating neuronal function. The interactions between neurons and astrocytes lead to the new concept of a 'tripartite synapse'. That is, the synapse consists of three parts, namely the presynaptic terminal, the postsynaptic region, and the glial cell. However, the role of astrocytes in modulating synaptic transmission and neuronal signal integration is largely unknown especially *in vivo*. Using 2-P microscopy we are starting out to address this issue. In this seminar, I will first present data from our study on *in vivo* Ca^{2+} signaling in astrocytes in normal and diseased mice. Secondary, I will show you some applications using this 2-P technology. Finally, I will talk about the future directions of our research.

BIOGRAPHY:

Dr. Ding obtained his M. S. in Biochemical Engineering and Ph. D. in Physiology from the State University of New York at Buffalo in 1996 and 1999, respectively. He held a postdoctoral position with Thomas Jefferson University in Philadelphia from 1999-2002. He joined the University of Pennsylvania-Philadelphia as a Postdoctoral Fellow from 2002-2005 and then as a Research Associate from 2005-2006. He is presently an Assistant Professor with Biological Engineering and a Research Investigator at the Dalton Cardiovascular Research Center.

DATE • TIME • LOCATION:

Tuesday, March 6, 4:00pm
Ag Eng Bldg 105 • Refreshments