



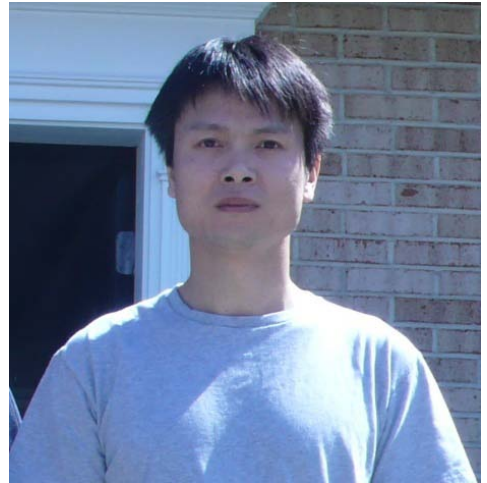
Biomedical Engineering Seminar Series



Johns Hopkins School of Medicine and the Whiting School of Engineering

Da-Ting Lin, PhD

Research Associate
Department of Neuroscience
Johns Hopkins University



Monday, November 2, 2009 at 1:30

Talbot Room, Traylor 709

Host: Dr. David Yue

Light lunch will be provided in Traylor 709

Video-Teleconferenced to Homewood Campus,
Rome Room, Clark 110

Activity Dependent AMPA Receptor Insertion and Synaptic Plasticity

The insertion of alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid receptors (AMPA) into the plasma membrane is a key step in synaptic delivery of AMPARs during the expression of synaptic plasticity. However, the molecular mechanisms regulating AMPAR insertion remain elusive. By directly visualizing individual insertion events of the AMPAR subunit GluR1, we demonstrate that Protein 4.1N is required for activity dependent GluR1 insertion. PKC phosphorylation of GluR1 S816 and S818 residues enhances 4.1N binding to GluR1, and facilitates GluR1 insertion. In addition, palmitoylation of GluR1 C811 residue modulates PKC phosphorylation and GluR1 insertion. Finally, disrupting 4.1N dependent GluR1 insertion decreases surface expression of GluR1 and the expression of long-term potentiation (LTP). Our study uncovers a novel mechanism that governs activity dependent GluR1 trafficking, reveals an interesting interplay between AMPAR palmitoylation and phosphorylation, and underscores the functional significance of the 4.1N protein in AMPAR trafficking and synaptic plasticity.

<http://www.hopkinsmedicine.org/ibbs/news/events.html>

<http://www.hopkinsmedicine.org/scical>

<http://www.bme.jhu.edu>

For more information call 410-955-3132