

# WHITAKER BIOMEDICAL ENGINEERING INSTITUTE

## DEPARTMENT OF BIOMEDICAL ENGINEERING FRIDAY SEMINAR SERIES

**Alex Reyes, PhD**

Associate Professor  
Center for Neural Science  
New York University

“Circuitry underlying neuronal firing in the mouse auditory cortex”

DATE: December 15, 2006  
TIME: 1:00 p.m. – 2:00 p.m.  
PLACE: **Traylor 709**  
Videoconferenced to Clark 110  
Host: Drs. Xiaoqin Wang & Yi Zhou

**Abstract:**

Numerous in vivo studies show that neurons in the auditory cortex exhibit a wide range of firing properties in response to acoustic stimuli. To elucidate the circuitry that underlie these complex responses, we performed simultaneous whole cell recordings from excitatory and inhibitory neurons in a slice preparation that contains the primary auditory cortex, the ventral medial geniculate and the interconnecting fibers. After characterizing the synaptic properties and determining the connection probabilities between excitatory and inhibitory cells, we constructed a neural network and performed simulations with real cells (using an iterative procedure) and with a computer. Remarkably, many of the firing characteristics observed in vivo (phasic & tonic firing, two-tone inhibition, and "co-tuning" of excitatory and inhibitory conductances) could be reproduced with minimal assumptions.

**Any questions, contact 410-955-3132.**

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