

# NEUROSCIENCE AND PHYSIOLOGY SEMINAR SERIES

## CASEY ADAM, PhD

Post-doc in the College of Veterinary Medicine | Purdue University

*“Mechano-Electro-Chemical Coupling in Neuromodulation and Neuronal Injury”*

Abstract: The chemical, electrical, mechanical, and magnetic properties of biological systems are coupled and dictate how biological systems respond to and propagate stimuli. Novel neuromodulation, cancer, and spinal cord injury therapies exploit this coupling to improve quality of life and partially alleviate pathological changes, but could be enhanced with better understanding of the underlying coupled mechanisms. My work employs dynamic atomic force microscopy (AFM), patch clamp, and calcium imaging to quantify how properties couple in biological systems and relate to cell function in normal, injury, disease, and neuromodulation contexts. Regardless of context, mechanical properties relating to stimulus attenuation and propagation predict cell behaviors. Therefore, targeted modulation of cell and tissue viscoelasticity, and consequently force attenuation and propagation in the biological system, will likely improve therapies for many pathologies.

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**TUESDAY, OCTOBER 28th | 12:00 PM | LILY 1-117**

