



Engineering
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FLORIDA INTERNATIONAL UNIVERSITY

Biomedical Engineering
Wallace H. Coulter Foundation
Seminar Series

Strategies to control neural excitability through the integration of computational and experimental approaches

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Thursday, April 26th, 2012
LECTURE: 9:00 AM - 10:00 AM

ENGINEERING CENTER
ROOM EC 2300
10555 WEST FLAGLER STREET
MIAMI, FL 33174

Abstract: Computational Neuroscience provides a novel framework to identify the effects of trauma/disease on the nervous system. Experimental findings at the molecular, cellular and network levels can be integrated using mathematical models to enhance our understanding of disease dynamics. Realistic neural models can further guide the design and testing of therapeutic strategies. In my presentation, I will focus on experimental and computational techniques utilized to identify aberrant ionic mechanisms and the consequent dysregulation of neural excitability in models of central pattern generation, spinal injury-induced hyperreflexia and epilepsy. I will further present how empirically driven computational neural models could be useful to identify multiple channelopathies leading to neural hyperexcitability/excitotoxicity in a mouse model for Amyotrophic Lateral Sclerosis, a debilitating and fatal neurodegenerative disease.

Biography: Dr. Sharmila Venugopal is a postdoctoral research associate in the Department of Integrative Biology and Physiology at University of California Los Angeles. Her unique expertise integrates computational neuroscience with electrophysiological and molecular approaches to understand neural dynamics in health and disease. In recognition of her research and education outreach efforts, she has received research and travel awards from the Society for Neuroscience, Organization for Computational Neuroscience, Society of Mathematical Biology, Association for Women in Mathematics and The Ohio State University. She currently serves as an Associate Editor for the Springer Encyclopedia for Computational Neuroscience.

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