Disease dynamics

Computational modeling of neurological diseases

CNS*2012 Workshop, July 25 or 26

Organizers Sharmila Venugopal, University of California Los Angeles (vsharmila@ucla.edu)

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Format Invited talks: 35 minutes + 10 minutes for Q/A

Abstract

The goal of this workshop is to bring together a diverse group of neuroscientists to discuss and present recent advances in computational modeling of dynamical disease phenomena. Computational modeling holds great promise in improving our understanding of disease dynamics and in designing pharmacological, surgical and neuroprosthetic interventional strategies for neurological disorders. In this workshop, we will focus on how computational models can enhance our understanding of disease dynamics and predict emergence of pathological excitability states. Examples of pathological excitability states include hyper-excitability of sensorimotor reflex circuits leading to spasticity, hyper-synchrony of cortical networks leading to epileptiform activity and Parkinsonian rhythms. The models discussed will represent cellular, network and behavioral disease constructs encompassing multiple levels of nervous system organization. The workshop will promote cross-talk on pathogenic mechanisms in multiple neurological conditions while providing opportunities for an open dialog amongst experimental, computational and clinical neuroscientists to further stimulate the utilization of computational models in predicting disease dynamics.

Program

8:30 – 8:45	**Introduction to the workshop:** Ranu Jung, Ph.D. (Florida International U)
8:45 – 9:30	**Keynote Talk:** Steven J. Schiff, M.D, Ph.D. (Penn. State U)
	Title:

Epilepsy

9:30 – 10:15	Ivan Soltesz Lab (U of California Irvine) – request sent
	Title:
10:15 – 10:30	Break

Neuromuscular Diseases

10:30 – 11:15	Sharmila Venugopal, Ph.D. (U of California Los Angeles) - confirmed
	Title: Modeling multiple channelopathies in Amyotrophic Lateral Sclerosis
11:15 – 12:00	Sheriff M Elbasiouny, Ph.D. (Northwestern University)
	Title:
12:00 – 1:00	Lunch Break

Parkinson's Disease

1:00 – 1:45	Jonathan Rubin, Ph.D. (U of Pittsburg)
	Title:

Schizophrenia

1:45 – 2:30	Alla Borisyuk, Ph.D. (U of Utah)
	Title:
2:30 – 2:45	Break

Alzheimer's Disease

2:45 – 3:30	Michael Hasselmo Lab (Boston U)
3:30 – 4:15	Discussion lead by Sharmila Venugopal (all participants, possible NIH Program Manager participation - request to be sent)