

# BIOENGINEERING & BIOMEDICAL ENGINEERING RESEARCH SEMINAR



## SYSTEM ENGINEERING APPROACHES FOR CLARIFYING MULTIFACTORIAL BRAIN MECHANISMS AND CONTROLLING DISEASE PROGRESSION

Dr. Yasser Iturria Medina  
Department of Neurology and Neurosurgery  
Montreal Neurological Institute

### BIO

Yasser Iturria Medina has a Nuclear Engineering background, a Master's degree in Neurophysics and a Ph.D. in Health Sciences. In 2003, he joined the Cuban Neuroscience Center, pioneering initial attempts to map/characterize whole-brain connectivity patterns using diffusion tractography techniques. At the present, he is an Assistant Professor in the Neurology and Neurosurgery Department, at MNI. His current work is focused on the development and validation of multiscale/multifactorial causal models of brain (dis)organization and cognition, which a particular emphasis on neurodegenerative mechanisms and personalized medicine.

### ABSTRACT

In this talk, I will overview my work with a specific focus on how integrative system engineering approaches can contribute to reach Personalized Medicine's ultimate purposes in neurology. In particular, I will discuss about the creation and validation of integrative molecular, multimodal neuroimaging and computational models for: i) modeling and understanding pathologic and environmental influences on brain networks and cognition, and ii) identifying effective personalized therapeutic interventions for controlling neurological disorders. Various Big Data-based examples in the context of aging and neurodegeneration will be presented.

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WONG 1030

1:00PM



**McGill**

Department of **Biomedical Engineering**  
Department of **Bioengineering**