

Early motoneuron degeneration in ALS: "The size hypothesis"

Dr. Sherif Elbasiouny
Northwestern University

Thursday, April 13, 2012
LECTURE: 9:00 AM - 10:00 AM

**ENGINEERING CENTER
ROOM EC 1107
10555 WEST FLAGLER STREET
MIAMI, FL 33174**



Abstract:

Amyotrophic Lateral Sclerosis (ALS) is a fatal neurodegenerative disease characterized by the selective and progressive degeneration of upper and lower motoneurons. There is no cure for ALS to date and the disease mechanisms are poorly understood. Sadly, patients usually die within 1-3 years from the onset of the disease. Remarkably, in ALS motoneurons degenerate in a size order (from small to large cells), which is exactly opposite to the normal activation pattern (small motoneurons are recruited before large motoneurons during movements). The goal of the present work is to understand the mechanisms of motoneuron degeneration in ALS and to develop rehabilitation interventions for stopping or delaying disease progression.

In this talk, I will present our data on the timeline of spinal motoneurons pathophysiology in the presymptomatic phase in two transgenic mouse models of ALS (the G93A and G85R models) and demonstrate how computational and experimental techniques could be combined to study ALS pathogenesis. I will also present how electrical stimulation-based approaches could be used as rehabilitation interventions in ALS. Although presented in ALS, the presented concepts are applicable to a number of neurological disorders such as spinal cord injury, peripheral nerve injury, and spinal muscular atrophy.

Biography

Dr. Elbasiouny is currently a Postdoctoral Fellow at the Department of Physiology, Northwestern University. His interests are in the fields of neuromodulation and neurorehabilitation, in which he combines computational and experimental approaches for studying the role of spinal neurons in integrating the sensorimotor signals for movement control during health and after neurological disorders (e.g., spinal cord injury & amyotrophic lateral sclerosis).

Dr. Elbasiouny received his Ph.D. in Biomedical Engineering (Rehabilitation Neuroscience) from the University of Alberta in 2007. He received his bachelor's & master's degrees in Biomedical Engineering (Rehabilitation Engineering) in 1997 and 2001 from Cairo University, Egypt. He also has professional industrial experience in major international biomedical companies and is licensed as Professional Engineer in the US and Canada.

Contact: bmeinfo@fiu.edu; 305-348-6717

Map: <http://campusmaps.fiu.edu/> (Other campuses/ - Engineering Center)