



Biomedical
Engineering

FLORIDA INTERNATIONAL UNIVERSITY

Biomedical Engineering
Wallace H. Coulter Foundation
Seminar Series



"Molecular Guidance in Neural Interfacing for the control and feel of Robotic Prosthetic Devices"

Dr. Mario RomeroOrtega
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Research Partner at the University of Wollongon, Australia

Friday, January 31, 2014
LECTURE: 9:00 AM -10:00 AM

ENGINEERING CENTER
ROOM EC 1112
10555 WEST FLAGLER STREET
MIAMI, FL 33174



Abstract: Our work has focused on the study of neural guidance molecules such as the ephrins/Eph receptors and neurotrophins during development or after injury. That knowledge led to the demonstration that induced expression of growth factors into the adult spinal cord, entice axonal regeneration and functional recovery of chronically injured neurons. In applying this concept to the repair of peripheral nerve gaps, we developed a biosynthetic nerve implant (BNI) based on a hydrogel-based transparent multichannel scaffold with luminal collagen matrix, able to entice axonal regeneration through both short and long-gap defects. More recently, the concept of guided nerve regeneration has proven also useful in the development of enhanced peripheral neurointerfaces, which along with the advanced engineered prosthetic limbs provides the potential for generating sensitive sensory-motor interfaces, capable of selective bidirectional communication with robotic prosthesis. Our current efforts are directed towards the use of molecular neurobiological signals to direct neurointerfacing of sensory feedback needed for precise control and natural sensation of the artificial limbs.

Biography

Dr. Romero received his doctorate in Neuroscience from Tulane University and postdoctoral training at the University of Texas Southwestern (UTSW) Medical Center as Associate Member of the Christopher Reeve Paralysis Foundation Research Consortium on Spinal Cord Injury. Prior to joining UTA, he served as Director of the Regenerative Neurobiology Research Division at Texas Scottish Rite Hospital and Assistant Professor of Neurology and Plastic Surgery at UTSW Medical Center. He also serves as Founder and Chief Scientific Officer for Nerve Solutions Inc, a company that commercializes the Biosynthetic Nerve Implant and the NeuroBlock devices developed in his laboratory. He is the recipient of the UTA College of Engineering Excellence in Research Award, the Tech Titans Award in Technology Innovation, the Tech-FortWorth Impact Award and "Ten Most Promising Life Science Company Award.

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