Seminar

CENTER FOR ADAPTIVE NEURAL SYSTEMS

IRA A. FULTON SCHOOL OF ENGINEERING

Nanomaterials and Neuroregeneration

Malathi Srivatsan, Phd

Abstract: The emerging field of nanotechnology offers the development of new materials and methods for crucial neuroscience applications namely (a) promoting survival and growth of the neurons, and (b) monitoring physiological signals generated in the nervous system. Such bio-devices will have several novel applications in basic science, laboratory analysis and therapeutic treatments. Our goals in this field of research include (a) development of new biocompatible substrates to guide and promote neuronal growth along specific pathways; (b) designing a neuron-friendly, bio-molecule delivery system for neuroprotection; (c) monitoring of electrical activity from neuron and also from neuronal networks; (d) determining the diffusion and intracellular localization of nanomaterial interacting with neurons at high resolution; and (e) detection of release of neurotransmitter molecules by means of newly designed nanosensors. We have fabricated and used magnetic nanotubes and nanowire electrode arrays in studies using a cell culture model of neuronally differentiating rat pheochromocytoma (PC 12) cells. Our results showed that the magnetic nanotubes were capable of delivering neurotrophic molecules and the nanowire electrodes are neuron-friendly, promote cell to cell communication and can be used as bio-sensors in the nervous system. We are currently exploring the possibility of using nanotubes for directed growth of neurites in animal models of injury.

Biography: Dr. Malathi Srivatsan obtained her PhD degree from All India Institute of Medical Sciences, New Delhi, India. She was a postdoctoral fellow and research assistant professor in the department of physiology at the University of Kentucky college of Medicine, Lexington, KY. She joined Arkansas State University as an assistant Professor in 2003 and is currently an associate professor in the department of biological sciences at Arkansas State University, Jonesboro, Arkansas. Her research interests include neuroregeneration and cholinergic neurotransmitter system.

Location and Time:
Location: ISTB1 227
Date: Mar. 23, 2009
Time: 4:00 pm - 5:00 pm

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Map: http://www.asu.edu/tour/main/istb1.html

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"designing adaptive engineered systems to promote adaptation in neural systems"