Prepresenter: Mr. Matthew Cozad
University of Missouri, Biological Engineering

Title: Design and Evaluation of a Composite Tissue Scaffold for Wound Healing

Abstract:
Over $3 billion is expected to be spent solely on advanced treatments for chronic, or prolonged, wounds in 2011. While this sizable expenditure may be good news for companies specializing in wound care products and treatments, from a science and engineering standpoint it reveals a need to enhance healing and prevent wounds from progressing to the chronic stage.

Research is currently being conducted in the Department of Biological Engineering at the University of Missouri-Columbia to tackle this problem. Decellularized porcine diaphragm and gold nanomaterial composites are being designed and evaluated as a potential tissue scaffold for wound healing. This presentation will demonstrate how the gold nanomaterial composites, which incorporate gold nanorods (AuNRs) or gold nanoparticles (AuNPs), result in biocompatible tissue scaffolds capable of promoting fibroblast attachment and proliferation. Additional background on the wound healing process and chronic wound formation will also be presented.

Biographical:
Mr. Cozad received his B.S. in Biological Engineering from the University of Missouri-Columbia in 2008. He is currently pursuing his Ph.D. in Biological Engineering under the guidance of Dr. Sheila Grant at the University of Missouri-Columbia. His primary research focus is the development of a tissue scaffold for enhanced wound healing. However, Mr. Cozad also investigates hernia mesh explants through surface, thermal, and mechanical analyses.

Date • Time • Location:
Tuesday, February 22, 2011, 4:00 PM, 105 Agricultural Engineering Building

The Food for the 21st Century (F21C) program at the University of Missouri (MU) was established in the mid-1980's through state funding. The overall goal of the program is to help Missouri food producers and processors maintain their competitive edge in the global marketplace by conducting cutting-edge research in a number of food-related areas. The program involves faculty researchers from multiple colleges including College of Agriculture, Food and Natural Resources; College of Arts and Sciences; College of Engineering; School of Medicine; College of Human Environmental Sciences; and College of Veterinary Medicine. Based on the research emphases, the researchers are grouped into four Clusters: Plant Biotechnology; Animal Reproduction; Bioprocessing and Biosensing Center; and Human Nutrition.

Bioprocessing and Biosensing Center was formed in 1986. The Center currently consists of 27 faculty members, plus collaborators, support staff, and graduate students from six departments in the College of Agriculture, Food and Natural Resources and College of Engineering. These departments include Biological Engineering; Food Science; Animal Sciences; Chemical Engineering; Electrical Engineering; and Mechanical and Aerospace Engineering. This seminar is one of the educational activities in the Bioprocessing and Biosensing Center.