University of Delaware | College of Engineering
BIOMEDICAL ENGINEERING

UNIVERSITY *of* DELAWARE

BIOMEDICAL ENGINEERING SEMINAR

OCTOBER 16, 2014

Athanassios Sambanis , Ph.D.

PROFESSOR • SCHOOL OF CHEMICAL & BIOMOLECULAR ENGINEERING
GEORGIA INSTITUTE OF TECHNOLOGY
PROGRAM DIRECTOR • BIOMEDICAL ENGINEERING PROGRAM
NATIONAL SCIENCE FOUNDATION

In this two part talk, Dr. Sambanis will first detail his lab's research on cell and tissue-based therapies for diabetes, and will then describe the Biomedical Engineering Program at NSF.

Part 1: "Cell and Tissue-based Therapies for Insulin-Dependent Diabetes"

His lab researches living biological substitutes for treating insulin-dependent diabetes that are less invasive and provide a more physiologic regulation of blood glucose levels than insulin injections. The critical technologies needed for such a substitute depend strongly on the type of cells used. The Sambanis lab focuses on encapsulated allo- and xenogeneic pancreatic cells and on non-pancreatic cells genetically engineered to secrete insulin in response to physiologic stimuli. With encapsulated cells, they are developing methods to improve immunoprotection by combining a semipermeable barrier that improves immune acceptance with the local presentation and delivery of pro-survival and insulinotropic factors. Furthermore, they are developing technologies for cryopreserving encapsulated cells and for monitoring grafts in minimally invasive or non-invasive ways. With non-pancreatic cells, they are genetically engineering hepatic and intestinal endocrine L cells for insulin secretion. The potential and challenges of developing clinical therapies based on these approaches will be discussed.

Part 2: "The Biomedical Engineering Program at the National Science Foundation"

The overall objectives of the Biomedical Engineering (BME) Program at NSF and various activities sponsored by the program will be presented. The program's thrust areas are (i) cellular, molecular and tissue approaches for advanced biomanufacturing, and (ii) neural engineering and human brain mapping. These areas will be discussed in the context of their significance within the biomedical field and of funding opportunities offered to investigators by the BME program.

11:00am in 322 ISE Lab. *Refreshments served at 10:45am.*

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Dare to be first.
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