NIMBioS
National Institute for Mathematical and Biological Synthesis

NIMBioS Interdisciplinary Seminar

Dr. Judy Day

Depts. of Mathematics, Electrical Engineering and Computer Science, Univ. of Tennessee

3:30 p.m.*, March 27, 2012
NIMBioS, Blount Hall, 1534 White Ave, 4th floor

"Complex Immune Responses: Modeling & Control"

Host-pathogen interactions consist of a complex cascade of events involving a multitude of immune cells and molecules concentrated on the goal of eliminating the offending agent and restoring equilibrium. The immune response cannot always restore homeostasis on its own, and appropriate interventions are needed. However, the administration of therapeutics helping to guide desirable outcomes is not as precise as one might think. Tools such as Model Predictive Control (MPC) have been suggested as a way to systematically determine the correct timing and amount of therapies to achieve a specified health goal. In this talk I will give an overview of the modeling of several immune event cascades instigated by various pathogens such as a generic gram-negative bacterium (to study systemic inflammation), Mycobacterium Tuberculosis (MTb), and Bacillus Anthracis (anthrax). In addition, I will introduce the MPC methodology applied to a four dimensional ordinary differential equations model of systemic inflammation and discuss the importance of modeling efforts like these in translational medicine.

**Join us for refreshments in the NIMBioS Lobby on the 4th floor at 3 p.m.*

For more information about this and other NIMBioS Seminars, visit http://www.nimbios.org/seminars

The National Institute for Mathematical and Biological Synthesis (NIMBioS) brings together researchers from around the world to collaborate across disciplinary boundaries to investigate solutions to basic and applied problems in the life sciences. NIMBioS is sponsored by the National Science Foundation, the U.S. Department of Homeland Security, and the U.S. Department of Agriculture with additional support from The University of Tennessee, Knoxville.

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