



cordially invites you to an

Interdisciplinary Seminar

with

Dr. Avner Friedman

on

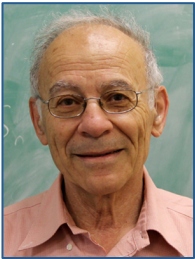
“Tuberculosis and the immune system”

Tuesday, December 6, 2016

3:30-5 p.m.

Reception & refreshments at 3 p.m.

Hallam Auditorium, Room 206
Claxton Education Bldg., 1122 Volunteer Boulevard



Avner Friedman is a Distinguished University Professor in the Department of Mathematics at The Ohio State University and founding director of the Mathematical Biosciences Institute. His research interests include partial differential equations, both general mathematical theory as well as applications to models that arise in the physical and life sciences, in engineering, and in industry. He is particularly interested in problems in which phase transitions or moving interfaces are present. Other research interests include control theory and stochastic differential equations. Friedman received his Ph.D. in 1956 from the Hebrew University. He served as director of the Institute for Mathematics and its Application at the University of Minnesota (1987-1999) and director of the Minnesota Center for Industrial Mathematics (1994-2001). He is a Fellow of the American Academy of Arts and Sciences and a member of the National Academy of Sciences.

Abstract: The lung encounters frequent challenges from inhaled particulates and microbes. The latter includes intracellular pathogens, such as *Mycobacterium tuberculosis* (Mtb). When the immune response is unable to eradicate the pathogen, a collection of immune cells surround and isolate the pathogen, forming a structure called granuloma. In this talk I will describe a mathematical model of granuloma in Mtb, and use the model to explore the efficacy of potential drugs. It will be shown that the amount of drug can be reduced for individuals with strong immune systems. Some mathematical analyses of simplified models will be described.