

GEORGETOWN UNIVERSITY
Department of Mathematics

COLLOQUIUM

Modeling antibody response during HIV infection

Speaker: Professor Stanca Ciupe

University of Louisiana

Friday October 23, 2009 at 3.15pm
St. Mary's 326

Abstract: One of the first anti-HIV immunologic responses recognized is the presence of neutralizing antibodies that seem able to inactivate several HIV strains. In vitro studies have shown the existence of monoclonal antibodies that exhibit broad neutralizing potential against the constantly mutating virus. Yet their number is low and slow to develop in vivo. In this study, we investigate the hypothesis that broadly neutralizing antibodies develop alongside strain specific neutralizing antibodies. We develop a mathematical model for the interaction between families of B lymphocytes producing broad and strain-specific antibodies following infection with several HIV variants. Using local and global stability analyses, we explore how cross-reactive immune mechanisms may help the virus escape, gaining insight into the failure to ultimately control the HIV infection.

Refreshments will be served after the talk.