COLLOQUIUM

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Mathematical Models of the Within-Host HIV Dynamics

Abstract

Some of the most challenging issues in the management of HIV infection within a host are establishment of latently infected cells, emergence of drug resistance, and opioid dependence. In this talk, I will present within-host mathematical models, consistent with experimental data, that can help address these issues. First, I will show that the latent infection can be limited by early antiretroviral therapy (ART) during acute HIV infection, and this effect may be influenced by the pharmacodynamics properties of antiretroviral drugs. Second, I will show that although administration of ART cannot suppress viral load in many patients due to the emergence of resistance, it can alter the viral fitness resulting in an increase of $CD4^+$ T cell count, which should yield clinical benefits. This benefit depends on the cell proliferation rate, which, in some situations, produces sustained T-cell oscillations. Third, I will discuss how opioid dependence can alter viral dynamics and immune responses.

Tuesday, November 24, 2015
3 – 4 PM
Room 135 Dodge Hall

(Refreshments at 2:30-3:00 PM in the kitchen area adjacent to 368 MSC)