MSCS ⚜ MESS

Math Bio Poster Session

On **Thursday, May 12**, senior Math Bio concentrators will be sharing their research projects on **the fourth floor of RNS** from **4pm till 5:30pm**. Drop in at any time to learn about their research - and refreshments will be provided! Masks are required at this event.

Thursday's Seminar	
Title:	Stopping HIV treatment: then what happens?
Speaker:	Jessica Conway
Date:	**Thursday, May 12**
Time:	**7:30pm**
Location:	RNS 310 (**masks required**)

About the talk: Antiretroviral therapy (ART) effectively controls HIV infection, suppressing HIV viral loads to levels undetectable using commercial testing. Typically, suspension of therapy is followed within weeks by rebound of viral loads to high, pre-therapy level. However recent observations give nuance to that statement: in a small fraction of cases, rebound may be delayed by months, years, or even possibly, permanently, termed post-treatment control (PTC). We begin with a discussion of mechanisms that may permit PTC, hypothesizing that early treatment induces PTC by restricting the latent reservoir size. Activation of cells latently infected with HIV are thought to drive viral rebound, and early treatment may render it sufficiently small for immune responses to control infection after treatment cessation. ODE model analysis reveals a range in immune response-strengths where a patient may show bistability between viral rebound or PTC. In absence of PTC, viral loads rebound, but data reveals significant heterogeneity across individuals in timing and ensuing dynamics. We will also discuss a proposed phenomenological model assuming simple heterogeneous dynamics in latent reservoir activation to make predictions on time to rebound following treatment interruption. We rely on time-inhomogeneous branching processes to derive a mechanistically-motivated survival function for time-to-rebound. We validate our model with data from Li et al. (2016), specifically a collection of observations of times to viral rebound across 235 study participants following treatment suspension. We show that our model provides good agreement with survival curves generated from study participants.

About the speaker: Jessica Conway is an Assistant Professor in the Department of Mathematics at Penn State. She is also graduate faculty in the Department of Biology and affiliated with the Center for Infectious Disease Dynamics (CIDD). She is interested in modeling viral infections at the within- and between-host levels, with particular emphasis on the interplay between infection and intervention.

Honors Day Poster Session

More posters! **Today** from **3pm till 5pm**, students from across the natural sciences and MSCS will be presenting their research posters on **the fourth floor of RNS**. Stop by to support your peers and learn about the research that's been conducted in RMS and RNS this year!

Seniors: Share Your Plans and Memories!

Every spring, the MSCS Mess publishes a special issue highlighting our graduating seniors, including their future plans and their favorite MSCS memories at St. Olaf. If you're a senior, then please share your plans and/or memories! To do so, fill out **this Google Form**, and please email **mcgowa2@stolaf.edu** if you have any questions.

To submit an article, event, or anything else for publication in the Mess, email mcgowa2@stolaf.edu*; to receive the Mess digitally each Friday, email* habero1@stolaf.edu*; visit* http://wp.stolaf.edu/mscs/mscs-mess/ *for a digital archive of previous MSCS Mess issues.*

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