Mathematics, Statistics, and Computer Science **@ UIC**

# Applied Mathematics Seminar

*Modeling tuberculosis, from cells to populations*

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**Abstract:** Tuberculosis continues to afflict millions of people and causes over a million deaths a year worldwide. Multi-drug resistance is also on the rise, causing concern among public-health experts. This talk will give an overview of my work on modeling tuberculosis at various scales. On the cellular side I will describe models of the metabolism of M. tuberculosis, where insights from duality led to a consistent analysis of existing models, a systematic method for reconciling discrepant models, and the identification of putative drug targets. On the population side I will describe models of strain evolution, where a new metric combined with an optimization-based approach resulted in an accurate classification of complex infections as originating from mutation or mixed infection, as well as the identification of the strains composing these complex infections.

Monday, September 8 at 4:00 PM in SEO 636