
Seminar



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Age-specificity and Limited Epitopes: Heterogeneity of immunity shapes strain-structured epidemics of antigenically variable infectious diseases

Understanding coexistence and maintenance of strain structure of antigenically variable pathogens under cross-immunity mediated competitions have important implications for the effectiveness of public health interventions, ranging from using strain composition for a vaccine to the understanding emergence and/or reemergence of antigenically discordant subtypes. Using an age-structured multi-locus-allele model and influenza virus as a case study, we investigate the hierarchically complex, heterogeneous and multiscale dynamic nature of antigenic strain structures in order to gain insight into the population dynamics, with the aim of understanding the interaction between the shifting demographical and immunological landscapes. Using theories from dynamical systems, quantitative insights from the model can be used to suggest robust differential/dynamic intervention strategies based on age-specific and antigenic cluster-specific profile of the population, generalizing contact-, morbidity and mortality-based public health policies.

Monday, February 11, 2019

2:30 PM

Laufer Center lecture hall 101

Host: Tom MacCarthy

Refreshments following the lecture
Laufer Hub 110