

Title:

Integrating within-host submodels into population-level transmission models

Speaker:

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Abstract:

Most epidemic and evolution models are based on sets of ODEs. However, I will argue that the use of ODEs alone is too limited for multi-scale models that integrate both within-host dynamics and between-host transmission in the same framework. Instead, “time-since-infection” models, based on integral equations and leading to what are often called “nested models”, offer an arguably much more natural and flexible approach. Rather than presenting a single study, I will briefly overview some of the main results for time-since-infection models, provide a few examples (mainly work with Katrina Lythgoe and Christophe Fraser), and discuss limitations and future challenges, with the aim of stimulating discussions.