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JING JIAO* (jing.jiao@cos.name), 1122 Volunteer Blvd., Suite 106, Knoxville, TN
37996-3410. *Host metapopulation, disease epidemiology and host evolution.*

While most evolutionary studies of host-pathogen dynamics consider pathogen evolution alone or host-pathogen coevolution, there is evidence that hosts can evolve more rapidly than their pathogen during initial outbreaks after disease introduction. In this talk, we will discuss the spatial, temporal, and epidemiological factors that may drive the evolutionary dynamics of the host population. We consider a simplified system of two host genotypes that trade off factors of disease robustness and spatial mobility or growth. For diseases that infect hosts for life, we find that migration and disease-driven mortality can have either antagonistic or synergistic effects on host composition, depending on disease starting status. For diseases that allow hosts to recover with immunity, we explore the conditions under which the disease dies out, becomes endemic, or has periodic outbreaks, and show how these dynamics relate to the relative success of the robust and wild type hosts in the population over time. Overall, we will discuss how combinations of host spatial structure, demography, and epidemiology of infectious disease can significantly influence host evolution and disease prevalence. We will conclude with some profound implications for wildlife conservation and zoonotic disease control. (Received January 07, 2020)