

The Emerging Pathogens Institute Seminar Series

Presents

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4:00pm - Room G-112, HPNP Building

**Non-Pathogenic Rickettsiae and Paratransgenic
Ticks: A Model to Probe Spotted Fever Biology**

Emerging diseases are disproportionately represented by zoonoses, many of which are associated with wildlife or caused by vector-borne pathogens (Jones et al. 2008. Global trends in emerging infectious diseases. Nature 451:990). In the temperate regions of the world, tick-borne pathogens take center stage as causative agents of emerging or re-emerging human diseases, and Rocky Mountain spotted fever (RMSF) rickettsiae are possibly among the most dangerous, and certainly among the most intriguing microbes in that group.

Following the discovery of effective antibiotics, the incidence of RMSF dropped, but has been rising to significant levels in the 1980s and again after the turn of the century. This re-emergence has focused the spot light on how little is known about the molecular and cell biology of RMSF rickettsiae which is in part due to the challenges associated with working with BSL3 agents. Using non-pathogenic spotted fever group (SFG) rickettsiae, we have generated rickettsial transformants expressing a fluorescent protein and elucidated their behavior in a paratransgenic tick model. Molecular analyses of the transformants precipitated the discovery of plasmids in several non-pathogenic and pathogenic rickettsial species, suggesting greater genomic flexibility than assumed. Non-pathogenic rickettsiae serve as model organisms to facilitate studies of rickettsial cell and molecular biology that are directly applicable to their pathogenic counterparts.

Emerging Pathogens Institute

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