Special Issue

Borrelia and Lyme Disease

Message from the Guest Editors

Lyme disease spirochetes are transmitted to a human during a tick bite. During the transmission, molecules from vertebrate hosts, tick vectors, and spirochetes interact in two overlapping and complex microworlds: (1) the feeding lesion in the vertebrate host and (2) the vector midgut. Survival of Lyme disease spirochete in both worlds is enabled by switching its antigenic profile and interaction with both vector and host proteins. Lyme disease is a multifaceted problem. To understand the transmission of *Borrelia* by ticks, development of spirochete infection, or host reaction to tick bite and infection, we first need to understand the ecological and epidemiological aspects of Lyme disease, particularly (1) the distribution and prevalence of spirochetes in their reservoirs and vectors, (2) the specific virulence factors differentiating between nonpathogenic and pathogenic variants of spirochetes from *Borrelia burgdorferi* sensu lato complex, and (3) the drivers that contribute to the spread and (re-)emergence of spirochetes which may lead to the discovery of pathogen-specific molecules that can be used as targets for vaccination or treatment.

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