

Department of Biochemistry and Molecular Biophysics Seminar

Wednesday, April 8 at 4:00 p.m. in Ackert 120

Coffee and cookies at 3:45 p.m. in Chalmers 168



Dr. Travis Bourret, Associate Professor

Medical Microbiology and Immunology
Creighton University

The enigmatic stringent response of the Lyme disease spirochete *Borrelia burgdorferi*

Borrelia burgdorferi, the etiologic agent of Lyme disease, encounters diverse environmental stresses as it navigates its natural cycle of infection between its tick vector *Ixodes scapularis* and mammalian hosts. The stringent response is a conserved strategy among pathogenic microbes to suppress the expression of genes involved in DNA replication, transcription, and translation to survive exposure to various environmental stressors including nutrient limitation, oxidative stress, osmotic stress, along with shifts in pH and temperature. The stringent response is coordinated by the production of guanosine tetra- and pentaphosphate ((p)ppGpp) and the DnaK suppressor protein (DksA). Typically, DksA and (p)ppGpp work synergistically to direct the transcriptional activity through binding to the secondary groove of RNA polymerase. In this talk, I will discuss the unique features of the *B. burgdorferi* stringent response and provide mechanistic insights into the unique roles of DksA and (p)ppGpp in the infectious cycle of *B. burgdorferi*.