Ackert Hall, Room 120
Wednesday, February 12, 2025
4:00 P.M.

Coffee and Cookies
Chalmers Hall, Room 168
3:45 P.M.

Biochemistry & Molecular Biophysics Seminar

DksA is a redox-sensitive, global gene regulatory protein required for infectivity of the Lyme disease agent *Borrelia burgdorferi*

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Lyme disease is the most prevalent vector-borne illness in the United States with CDC estimates reaching approximately 476,000 cases per year. Lyme disease is caused by the spirochetal bacteria *Borrelia burgdorferi*, which coordinates gene expression as it cycles between its tick vector and mammalian hosts using a small repertoire of gene regulatory proteins. However, there remains key gaps in our knowledge of the mechanisms governing gene expression throughout *B. burgdorferi* 's infectious cycle. We recently reported an essential role for DnaK suppressor protein (DksA) in control of *B. burgdorferi* virulence gene expression required for infectivity. DksA mediates changes in gene transcription through direct interactions with the β' subunit of RNA polymerase, however, the mechanisms governing how changes in the environment contribute to DksA's gene regulatory capacity remain unclear. In this presentation, I will discuss how DksA coordinates transcriptional responses of *B. burgdorferi* to reactive oxygen species (ROS) and reactive nitrogen species (RNS), and how this contributes to its ability to successfully adapt to its tick and mammalian host environments.