Description for the general public

Compaction of chromosomal DNA is a fundamental process that impacts all aspects of cellular biology, including global transcription profiles. In pathogens, chromosome organization also influences the expression of adaptive traits and virulence factors. We do not yet fully understand chromosome organization in bacteria, particularly in pathogens such as tubercle bacilli. Moreover, mycobacteria possess a unique and intriguing set of nucleoid associated proteins (NAPs), including the pleiotropic protein, Lsr2, which is a functional homolog of H-NS, and HupB, which resembles histones in its C-terminal amino acid sequence. Tuberculosis remains a serious worldwide health problem, and research focused on crucial proteins (e.g., Lsr2 and HupB) involved in maintaining the chromosome integrity of this pathogen could facilitate the identification of new drug targets. We believe that this work will also reveal important differences in the biological roles of the nucleoid associated protein in mycobacteria versus better-characterized model organisms, such as *Escherichia coli* and *Bacillus subtilis*.