DNA replication and DNA methylation in Alphaproteobacteria.

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Abstract:

The Collier lab has an open position to study the roles of DNA methylation in the Caulobacter crescentus Alphaproteobacterium. DNA methylation can impact gene expression through epigenetic mechanisms of regulation, but also the capacity of bacteria to exchange genes (including antibiotic resistances) through horizontal gene transfers or to resist to phage infections. Caulobacter crescentus is one of the best model systems to study such biological processes, as it is easy to cultivate and modify genetically, while it carries five different DNA methyltransferases (DNA MTases) methylating its genome. The goal of the advertised project will be to characterize the role of two of these DNA MTases, combining genetic, genomic, phenotypic and fluorescence microscopy approaches. Preliminary results from our team indicate that one of these may play a role in controlling DNA/plasmid entry into cells, while the other may be connected with cell division. We are then looking for a highly motivated candidate to join our research group.