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MarA Repression of Virulence Gene HilA in Salmonella

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Salmonella is a bacteria most commonly known for causing the eponymous food-related illness. Due to their rapid reproduction rate and their ability to be propagated and maintained in a lab setting, they are commonly used in lab studies so that we can better understand how Salmonella causes disease in organisms that are more difficult to study. One area of interest is analyzing how Salmonella controls expression of the mechanisms that actually cause disease, called virulence traits, in response to the environment. In this study, antibiotic stress was used to analyze virulence gene expression. MarA is a gene that regulates ampicillin resistance. My goal is to determine if MarA directly represses an important virulence gene, hilA. To test this, a Salmonella strain that overexpresses MarA and contains a hilA expression reporter was mutagenized with a mini-Tn5 transposon. I am currently screening bacterial colonies of these mutants to determine if there are any observable effects that MarA repression has on hilA expression. If all colonies are white, then MarA likely represses hilA directly. If some colonies are blue, then MarA may repress hilA through an intermediate.