

The characterization of *F. tularensis*-mosquito interactions following acquisition of these bacteria from nectar. Kole Starkey, Ethan McDonald, Anna Gaughenbaugh, Austin Cusick, Roger Seeber, and Joseph Horzempa. Department of Natural Sciences and Mathematics, West Liberty University, West Liberty, WV USA

Francisella tularensis is disseminated in nature by biting arthropods such as mosquitoes. Although mosquitoes have caused significant tularemia outbreaks, these insects are merely considered as mechanical vectors of *F. tularensis*. One possible explanation for mosquitoes being a prominent, mechanical vector is that these insects feed on flower nectar between blood meals, allowing for transmission of *F. tularensis* between mosquitoes. Others have reported that nectar is largely antimicrobial, partly due to the high osmolarity and presence of antimicrobial compounds in this plant material. However, it was previously shown that *F. tularensis* can survive in flower nectar, suggesting that these bacteria are capable of resisting the aforementioned antimicrobial factors. It was also demonstrated that mosquitoes are capable of transferring *F. tularensis* bacteria from one source of nectar to another. The purpose of this study was to further characterize *F. tularensis*-mosquito interactions following acquisition of the bacteria from nectar. Fluorescence microscopy indicated the presence of *F. tularensis* on the mouth-parts of mosquitoes that fed from inoculated sucrose solutions suggesting that feeding may contribute to colonization in the insects. It was also investigated whether the presence of leucine, an amino acid associated with certain types of nectar, influenced the survival of *F. tularensis*. We also developed microscopy techniques to visualize the bacterial colonization sites on the mosquitoes. These results further elucidate factors influencing plant-insect-bacterial interactions that may facilitate transmission of a pathogenic microbe. **(Supported by NIH Grant P20GM103434 to the West Virginia IDeA Network for Biomedical Research Excellence)**