JENNIFER HICKMAN and DEANNA M. SCHMITT, Department of Natural Sciences and Mathematics, West Liberty University, West Liberty, WV 26074. Determining resistance of *Francisella- tularensis* to resazomycins, a novel family of antibiotics

Because a significant number of bacteria are becoming increasingly more resistant to antibiotic treatments, the development of new antibacterial drugs is imperative. Recently, a new family of resazurin-based compounds, resazomycins, have exhibited promising antimicrobial activity against *Francisella- tularensis* and *Neisseria- gonorrheae in vitro* and *in vivo.* While the mechanism of action of resazomycins has yet to be determined, preliminary data suggests that the lipoprotein sorting machinery (LolDF) of these bacteria may be the target. Since the Lol complex is essential in all Gram-negative bacteria, we hypothesize that both *F. tularensis* and *N. gonorrhoeae* will develop little resistance to resazomycins. To address this, we first sought to determine the minimal inhibitory concentration (MIC) of resazurin against *F. tularensis* cultured on chocolate agar. Bacterial growth was observed up to 7.7 µg/ml resazurin, then completely abolished at 11 µg/ml, indicating this is the MIC. We then wanted to determine if resistant colonies of *F. tularensis* would emerge following continuous cultivation on chocolate agar containing 1 x MIC of resazurin. Over time, hundreds of *F. tularensis* colonies were observed on the chocolate plates containing resazurin, suggesting this bacterium can develop resistance to resazomycins. We are currently working to isolate the genomic DNA from resistant isolates to send to Marshall University's Genomics Core for whole genome sequencing to identify single nucleotide polymorphisms associated with resazomycin resistance. Future investigations will focus on generating mutants of genes identified as possible resazurin resistance targets in *F. tularensis* and determining the sensitivity of the resulting strains. (Supported by NIH Grant P20GM103434 to the West Virginia IDeA Network for Biomedical Research Excellence)