

AUTUMN G. DODSON, EMILY YOUNG, & DEANNA M. SCHMITT, Department of Biological Sciences, West Liberty University, West Liberty, WV 26074. Resazomycins alter outer membrane protein expression in *Francisella tularensis* resulting in increased antibiotic susceptibility

A growing number of human pathogens are becoming resistant to most common antibiotics. Each year, antibiotic-resistant infections are responsible for 35,000 deaths in the United States and billions of dollars in health care costs. The development of new antibiotics is essential to combat this public health crisis. Our laboratory has identified a novel family of compounds based on the compound resazurin, known as resazomycins, that inhibit the growth of *Neisseria gonorrhoeae* and *Francisella tularensis*. The mechanism of action of these compounds remains unknown. We hypothesized that resazomycins disrupt the membrane integrity of *N. gonorrhoeae* and *F. tularensis* resulting in bacterial cell death. To test this hypothesis, we measured differences in inner and outer membrane protein expression of *F. tularensis* in the absence and presence of resazurin. Treatment with resazurin altered protein expression in the outer membrane of *F. tularensis* suggesting enhanced membrane permeability. Kirby Bauer assays were then performed to assess the susceptibility of *F. tularensis* to various detergents and antibiotics in the presence of sublethal concentrations of resazurin. Larger zones of inhibition were observed in the presence of resazurin suggesting increased antibiotic uptake due to perturbation of the outer membrane. Further investigation is needed to determine the exact target of resazomycins.