BAILEY SEBROSKI, MACKENZIE HALL, RORI SCHREIBER, and DEANNA M. SCHMITT. The Hilltop Center for Biomedical Research, West Liberty University, West Liberty, WV, 26074. Contribution of *perR t*o the resazomycin susceptibility of *Neisseria gonorrhoeae*.

Neisseria gonorrhoeae is of public health concern as one of the most common causes of sexually transmitted infections across the globe. Given the increasing prevalence of strains resistant to first-line treatment, it is of utmost importance to find alternative treatments for gonorrhea. Resazomycins are resazurin-based compounds that exhibit antimicrobial activity against *N. gonorrhoeae.* One resazomycin, resorufin pentyl ether (RPE), has been shown to reduce vaginal colonization by *N. gonorrhoeae* in a mouse model of infection. However, the efficacy of these compounds *in vivo* is limited as repeated administration of RPE was not sufficient to completely clear the infection in all mice. Determining the mechanism of action of resazomycins could provide insight into improving their effectiveness *in vivo.* It is hypothesized that production of reactive oxygen species contributes to the bactericidal activity of resazomycins. Supporting this hypothesis, resazomycins showed a reduction in antimicrobial activity against *N. gonorrhoeae* in 2% oxygen compared to 20% oxygen. Additionally, we have shown that the antimicrobial activity of resazomycins against *N. gonorrhoeae* is diminished in the presence of antioxidants like glutathione. In *N. gonorrhoeae,* PerR regulates Mn-dependent resistance to oxidative stress; therefore, we are generating a *perR* mutant to determine the role of this gene in *N. gonorrhoeae* susceptibility to resazomycins. Agar dilution and time kill assays will be conducted to assess the sensitivity of this mutant to various resazomycins. Understanding the contribution of *perR* to resazomycin susceptibility is essential to elucidate the role of oxidative stress in the bactericidal activity of these antibiotics.