

Ribosplode! Macrolide-Mediated Ribosomal Polymorphisms

Robinson, Amarri (School: John S Davidson Fine Arts School)

As the development of novel antibiotics slows and pathogenic bacteria develop mutations to counter antibiotics, understanding mutant genes contributing to resistance becomes critical. Among Gram-negative bacteria like *E. coli* and *V. cholerae*, ribosomal mutations often lead to Macrolide resistance. While extensively studied in these species, macrolide resistance in *V. natriegens* remains unexplored. Using a chemostat for sustained drug inhibition, I monitored *V. natriegens*' directed evolution against erythromycin, a common Macrolide. I anticipated the evolution of 23S rRNA and 50S subunit mutations under erythromycin stress. Surprisingly, I also observed 16S rRNA and 30S subunit mutations alongside the expected ones. This insight into ribosome-mediated resistance in *V. natriegens* could serve as a model for understanding resistance in related pathogens.