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2023 SEA Symposium Abstract

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Examining Mycobacteriophage Gene Functions and Modulation of Bacterial Host Phenotypes

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Mabel is a temperate bacteriophage that was isolated from *Mycobacterium smegmatis* in 2017. The goal of this project was to utilize techniques of molecular biology and genetics to investigate the functions of four genes encoded by bacteriophage Mabel. Plasmids incorporating viral genes were constructed using cloning techniques. Phenotypic assays were conducted to test for cytotoxicity and defense against phages when viral gene proteins are expressed. Though Mabel gp72 did not exhibit cytotoxicity or inhibit the growth of bacteriophages, gp27, gp56, and gp81 all exhibited varying cytotoxicity on both phenotypic assays. In the future, protein-protein hybrid selection assays could be performed to identify potential protein-protein interactions between any genes of interest and host proteins in *E. coli*.