

Isolation and characterization of Ronstoppable, a *Gordonia rubripertincta* bacteriophage found in soil

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Due to the increasing number of bacteria that have become resistant to antibiotics, there is a growing need for the development of alternative therapies to treat infections. One possible solution is bacteriophage therapy, the use of viruses to eliminate bacterial infections. The goal of this project was to isolate and identify novel bacteriophages, or phages, from soil samples that target *Gordonia rubripertincta*. *G. rubripertincta* is a gram-positive bacterium found in soil that can cause pulmonary infections that clinically resemble tuberculosis in immunocompetent patients. There are no current guidelines of how to manage these infections. In this experiment, a soil sample was collected from NSU's Medicinal Garden and enriched with *G. rubripertincta* to amplify the phage. A spot test, where 10uL of the filtered sample was placed on top of a lawn of *G. rubripertincta*, was used to screen the sample for phage and resulted in a clearing, indicating the presence of phage. To ensure that only a single phage was present in the sample, purification was performed by diluting the sample, performing a plaque assay, picking an isolated plaque and repeating this process until the plaque morphology was uniform. The phage, named Ronstoppable, was then visualized through cryogenic electron microscopy and was classified as siphoviridae based on its morphology. Phage DNA was extracted, and samples were sent off for sequencing as well as subjected to RFLP analysis to compare its genome with other *Gordonia* phage. Future experiments include genome annotation to further characterize this newly discovered phage.