CONSIDER FOR TALK

2022 SEA Symposium Abstract

University of Maine, Honors College

Orono ME

Corresponding Faculty Member: Melody Neely (melody.neely@maine.edu)

The Mysterious Gordonia Phage Widow

Ben Curtis, Bayarjavkhlan Ganbaatar, Griffin Lawrence, Wyatt Oglesby, Jaylee Rice, Emelia Tremblay, Melody N Neely

Antibiotic resistance in bacteria is expected to reach epidemic proportions by 2050. To combat this, bacteriophages (phages), viruses that infect bacteria, are being studied as an alternative solution to antibiotics. With more knowledge of phages and their genes, previously incurable bacterial diseases may become curable. To increase our knowledge about phages and their applications to medicine, novel *Gordonia terrae* phage, Widow, was isolated and the genome annotated. Widow was isolated from a soil sample found in Mattapoisett, MA using an enriched isolation process. Widow has a lytic life cycle, meaning that it can only use the bacterial host to replicate and make new copies of itself, while killing the bacterial host. It is classified as a cluster CD phage belonging to the Siphoviridae family. The genome consists of 43656 total base pairs with a GC content of 67.6% and encodes 63 genes. The placement of the lysin B protein relative to the rest of the lysis cassette is a distinct feature of Widow as this does not follow the canonical genome structure. Widow also contains a putative HicAB toxin/antitoxin cassette. Further research should be conducted to explore how these phage may be applied to the fields such as waste water management and bacterial infections, as other *G. terrae* phage have been utilized in the past. Such research could also provide insight on how phages are able to hijack the bacterial host and cause lysis.