DO NOT CONSIDER FOR TALK

2022 SEA Symposium Abstract

University of Maine, Honors College

Orono ME

Corresponding Faculty Member: Sally Molloy (sally.dixon@maine.edu)

Novel Gordonia Phage StarStruck: A Shining Light For Discovery

Wyatt Cannell, Eleanor Carrolton, Julia Coombs, Addie Gambol, McHenna Martin

Filamentous bacteria like Gordonia terrae pose economic, environmental, and health risks by diminishing wastewater treatment efficiency. Bacteriophages (phage), viruses which infect bacteria, can be used to reduce G. terrae populations improving wastewater treatment. Phage are the most abundant biological entities representing 1031 particles in Earth’s biosphere, but only 634 G. terrae phage have been sequenced. StarStruck, a novel phage, was isolated through an enriched G. terrae sample and sequenced for characterization of it’s genome to better understand phage diversity. Phamerator, HHPRED, PhagesDB, and NCBI Blast were all used to annotate the genome of StarStruck. StarStruck is a cluster CR2 phage, meaning it shares more than 35% of its gene content with cluster members. StarStruck’s genome is 68,128 bp long, contains 91 genes, and has a 65.4% GC content. StarStruck is a lytic phage which lyses the cells it infects, while most G. terrae phages are temperate and integrate their genomes into their host’s. As a lytic phage, StarStruck encodes lysin A (gp 49/50), lysin B (gp18), holin (gp15), and a HicA toxin (gp6). More phage should be isolated and compared genomically to improve our ability to control bacterial populations in wastewater treatment plants and to learn about their potential use as antibacterial treatments in medicine.