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2022 SEA Symposium Abstract

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Discovery and Annotation of Microbacterium foliorum Actinobacteriophage BabyDaisy.

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Salem State was fortunate to be able to run the Phage Discovery semester of SEA-PHAGES in person in the Fall of 2021 under COVID-19 compliant protocols. Two actinobacterial hosts were used; *Microbacterium foliorum* and *Gordonia rubripertincta*. Student’s enriched soil samples yielded a number of phages on both hosts. We were able to amplify and purify only one *Microbacterium foliorum* phage as we had difficulty isolating enough DNA for sequencing from the *Gordonia* phage, but finally sent a DNA sample for full genome sequencing at the University of Pittsburgh. *Microbacterium* phage BabyDaisy is that lone phage from this year. BabyDaisy is a lytic *siphoviridae* in cluster EB at 42226 base pairs in length. BabyDaisy was annotated using the Actinobacteriophage Database at phagesdb.org, Phamerator and PECAAN. BabyDaisy has a translational frameshift in the tail assembly chaperone upstream of the tape measure protein, and displays typical genome structure with structural proteins in the left arm of the genome and DNA synthesis and nucleotide modifying enzymes in the right. BabyDaisy contains one glutamine tRNA in the far-right arm of the genome, similar to many phages in the EB cluster. Plans for the end of the semester and summer are to troubleshoot the phage DNA isolation, as we had several high titer stocks, but were only able to isolate DNA from one phage lysate with help from HHMI. We also need to complete the documentation of the discovery of BabyDaisy, including TEM images, restriction digest map and archiving.