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2023 SEA Symposium Abstract

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Characterization of Discoknowium, A Novel A5 Phage

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In fall 2022, Discoknowium was discovered from a fecal rat sample using a Mycobacterium smegmatis host. As part of the SEAPHAGES program freshman discovery course, we purified the sample, isolated DNA, ran gel electrophoresis analysis, and performed electron microscopy. TEM photos revealed this phage is Siphoviradae, and plaque observations indicate it creates small, clear plaques. After Illumina sequencing through the Pittsburgh Bacteriophage Institute, this phage was revealed to be a temperate member of the A5 subcluster (a fairly large subcluster with 37 other members) and has 50,222 base pairs. During the bioinformatics section of the course, we annotated Discoknowium and compared to other similar phage using comparative bioinformatic tools to discover possible differences in phage isolated from an animal microbiome. Initial annotation reveals that while Discoknowium is significantly similar to other subcluster members, there are some notable differences; for example, gene 19 for Discoknowium is not in the same pham as its most similar phages’ corresponding genes. Further annotation and investigation hope to reveal additional unique characteristics of this novel phage.