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Carthage College

Kenosha WI

Corresponding Faculty Member: Deb Tobiason (dtobiason@carthage.edu)



Mason Fanelle

Discovery and Analysis of Mashley (Cluster EG), Den3 (Cluster EA1) and Velene (Cluster EA1)

Mason Fanelle, Asher Boucher, Ashlynne Edwards, Cristian Hilliard, Letitia Siers, Krysti Vanovenoeke, Andrew Albers, Amy Cooper, Gelene Rivera, Victor Austin, Madeline Perez, Steven Henle, Qinzi Ji, Sheryl Konrad, Deborah Tobiason

During the Fall semester at Carthage College, 58 bacteriophages were isolated using *Microbacterium foliorum* as a host. These phages were purified and characterized, and three of the phages were chosen for DNA sequencing and annotation (Den3, Velene and Mashley). All three annotated phages are lytic and lack an integrase gene. In addition, these phages have siphoviridae morphology with long, flexible, non-contractile tails. After sequencing and annotation, Den3 and Velene were found to belong to cluster EA1 and are very similar to each other. Mashley belongs to cluster EG and has several orphams. Mashley is most closely related to phage Hyperion though the EG cluster is quite diverse, and Mashley appears to contain unique sections. Further analysis of these phages spans topics from doing whole genome comparisons to focusing on specific genes of interest to determine phylogeny and analyzing regions of interest such as repeated DNA sequences. There is relatively little data available thus far on Microbacterium phages; therefore, our research will boost our understanding of Microbacterium phages, especially those in clusters EA1 and EG.