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2021 SEA Symposium Abstract

Merrimack College

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Argent26 and Quallification and the Typical Arrays of Reverse Small Protein Genes in Cluster E Phage

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Argent26 and Quallification are two new cluster E Mycobacterium smegmatis phage that join three others discovered by the Merrimack College SEA PHAGES team: Emmina, Hopey, and Paperbeatsrock. Three came from the Merrimack College campus, while the other two were from areas within a 30 mile radius in northeastern Massachusetts. Quallification was a direct isolate but the rest were the products of enriched isolation. The soil samples were all reported to be moist, from mud, mulch or a garden bed. All of these phage are temperate of the siphoviridae morphotype. Their genomes are approximately 75,000 bp in length with a similar organization. All possess a tyrosine integrase from the same pham (4569), and have two tRNAs in tandem at roughly the same position, around 62kb, between an hnh endonuclease represented in clusters E and L, and a protein of unknown function from a pham found exclusively in cluster E. Most of the genes are oriented in a forward direction with the exception of two clusters encoding small peptides of unknown function. One group is found mid-genome, and the other in the distal part. Most of these proteins belong to phams represented in only a small sampling of other phage clusters, and many are exclusive to cluster E.