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Orono ME

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The Discovery of DosHalletts: An F1 Cluster Mycobacteriophage

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Antibiotics are becoming less effective at combating bacterial infections as a result of selective pressure, which forces bacteria to adapt and gain resistances to antibiotic mechanisms. Bacteriophages (phages) are viruses that infect bacteria and can be used in medicine to target bacterial infections, commonly known as phage therapy. Through the continued study, isolation, and annotation of novel bacteriophage genomes, we increase our understanding of phage diversity and host interactions and how viruses can be used in the treatment of bacterial infections. Mycobacteriophage DosHalletts is a temperate siphovirus isolated from soil in Orono, ME, United States, that forms turbid plaques on a lawn of Mycobacterium smegmatis mc²155. The DosHallett genome is 57,562 bp long and has a GC content of 61.3%. It encodes 103 putative genes and belongs to cluster F1. The left arm of the genome encodes structural and assembly genes and is highly conserved whereas the genes of the right arm are highly diverse. DosHalletts encodes a RelBE toxin-antitoxin system that may contribute to bacterial fitness, two WhiB transcription factors and a mycobacteriophage mobile element (MPME1). The characterization of this novel bacteriophage adds to the growing database of mycobacteriophage genomics, and could improve our understanding of the diversity of these viruses and their potential for treating mycobacterial infections.