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Gordonia phage Periwinkle

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Gordonia are ubiquitous Actinobacteria that are frequently isolated from soil and water but can also cause infections in immunocompromised individuals. Studying the content of Gordonia bacteriophage (a bacterial virus) genomes will help us better understand the physiology of the bacterial host and provide opportunities to improve treatment of bacterial infections in general. Using the SEA-PHAGES protocol, the novel Gordonia bacteriophage Periwinkle was isolated from a manure sample collected at Roger’s Farm, Orono, ME, using the host bacterium Gordonia terrae 3612. Periwinkle was characterized by plaque morphology, virion morphology, restriction endonuclease digest patterns, host range, and genetic sequencing. Periwinkle is one of 22 cluster DN temperate bacteriophages. The genome is 55,657 nucleotides long, has a GC content of 62.9%, and encodes 113 putative genes. Consistent with a temperate phage, Periwinkle encodes a tyrosine integrase (gp57) and an immunity repressor (gp58). There is a ~6-kb region between the structural genes and tyrosine integrase that likely encodes accessory genes that could contribute to the fitness of the bacterial host and includes an acetyl transferase, six membrane proteins and two DNA binding proteins. The increased knowledge and identification of Gordonia bacteriophage genomes such as Periwinkle, especially the uncharacterized genes, can advance our understanding of bacterial and phage evolution.