Comparing the Genomic and Functional Properties of Phage BangNhom and Other Phages To Test Medical Capabilities for Tuberculosis

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Tuberculosis (TB) is a type of mycobacterial infection that has a very high mortality rate if it is left untreated. Bacteriophages are a type of virus that infects and replicates only in bacterial cells. Due to the rising prevalence of drug-resistance bacteria that is found in Tuberculosis, mycobacteriophage treatments have been used. In my project, I used D29, L5, and TM4, which are phages that are known to treat Tuberculosis, and compared them to BangNhom, a phage that is closely related to those phages to test if it could be a possible phage used in Tuberculosis treatment. I used various bioinformatic tools to conduct research on these phages' genome and functional properties. I used tools such as Phamerator, BLAST, and phages DB to compare the phages' physical properties and functions of certain genes of these phages to compare the effect that they could have on Tuberculosis. I found that BangNhom exhibits certain genes which include the immunity repressor gene and the lytic cassette gene, which affects lysis. Lysis is the breaking down of a cell in order to release inter-cellular materials such as DNA, RNA, or proteins from a cell, allowing for replication and treatment of an infection. BangNhom also shows genomic and nucleotide similarity with phages D29 and L5. This shows that BangNhom does provide similar features to Tuberculosis treating phages, making it a phage that could possible be used to treat Tuberculosis.

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