CONSIDER FOR TALK

2021 SEA Symposium Abstract

University of the Sciences (now St. Joseph's Univ)

Philadelphia PA

Corresponding Faculty Member: C. Nicole (Nikki) Sunnen (csunnen@sju.edu)

Shine a Light on Beem Annotation

Maryam Khan, Kristine Macatantan, Angelina Sokivka, C. Nicole Sunnen

Bacteriophages are viruses that infect bacteria and were first found almost 100 years ago. We are trying to further understand the actinobacteriophage Beem, originally found in 2019 by Brandon Martinez at Orangeburg, NY. The phage Beem is found to be a temperate phage, belonging to cluster J, of which there are 38 members. The phage Beem’s morphotype was categorized under siphoviridae, which is a family of viruses that have double-stranded DNA and long flexible tails. The isolation host is *Mycobacterium smegmatis* which is found in normal human-genital secretions, lower animals, soil, dust, and water. Unfortunately, some strains of this bacteria can be lethal as it often results in clinical infections that develop from contaminated wounds caused by contaminated solutions. Annotating the genome will allow us to get a better understanding of Beem, which in turn will also help us understand other bacteriophages. We used DNA Master for annotation of phage Beem. Through the process of annotating, we used resources like Starterator, NCBI Blast, Phagesdb, Genemark and Glimmer. Using these we were able to identify the coding potentials, start and stop sites, alignments, gene sequences, gaps and functions, etc. With the use of all of our resources, we expect to identify the genes and their functions. The genes that we found were consistent with the temperate phage, Beem. We gathered an abundant amount of information about the phage such as it being 113128 base pairs in length, having 242 putative genes, and having a tRNA between base pairs 184 and 185 in order to use the amino acid glycine since the host doesn’t create much on its own. Further annotating will be necessary to ultimately develop a wider knowledge and deeper understanding of bacteriophages.