CONSIDER FOR TALK

8th Annual SEA-PHAGES Symposium Abstract

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Features for Eight Mycobacteriophage Genomes: AlleyCat (K5), Baehexic (A2), Flare16 (A2), Gruunaga (A6), Jeckyll (K1), LilTurb (A2), Mutante (B1), and NearlyHeadless (A8).

Taylor E Senay, Kathrine A Gaiko, Tithe Ahmed, Katie L Alexander, Colin M Baker, James M Biddle, Xavier K Brickeen, Matthew R Broadbent, Amber N Carroll, Jacob M Coty, Noah M Crews, Makenzie K Daniels, Davis L Elliott, Sherafghan Khan, Jacob K McDavid, Hannah E Miller, Jenna R Rowlett, Michael C Squire, Jodi E Thomas, Kristin K Stockdale, MarthaAnn L Stockler, Ja Vonte A Turner, Olivia Urso, Hannah A Watkins, Bobby L Gaffney, Rodney A King, Naomi S Rowland, Claire A Rinehart, Lonji Li

Eight mycobacteriophages were isolated at Western Kentucky University. These mycobacteriophages were then sequenced and annotated.   
 AlleyCat belongs to the K5 cluster and is most closely related to Mycobacteriophage Larva.   
Baehexic belongs to the A2 cluster and is most closely related to Equemioh13, Piro94 and NaSiaTalie.   
 Flare16 also belongs to the A2 cluster and is most closely related to NaSiaTalie. It has plaques that are more turbid than Baehexic and also carries two adjacent proteins that have been called as repressors but that have little similarity at the protein sequence level.  
 Gruunaga belongs to the A6 cluster and is most closely related to Gladiator. It had plaques that were bullseye in morphology.   
 Jeckyll belongs to the K1 cluster and is most closely related to BarrelRoll. Jeckyll is lysogenic with 2-3 mm diameter plaques. A spontaneous clear plaque mutant with 3-4 mm diameter plaques was also isolated, sequenced and compared to the lysogenic phage. Two mutations were detected in the clear plaque mutant, one that was a silent mutation in gene 59. The second mutation in the clear plaque mutant substituted T for I at position 62 of the putative repressor protein (gp 43). The mutation is in the immunity repressor and appears to be in the turn of a helix-turn-helix domain. The location of this substitution most likely alters the affinity of the protein for repressor binding sites on the DNA.   
 LilTurb belongs to the A2 cluster, and is most closely related to Turbido. Compared to other A2 phages, it was much more turbid than the others.  
 Mutante belongs to the B1 cluster and is most closely related to UncleHowie. Mutante gene 54 is an orpham that was believed to be a truncated version of gene 53 found in bacteriophage Zonia. The 3D versions of both of these protein products show almost identical structures.   
 NearlyHeadless belongs to the A8 cluster and is most closely related to phages Astro and Smeadiey. NearlyHeadless exhibited a weak connection between the head and the tail as evidenced by the quantity of tailless heads in the EM pictures.