CONSIDER FOR TALK

7th Annual SEA-PHAGES Symposium Abstract

University of North Texas

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Corresponding Faculty Member: Lee Hughes (lhughes@unt.edu)



Isabel O Delwel

Isolation and Characterization of Streptomyces bacteriophage Chymera, OlympicHelado, Verse, and Amela

Isabel O Delwel, Emory Barnes, Sierra Barnett, Alec Bond, Cheyenne Colley, Gabriel Doria, Alex Eller, Ryan Hemenway, Connor Kennedy, Ashley Millican, Christine Munyoki, Jessi Narvaez, Stetson Norried, Jazmine Rosado, Christie Sirisakd, Brandt Smith, Justin Swain, Orooj Syed, Swapan Bhuiyan, Sonya R Layton, Robert C Benjamin, Lee E Hughes

*Streptomyces* are Gram-positive, filamentous bacteria. Members of this genus are used to produce antifungals, antivirals, antitumoral, anti-hypertensives, antibiotics and immunosuppressives. *Streptomyces griseus* and *Streptomyces venezuelae* were used as the host bacteria in this research for the isolation of bacteriophage. *Streptomyces griseu*s is most often found in soil and was first used to produce the antibiotic streptomycin. *Streptomyces venezuelae* can also be found in the soil, and was used to manufacture the antibiotic chloramphenicol.
The diverse group of *Streptomyces* bacteriophage isolated in this study were Chymera, OlympicHelado, Verse, and Amela. Chymera, OlympicHelado, Verse, and Amela came from enriched soil samples from Texas and New York. Amela and Verse both have a 3’ sticky overhang of 11 base pairs CGGTACGTGAT, 65.6% GC content, and are only 31 base pairs different in genome length. Verse has a 49,483 genome base pair length, and Amela has a 49,452 genome base pair length. These two phage are in the same cluster. OlympicHelado and Chymera both produce extremely small, lytic, and circular plaques. OlympicHelado is the only phage that was isolated from a soil enrichment that was not collected in Texas, and has the shortest 3’ sticky overhang length of 9 base pairs CGCCCGCCT. OlympicHelado has a 56,189 genome base pair length, and a 59.5% GC content. OlympicHelado produces plaques that are approximately .5 mm in diameter. OlympicHelado established a new Streptomyces phage cluster. Chymera was isolated from a prophage on the host strain and was also isolated as Dayspring in a separate class section. Chymera has a 34,742 genome base pair length, and the highest GC content of the phages in this study at 71.4%. It has a 3’ sticky overhang length of 10 base pairs CGCGGGGGGG. OlympicHelado has a 56,189 genome base pair length, and a 59.5% GC content. OlympicHelado produces plaques that are approximately .5 mm in diameter. Chymera is currently a singleton. Chymera, OlympicHelado, Verse, and Amela all appear to have normal synteny in the structural protein genes. Using these phage to infect either *Streptomyces griseus* or *Streptomyces venezuelae* helps further the research into not only bacteriophage, but also the *Streptomyces* bacterium.