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Once in a Blue Moon: Isolating BluerMoon and EvenBluerMoon at Texas Tech University

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BluerMoon and EvenBluerMoon, named after the blue statue that faces away from the Texas Tech Biological Sciences building in Lubbock, Texas, are two bacteriophages (phages) that were successfully isolated on Gordonia rubripertincta in the Fall of 2023. After enriched isolation of the soil samples, we in the TrUE Scholars program performed a triple plaque purification. Both phage produced clear plaques, suggesting a lytic lifestyle. We extracted the genomic DNA, which was sent off to the Pittsburgh Bacteriophage Institute for sequencing. BluerMoon is in the DJ cluster and has a genome size of 61,118 base pairs (bp). This phage has a GC content of 51.6% with 90 genes. EvenBluerMoon is in the FO cluster and is 36,321 bp in length. This phage has a GC content of 68.8% with 51 genes. Both genomes are circularly permuted with a 3’ sticky overhang. After receiving the genomes’ sequences, we annotated them by calling start and stop calls and determining each gene’s function using programs like DNAMaster, HHpred, and PhagesDB. Even though BluerMoon has almost double the length of EvenBluerMoon, EvenBluerMoon had a noticeably higher number of reverse genes than BluerMoon. As this program not only continues to introduce students to the isolation and discovery of novel bacteriophages through an exposure to microbiology applications, it also decreases the bacteriophage knowledge gap in the scientific research world today as we are currently preparing these phages for publication.