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2025 SEA Symposium Abstract

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Isolation and Characterization of a Novel, Bacteria-infecting Siphovirus GoldenChild

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Viruses that utilize bacterial hosts in their replication cycle are called bacteriophages or phages. Siphoviruses, formerly belonging to family *Siphoviridae* which was rendered obsolete in 2022 by the International Committee on Taxonomy of Viruses (ICTV), are non-enveloped, double-stranded DNA viruses with a 20-sided isometric capsid and a long, flexible, noncontractile tail. Bacteriophage isolation is important for treating antibiotic-resistant bacterial infections, and for genomics and phylogenetics research. Phage GoldenChild was isolated from a soil sample collected on August 27, 2024, in Longview, Texas on the LeTourneau University campus (32.46165° N, 94.72697° W). GoldenChild was isolated using the enriched method, with *Mycobacterium smegmatis* mc2 155 as the host, following the SEA-PHAGES Phage Discovery Guide protocols. GoldenChild’s plaques had a bullseye-like appearance, with an average diameter of 1.7 mm (range 1mm-2mm; n = 15). GoldenChild’s lysate had a titer of 1.3 x 1011 PFU/mL, and it was used for gDNA extraction, negative-stain TEM preparation, and archiving. DNA sequencing is still pending, but TEM image analysis of four virus particles revealed this phage as having Siphovirus morphotype with its capsid having an average diameter of 51.1 nm (range 51.1 to 55.6 nm) and its tail having an average length of 201.1 nm (range 182.4 to 214.0 nm).