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Retrieval of Mycobacteriophage from Different Types of Soils

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In the current study, mycobacteriophages Penelope2018 (D1) and Guwapp (C1) were collected from compost-enriched soil. Mycobacteriophage are viruses that infect members of the genus Mycobacterium. It is advised to search for these bacteriophage in moist soil rich with organic matter. It is hypothesized that phages will be retained in rich soil and not retained in sand or clay. Five soil types were tested, namely, commercial potting soil, clay, compost, peat, and sand. In addition, three types of clay were analyzed. The soils were sterilized and phage were added along with phage isolation buffer and/or host bacterium. The mixtures were incubated at 30°C for 3 and 5 days, after which phage presence was tested using a spot plate procedure. Results indicate that clay does not support phage retention, and the titer of the phage decreased significantly within 5 days. The sand and peat retained phage to the greatest degree, with potting soil and compost to a lower degree. Future studies include an assessment of pH in the ability to retrieve phage from the various soil types, as well as aeration status of the soil, in terms of the ability to retrieve phage from the soil. Annotations of these genomes was completed, and an analysis into the amino acids found in the major tail subunit and capsid proteins will be done. This research informs students isolating and purifying phage that soils such as sand may also harbor mycobacteriophage.