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2023 SEA Symposium Abstract

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Direct isolation of Gordonia terrae phage from freezing soil and potted plants

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*Gordonia terrae* (*G. terrae*) is one host that can be used during Phage Hunters. The optimal growth of *G. terrae* is at 30°C for 2-3 days, resulting in a bright orange color. *G. terrae* 3612 host was used at the University of Pittsburgh, throughout Spring 2023, for the discovery of phages in 4 sections. Collecting direct isolation soil samples from around Pittsburgh’s campus during January might seem useless, however, success is possible even when the weather is freezing. The success rate from an enriched sample is ~33% when utilizing *G. terrae* (SEA-PHAGES guide), and direct isolations typically have a lower success rate than enriched isolations. However, during 2 different weeks in January 2023, when the weather was an average of 4°C (40°F) and 2°C (35°F), 4 sections of students obtained a total of 178 soil samples from “outside” and 52 samples from “inside”. The inside samples from potted plants were only obtained during the second week when the average temperature was 2°C.
Two lab sections incubated the direct plaque assays at 25°C for 7 days, while the other two lab sections incubated at 30°C for 2-3 days. The success rate of direct isolation for the “outside” samples was 6%, when grown at 25°C and 14% at 30°C. Interestingly, a higher success from outside samples were obtained during the second week, which was colder. The “inside” samples showed 19% success at 25°C and 40% at 30°C. These results indicate that performing direct isolations on frozen soil can result in the discovery of new phages and that not even freezer weather can stop phage discovery.