Title: A Bacteriophage Database of Isolated Medicinal Phages and Novel Phages from the Local Environment

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Bacteriophages are viruses that infect bacterial cells and may live silently in their host or have a productive infection and kill their host. Eastern medicine routinely uses phage for bacterial infections as alternatives to traditional antibiotics. Phages may also be important in reducing bacterial virulence factors such as biofilm formation. Biofilms are formed when the bacteria reach a density that can detect the signaling molecules they secrete. The molecules signal the bacteria to turn on certain genes whose products are necessary for biofilm formation. Biofilms are sticky layers that help bacteria attach to surfaces and protect themselves from antibiotics and the body's immune system. In this study, bacteriophages were isolated from environmental water samples collected across the Hampton University campus as well as from a novel human medicine from the Eliava Institute Pharmacy, located in the Republic of Georgia. Samples were centrifuged, filtered (0.22 µm), and plated using a top agar overlay method for plaque isolation. Phages targeting clinically relevant bacteria (*Bacillus subtilis, Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus, and Streptococcus mutans)* were isolated, characterized by plaque morphology and titer counts, and organized into a structured database based on host species. We have thus far isolated 61 phages. The phages are currently being tested for biofilm inhibition and eradication. Future phage characterization includes genome sequencing, latency period determination, and interactions with known biofilm-inhibiting drugs. Phage characterization of those phages capable of diminishing virulence compared to those phages that have no effect will be used to eventually produce phages by synthetic genome construction that will be useful in controlling biofilms. This work will support the development of novel antimicrobial mixtures combining bacteriophage therapy with newly identified compounds to combat biofilm-associated infections.