

# Isolation and Characterization of an Environmentally Sourced Bacteriophage for *Serratia marcescens*

Massow, Demetri (School: Crown Point High School)

While antibiotics have been used for decades to treat bacterial infections, the use of bacteriophages in the medical setting provides a potential for new treatments in an era of growing antibiotic resistance. In this study, environment samples were gathered from three locations in order to isolate a phage capable of infecting and lysing *Serratia marcescens*, a bacteria known to cause nosocomial infections. The environmentally sourced samples were added to separate vials of LB broth containing *S. marcescens* and incubated for 4 days, in order to enrich for *S. marcescens* specific bacteriophage. The cultures were then centrifuged to pellet the bacteria and the supernatant containing potential bacteriophage was collected. This phage solution was serially diluted, added to an LB top agar containing *S. marcescens*, plated, and incubated for 24 hours at 37°C. Viral plaques were observed in the preparation from the lake on Stillwater Parkway (41°23'54.7"N 87°20'10.0"W), indicating the presence of bacteriophage. The isolated bacteriophage were specific for *S. marcescens*, as plaque formation did not occur when added to cultures of *S. aureus* and *E. coli*. Current work is aimed at further characterizing this bacteriophage through DNA isolation and genome sequencing to determine whether the isolate is a novel phage. These results demonstrate the ability to isolate specific *S. marcescens* lytic phage from environmental sources, and could lead to the development of novel therapeutic treatments against *S.marcescens*.