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Bacteriophage Discovery at The University of North Carolina at Charlotte

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Bacteriophages are the most abundant organism on the planet, these bacteria-killing viruses have enormous potential in the world of medicine. Research has suggested that bacteriophage therapy can be effective against antibiotic-resistant bacteria. Despite the enormous amount of bacteriophages on earth, fewer than 3000 have been genomically characterized. As such, undergraduate students from the University of North Carolina at Charlotte took part in the discovery component of the SEA-PHAGES program with the goal of isolating novel bacteriophages. Researchers followed protocols laid out by the Howard Hughes Medical Institute in the Phage Discovery Guide, collecting soil samples from areas around Charlotte, North Carolina. Experiments were performed first to determine if there was phage presence in the samples then to isolate, purify, amplify, and finally characterize the phages. Some experiments such as enriched isolation incorporated the use of host bacteria *Microbacterium foliorum*. Phage was successfully isolated from a majority of the collected samples, this was indicated by the presence of plaques found in plaque assay experiments. Characterization of the phages through restriction enzyme digests as well as transmission electron microscopy further verified phage presence. The restriction enzyme digest initially produced unclear results and was repeated later in the course after protocol modification. In a subsequent semester, the genomics component of the SEA-PHAGES program will be carried out using the discovered phages from this project.