Cloning and Testing of Phage Shene Gene #50 for Cytotoxicity

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Bacteriophages are viruses that infect bacteria. During infection a phage attaches to a bacterium and proceeds to insert its genetic material into the cell. After that the phage follows one of two life cycles: lytic, or lysogenic. Lysogenic phages insert their DNA into the host and replicate it without destroying the host cell. When phages were discovered there were attempts to use them to treat bacterial infections, but was unsuccessful, likely because the strains of phage used were not ones for these particular infections. Bacteriophage genomes have between 4 and 750 genes. Of all the genes that make up phages, we only know what about 50% of them do, so this project is targeted at concluding what two unknown genes do. This project's research question is: Do certain genes from Phage Sheen inhibit growth in a bacterial host? The hypothesis: If I clone and test phage sheen genes, then I can elucidate their function by evaluating the effect on the host's growth. The independent variable is the phage genes with the unknown function. The dependent variable is the effect on the host's growth. This project is broken down into three sections, the first is amplifying the DNA. The second section is cloning the gene into the backbone. The third section is to test the cytotoxicity. The results of this project are important to the scientific community because once we know what all of the functions of the genes inside of the majority of phage strains are, we can start clinical trials to test phage therapy. This information will enter the international phage database and will help further the overall progress of phage research. Phage therapy could become the alternative treatment for antibiotic resistant infections, which would otherwise be life threatening to the patient.

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