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The Future of Food in Phage Structure

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Bacteriophages, more commonly called phages, are essential in being able to understand the functionality of viruses in our environment and how viruses can affect other organisms differently. Bacteriophages are becoming more prominent in the food industry, especially in contributing to the advancements in food biocontrol. Current products using bacteriophage are not incredibly sustainable or the phage lacks many features necessary that can help the bacteriophage efficiently target foodborne pathogens and sustain future food innovation. Sustainable food innovation has been a prime focus of many in the agricultural and biological fields. Phages have the potential to minimize the impact of large-scale agricultural production to the environment and to maximize the organic process value of food products.

In order to better understand this issue and how to combat it, a function and structure analysis of the bacteriophage SilverDipper will be conducted. SilverDipper is a myoviridae phage discovered in 2019 and is a part of the C1 cluster. It has a length of 155812 base pairs, which is considered a significantly long genome. Having a long genome allows for the possibility of more protein-coding genes to be found within a given phage. Such qualities can be found through the annotation of the SilverDipper genome and analysis of the genome functions. By understanding the function of the genes in SilverDipper and being able to recreate their related structure, a better insight can be gained as to the overall structure of the phage. Understanding SilverDipper’s unique genome can aid in the determination of its fitness for scientific manipulation to contribute to the food biocontrol industry and sustainable innovation of food products.