

Isolation, Cultivation, and Characterization of Novel Phage

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Introduction

Bacteriophages (phages) are viruses that target bacteria and are found everywhere in nature. This project's objective is to expand on knowledge of phages by cultivating a novel phage and acquiring enough DNA for genome sequencing. Madison Gubitose isolated novel phage from soil from a houseplant. Lab protocols were done according to SEA-PHAGES discovery guide.

Methods

Picking a plaque
(Figure 1.)

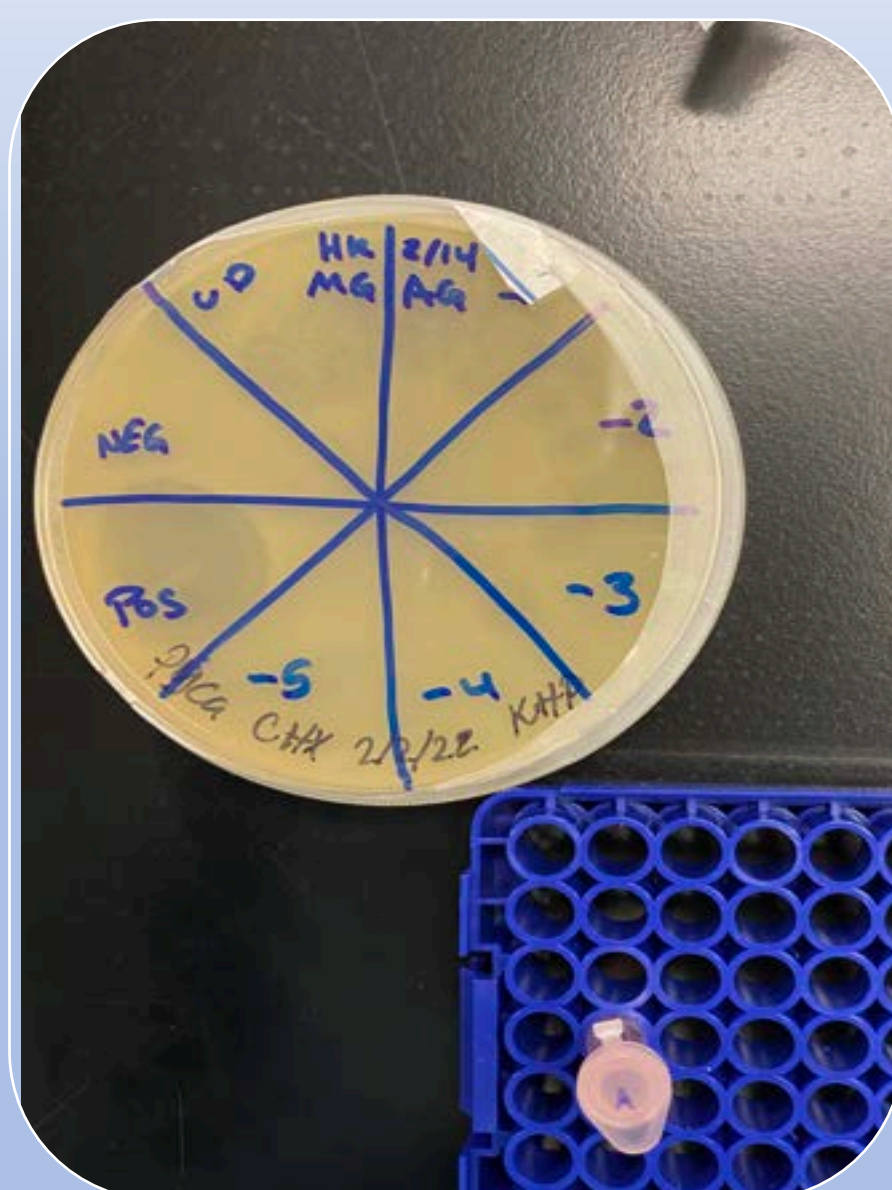


Figure 1. Plate that phage was picked from

Serial dilutions
(Figure 2.)



Figure 2. Serial dilution materials

Plaque Assay
(Figure 3.)

Make Webbed Plates
(Figure 4.)

DNA Extraction
(Figure 5.)

Results

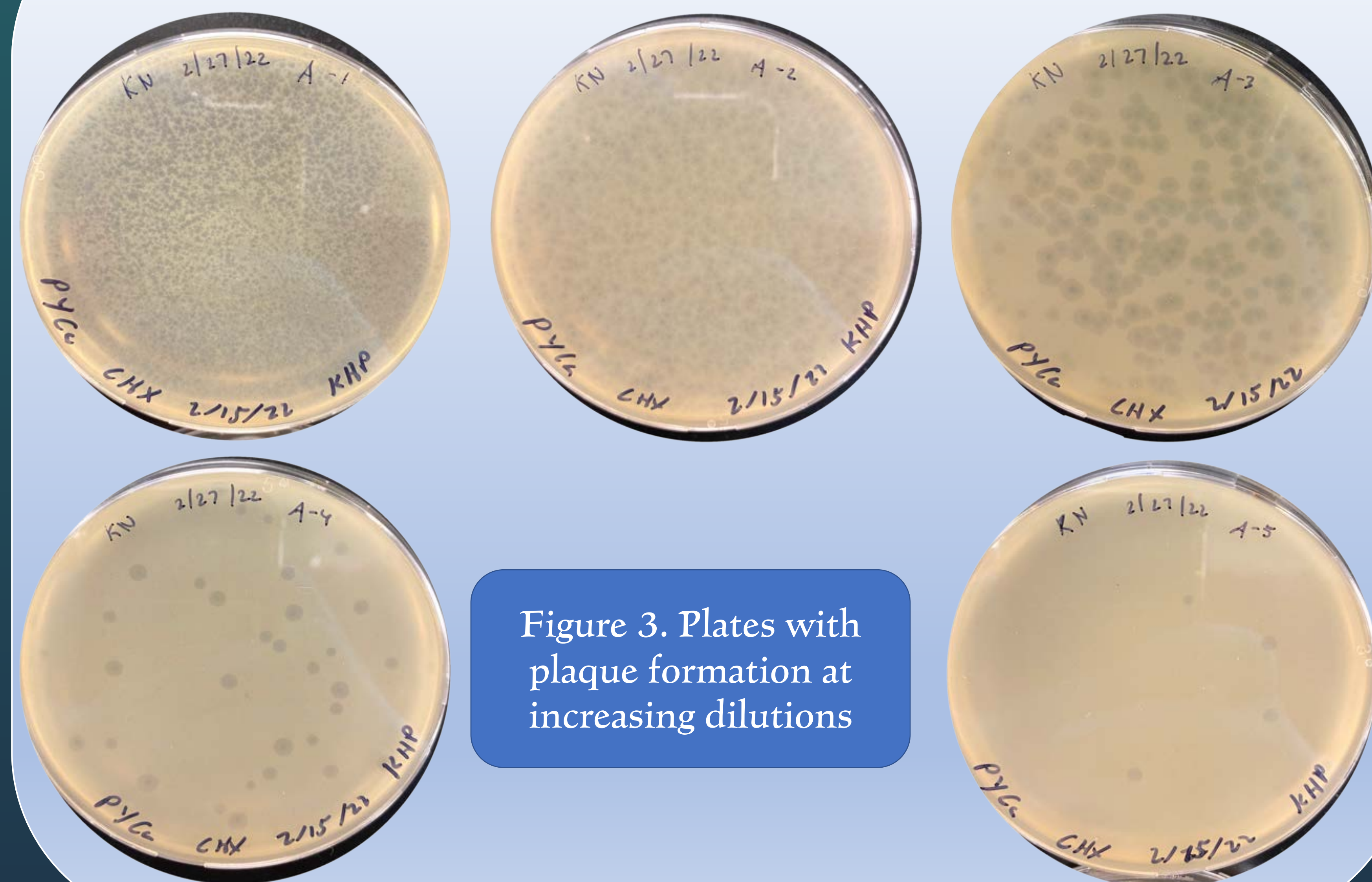


Figure 3. Plates with plaque formation at increasing dilutions

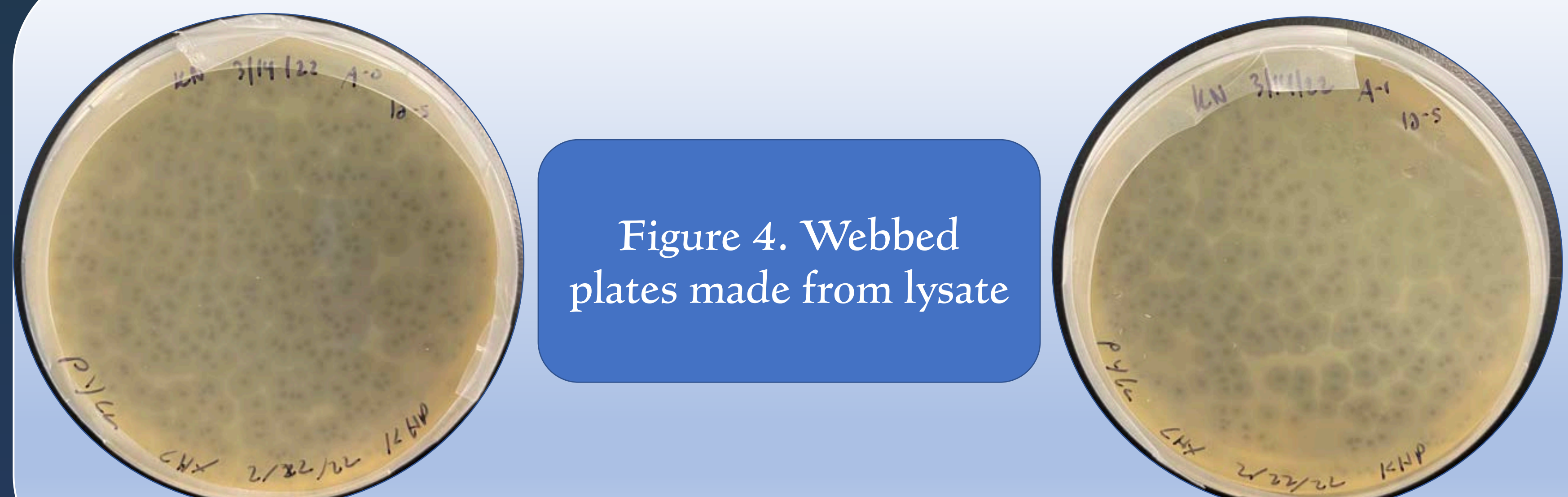


Figure 4. Webbed plates made from lysate

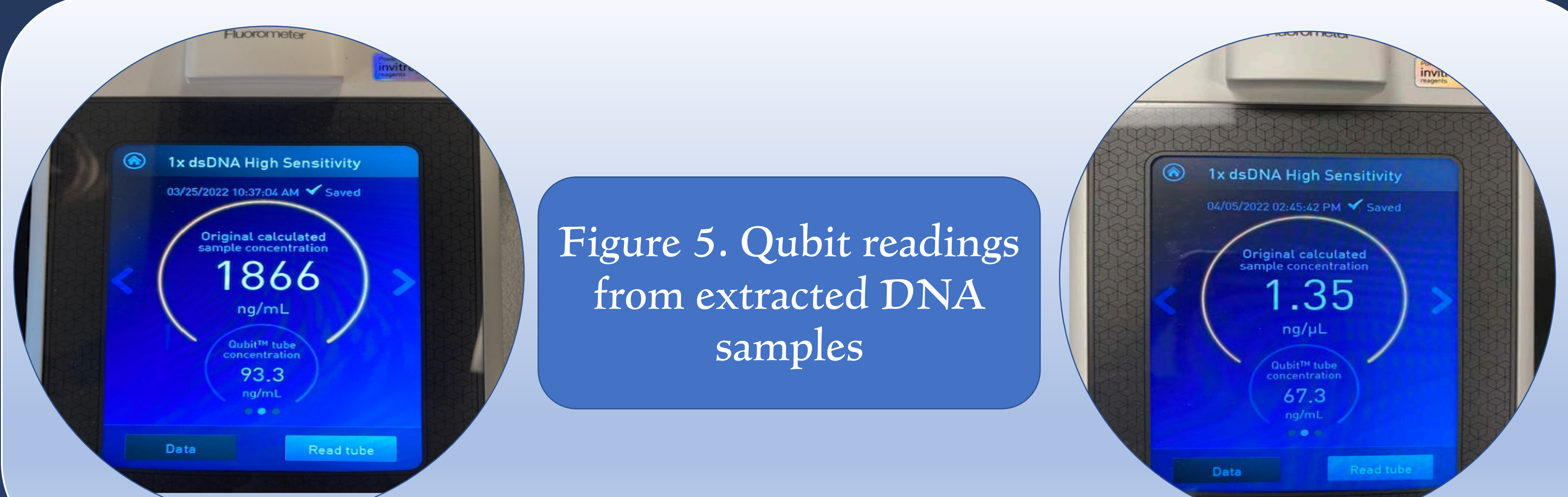


Figure 5. Qubit readings from extracted DNA samples

Conclusion

The SEA-PHAGES program hosted by Howard Hughes Medical Institute works with students on discovery of novel phage and annotating that novel phage's genome. Discovery of novel phages and later documenting their genomes in a database expands on scientific knowledge. With the rise of multidrug resistant bacteria, phages have been considered for therapeutic use.

- Multiple rounds of plaque assays confirms that plaque morphology is bullseye appearance.
- Webbed plates made from lysate have a titer of 5.0×10^9 pfu/ml.
- DNA extracted from lysate read low levels on Qubit. Low quantity could be a result from improper rinsing of isopropanol during DNA extraction step or low titer of lysate sample.

Acknowledgments

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References

SEA-PHAGES. (n.d.) SEA-PHAGES. <https://seaphages.org/>