

# Exploring Marine Phage Hunting in the Greater Pensacola Beach Area



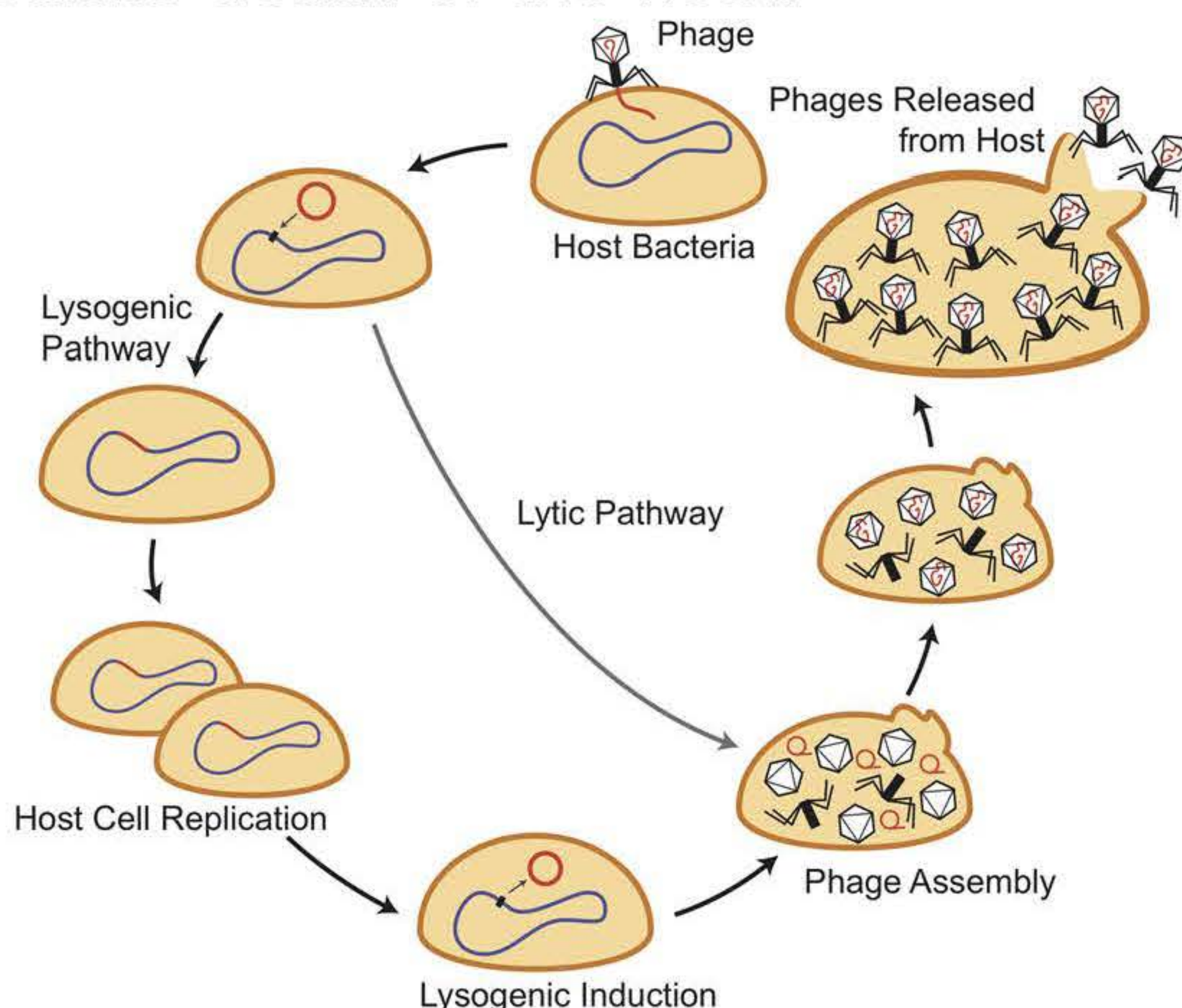
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## INTRODUCTION

A bacteriophage (often referred to as a “phage”) is a type of virus that infects bacteria. Specific phage strains only infect specific bacterial species. Phages can have two types of life cycles: lytic and temperate.

- Lytic phages force a host cell to quickly replicate the virus, which causes the cell to lyse.
- Temperate/lysogenic phages mostly follow the lysogenic cycle, which does not result in the immediate death of the host.



Phages are highly abundant in ocean environments; up to 10 million phages may be found in a single drop of seawater. Despite this, not much is known about the full scope of their diversity.

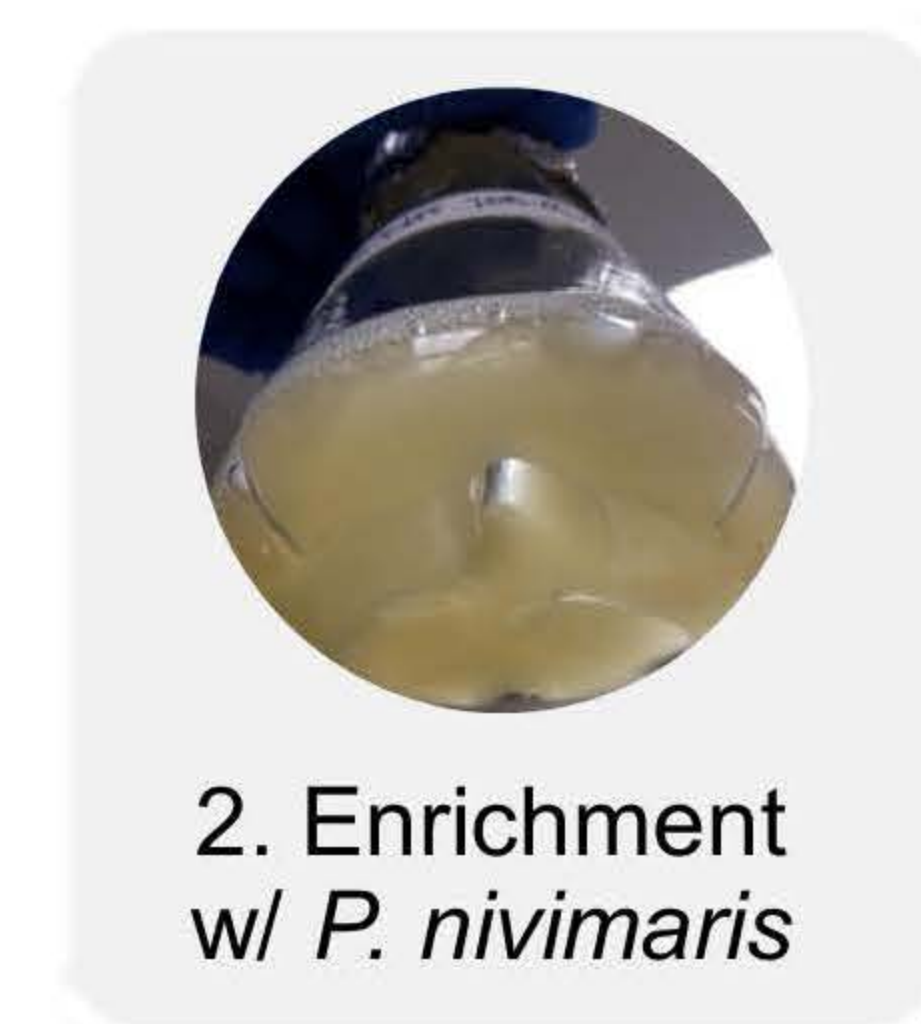
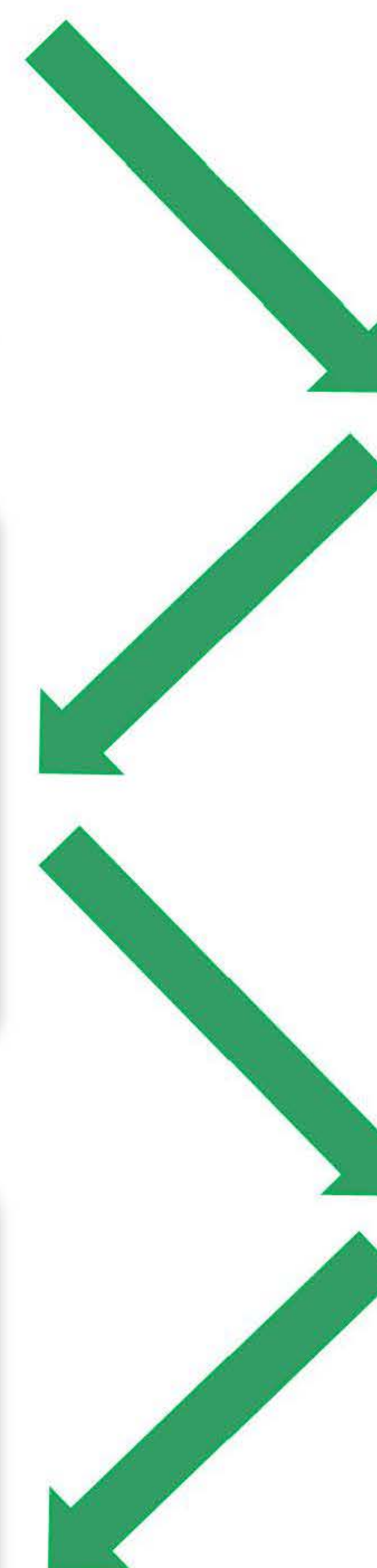
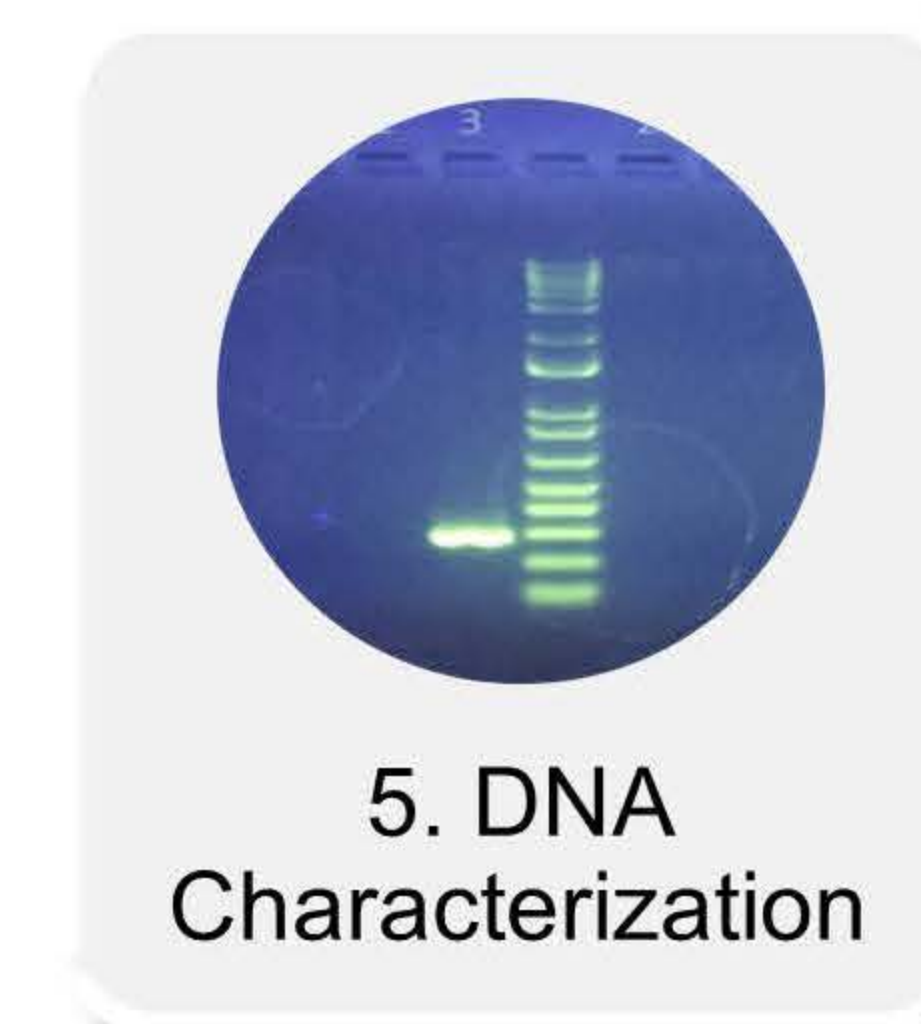
## AIMS

- Characterize the morphologies and genomes of new marine phage strains
- Determine the effectiveness of host-specific phage hunting for building genomic libraries
- Document any modifications to the traditional host-specific phage hunting method and make these available to the community

## METHODS

### Bacterial host *Psychrobacter nivimaris*

- Gram-negative
- Aerobic
- Non-motile
- First isolated from the Southern Ocean



## RESULTS & DISCUSSION

The two plaques picked provided two unique novel marine bacteriophages, Apsu and Oceanus. Apsu was picked from a small plaque with a fuzzy edges, and Oceanus was picked from a large plaque with distinct edges.

- Apsu and Oceanus contribute two new entries in the marine phage database, which can be used for comparative genomic analysis with phages sequenced via metagenomic methods
- Very little modification to the terrestrial host-specific phage hunting method was necessary

## FUTURE DIRECTION

- Sequencing the genomes of Apsu and Oceanus for bioinformatic analysis
- Precipitation of phage particles from seawater via iron (iii) chloride flocculation
- Metagenomic sequencing of precipitated phages and bioinformatic analysis
- Development of a hybrid metagenomic/host-dependent phage hunting method

## ACKNOWLEDGEMENTS

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## REFERENCES

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