

# A Deep Freeze: Disruption of the Coral Microbiome During Cryopreservation and the Development of Novel Therapeutics for Recovery

[*Jefferson, Tori*]<sup>1</sup>; [*Henley, Michael*]<sup>2</sup>; [*Erwin, Patrick*]<sup>1</sup>; [*Hagedorn, Mary*]<sup>2</sup>; [*Ushijima, Blake*]<sup>1</sup>

<sup>1</sup>Biology and Marine Biology, University of North Carolina Wilmington, Wilmington, NC

<sup>2</sup>Smithsonian National Zoo and Conservation Biology Institute, Front Royal, VA

Coral reefs are vital ecosystems under threat from climate change, pollution, and disease. Isochoric vitrification, a cryopreservation technique, holds potential for preserving whole coral fragments for future restoration efforts. However, the effects of cryopreservation on corals and their microbial diversity remain largely unknown. In a recent study, *Porites compressa* fragments from Kāneʻohe Bay, Hawaiʻi were subjected to isochoric vitrification, with microbiome sequencing revealing a significant post-thaw overgrowth of the bacterial family *Vibrionaceae*. Depletion of the natural microbiome post-thaw suggests the need for supplemental repopulation of beneficial microbes (probiotics). These results were confirmed by plating various post-thaw samples onto various media types, confirming >99% of the culturable isolates were suspected *Vibrionaceae*. Cultured isolates were identified through a combination of the 16S rRNA gene and *hsp60*. Representative targets were modified to express GFP, and a rapid screen was developed to identify probiotics that inhibit *Vibrio* spp. growth, which has been confirmed with pre-existing probiotics. Efforts are now being directed towards optimizing sample collection for the development of potential probiotic treatments for coral microbiome supplementation post-thaw.

**Presentation author:** *Select one*

	Undergraduate Student
	Graduate Student MS
	Graduate Student PhD
	Post-Doctoral Researcher
<b>x</b>	Professor/Professional

**Presentation type preference:** *Select one*

<b>Rank</b>	<b>Presentation type</b>
	Oral
<b>x</b>	Poster