

## **Abstract**

Ocean acidification is driven by the proliferation of greenhouse emissions in the atmosphere or global warming. Global warming is negatively affecting more than just the surface temperatures in the ocean. Increased temperatures in the ocean have a direct, adverse impact on ocean ecosystems, including coral. Coral survives based on a symbiotic relationship with the microalgae, Zooxanthellae. Ideally, coral and Zooxanthellae benefit from each other by providing safe habitats and nutrients to the other organism. However, as temperatures rise, Zooxanthellae produces reactive oxygen species that harm the host coral. As a result, the Zooxanthellae is expelled from the coral as a protective measure, killing the coral in what is known as coral bleaching. This project aimed to discern a method of isolating Zooxanthellae as the first step in conducting genetic modification to improve heat tolerance through increased production of Heat Shock Proteins (HSPs). Ultimately, Zooxanthellae was successfully isolated and cultivated, and procedural next steps to increase the production of HSPs have been outlined.