Undergraduate Research Conference 2022

Lightning Talk Abstract

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Mentor: Dr. Brian Snyder
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Biodegradable Constructed Floating Wetland

The goal of this project is to build a bio-based floating wetland. The benefit of constructed wetlands come from their ability to be placed where wetlands are not commonly located. Currently, this has allowed for success with chemical sequestration. In addition, recent discoveries have shown that artificial wetlands are also effective as carbon sinks which is essential for lowering the amount of greenhouse gasses that accumulate in the atmosphere. Artificial wetlands are available on the market; however, they contain polyethylene terephthalate, PET, which is a plastic polymer that has the ability to absorb chemicals. These plastics will eventually breakdown, due to wave action amongst other methods, and possibly lead to increased toxicity in aquatic environments. The wetland we plan to build will be made from *Phyllostachys Henon* and *Phyllostachys Moso*, bamboo grown in Louisiana, hemp twine, coco coir pith and sheets, and *Phragmites australis*. The testing will proceed in two parts. First, the bamboo skeleton will be built, held together by Japanese square and shear lashings, and tested in LSU lakes for three to four months. For the second part, we will grow the *Phragmites australis*, or adjacent plant, hydroponically in the coco coir, then proceed to test its durability in LSU lakes. We hope that these constructed wetlands will be a cost-effective alternative to those on the market, for lower income communities. Also, it is our goal to make these an option for coastal restoration.

Zachary Thibodeaux

Mentor: Dr. Sherry Krayesky-Self

University of Louisiana at Lafayette

Development of an Assay for Identifying Endolithic Eukaryotic Cells Found in Rhodolith-Forming Coralline Algae

The researchers in the Seaweed Lab at the University of Louisiana at Lafayette documented eukaryotic life stages inside many biogenic rhodolith-forming coralline algae samples. They used cell injection systems to remove endolithic eukaryotic life stages from the lumen of rhodolith-forming coralline alga cells that contain $CaCO_3$ in their cell walls. However, frequently the ultra-micropipettes broke making the work laborious and tedious to complete. This is not time efficient if samples that are collected globally are to be compared. However, completing analysis of rhodolith samples using our newly acquired focused ion beam scanning electron microscope (FIB SEM), which has energy dispersive x-ray spectroscopy (EDS) capability has been more time efficient and more efficient in confirming the presence of eukaryotic life stages.