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Margalefidinium polykrikoides Cyst Resuspension in the Lafayette River, a Sub-tributary of the Chesapeake Bay

Gabrielle Greaney
Old Dominion University

Eduardo Perez Vega
Old Dominion University

Katherine Crider
Old Dominion University

Dreux Chappell
Old Dominion University

Kimberly Powell
Old Dominion University

See next page for additional authors

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Author Information

Gabrielle Greaney, Eduardo Perez Vega, Katherine Crider, Dreux Chappell, Kimberly Powell, Richard Hale, Peter Bernhardt, and Margaret Mulholland

Undergraduate Research Symposium Proposal

Gabrielle Greaney, 01155552

My name is Gabrielle Greaney, and I am a senior studying Marine Biology. This past summer I was granted the opportunity to be a research assistant in Dr. Margaret Mulholland's lab as a "PURS (Program for Undergraduate Research and Scholarship) student". I assisted the summer sampling team in collecting data on Harmful Algal Blooms in the Lafayette River, a sub-tributary of the Chesapeake Bay. I was given a research project studying the cysts of the dinoflagellate species: *Margalefidinium polykrikoides*. Through this project I was mentored by PhD candidate Eduardo Pérez Vega. During summer 2022, we collected bottom water samples before the *M. polykrikoides* bloom initiated. Furthermore, the samples were collected during wind events that are known to resuspend sediments, where dinoflagellate cysts are known to accumulate. Then we determined the total suspended dinoflagellate cysts concentration in the water column by using light microscopy. Additionally, we will quantify the *M. polykrikoides* cysts by using qPCR with the assistance of PhD student Katherine Crider during the spring. We have been successful in confirming the ribotype of *M. polykrikoides* that blooms in the Chesapeake Bay but are still working on the qPCR analysis and is expected to be completed by March.

Margalefidinium polykrikoides Cyst Resuspension in the Lafayette River, a Sub-tributary of the Chesapeake Bay

Gabrielle E. Greaney^{1,2}, Eduardo Pérez-Vega¹, Katherine E. Crider¹, P. Dreux Chappell¹, Kimberly E. Powell¹, Peter W. Bernhardt¹, Margaret R. Mulholland¹

1. Old Dominion University, Department of Ocean and Earth Sciences
2. Old Dominion University, Department of Biological Sciences

Abstract

Harmful Algal Blooms are a collection of algae in a body of water that can cause serious environmental issues and health problems in both people and aquatic organisms. Dinoflagellates are microscopic, unicellular, and eukaryotic organisms that are well known for forming harmful algal blooms because of eutrophication. Coastal Virginia suffers from HABs in the Chesapeake Bay and its tributaries. A common species of dinoflagellate, known as *Margalefidinium polykrikoides* exists in the Chesapeake Bay. The purpose of this study is to determine if sediment resuspension produced by wind generated surface gravity waves cause cysts (dinoflagellate resting stages) to be suspended into the water column, which could contribute to bloom initiation if they germinate and then inoculate the water column with motile cells. Using light microscopy and qPCR, we will determine the percentage of resuspended dinoflagellate cysts being identified as *Margalefidinium polykrikoides*.