

Amanda Dillingham Greene: Identification and Characterization of Bacterial Species Found on Marine Life Living in a Touch Tank.

This year I was excited to teach the first ever Biotechnology elective in our school. The class had twenty students who elected to be in the class because of their interest in science and biotechnology. One of my students in particular also worked at the New England Aquarium and had a huge interest in all things Marine Biology. Every day he would come into class with new questions about marine biology and the aquarium. One question he had in particular was “What types of bacteria live on the animals in the touch tanks and can these bacteria be transmitted between human and animal?” The other students in the class quickly became interested in this question as well and the question actually ended up shaping the first semester of our class.



With the funds awarded by C-More Education and Outreach we purchased a microscope, microscope digital camera, and consumables such as petri plates, agar, inoculation loops, a procedure guide, and bacterial staining materials needed to identify the bacterial species found. As a whole class we developed a procedure we could use to test what bacterial species were on our hands before and after we touched animals in two different touch tanks, the shark and ray tank and the tidal pool tank. Thanks to help from the manager of youth development programs, my entire class was invited to the aquarium to conduct our research! The students had the most amazing time conducting their field research at the Aquarium and learning about how the animals in the tanks are cared for. Once we returned with our samples, we began learning microbial lab techniques needed to culture and identify the bacteria. In our class this year students learned how to make and pour petri plates, aseptic technique, colony counting, methylene blue and gram staining in order to try and classify the bacterial species. In addition we learned about identifying bacteria according to size and shape, and were able to discuss this project with a scientist at NEAQ who is actually working on a project similar to ours. The scientist there taught us about his work classifying bacterial species using genetic analysis. Students concluded their work in written reports that we shared with other classes.



In addition to learning about bacteria on marine animals this project allowed us to form a great relationship with the New England Aquarium. As a result we were invited to participate in the Science at Sea Program about the WHOI vessel Tioga, a program funded by the Richard Lounsberry Foundation. In this program we were able to use an underwater video camera to see the harbor floor, a plankton net to capture plankton, temperature probes to measure temperature at different depths and use a net to look at marine organisms. I am sincerely grateful to the C-MORE Grants for Education that has allowed to embark on this adventure, and I am certain this year is just the beginning for oceanic research in our classroom! To see more photos about our research funded by C-MORE Education and Outreach please visit our website at <https://eastbostonscience.wordpress.com/>.