The Microbial Ecology of Benthic Habitats in Rhode Island: A Ciliate Diversity Study at Point Judith Pond

Abigail Goodman

Cell & Molecular Biology, University of Rhode Island, Kingston, RI

Ciliates are single-celled eukaryotes (protists) which are able to thrive in a wide array of habitats globally, including anoxic habitats such as marine coastal sediments. Ciliates are integral members of microbial food webs and the anoxic ecosystem just below the surface of these sediments. While these organisms are extremely diverse both morphologically and ecologically, much of their diversity is still undescribed. The full diversity of anaerobic ciliates is especially unknown, largely due to difficulties in culturing. In this study we set out to investigate this underexplored diversity of ciliate and protist communities in the anoxic sediments of Point Judith Pond via high-throughput DNA sequencing. We collected 15 sediment samples from 5 different sites and sequenced the universal 18S rRNA marker genes from them in order to identify the members of these communities. We found a wide range of protist diversity among our samples, and this diversity was largely influenced by the relative geographic location of the sites. Gaining a better understanding of the members of these underexplored anoxic microbial communities is especially important as oceanic hypoxic zones expand globally due to climate change.

This work was supported by RI NSF EPSCoR C-AIM