

Recovery and Identification of Marine Microbes from Narragansett Bay and Assessment of Their Potential for Biofilm Formation

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The recovery of marine microbes in pure culture remains a challenge due to microorganisms being found in low abundance, not growing readily on standard growth media, and/or relying on interactions with other microbes for growth and viability. Studying the microbes found in Narragansett Bay will help us understand how microbial population vary in response to climate change and may lead to the identification of biomarkers for monitoring the health of our local marine ecosystem. The purpose of this study was to recover microbes in Narragansett Bay at various locations, to identify them at the genus level and to assess their ability to form biofilms. Water samples were collected from various locations around Narragansett Bay, microbes were recovered by filtration and centrifugation, and cultured on low-nutrient growth media. Recovered microbes were further subcultured to obtain pure isolates and subsequently identified through PCR and sequencing of the 16S rRNA region. The 60 isolates recovered belonged to 4 phyla and 17 genera. Pellicle formation was assessed for the 60 isolates representing 17 genera. Moderate pellicle formation was seen in 85% of isolates, while 3% of isolates showed strong pellicle formation. To date, biofilm formation has been tested for 20 isolates. Strong biofilm formation was seen in 45% of isolates, while 50% of isolates showed moderate biofilm formation. This project will extend to using the strongest biofilm producers to discover which types of materials and/or coatings are more resistant to biofouling and as such optimal for use in underwater sensors.