

Recovery and Identification of Marine Microbes from Narragansett Bay and Assessment of their Potential for Antibiotic Synthesis and Resistance

Madison Lint, Juwaan Douglas-Jenkins & Anne Reid

Biology & Biomedical Sciences, Salve Regina University, Newport, RI

Antibiotic resistance is a public health crisis. The discovery of new antibiotics is urgently needed, as multi-drug resistant pathogens continue to emerge. Bacterial antibiotic resistance occurs when bacteria themselves, not people or animals, become immune to the medicinal effects of the antibiotics. The ocean is an untapped reservoir of marine bacteria that have the potential to produce novel antibiotics effective against harmful pathogens. The goal of this study is to explore the antimicrobial-producing and antibiotic resistance properties of bacteria found in the Narragansett Bay, a semidiurnal estuary located in the north Atlantic waters of Rhode Island. Bacteria from 7 water samples collected from around the bay were isolated by filtration and cultured on low nutrient media, identified by 16S rRNA sequencing, and screened for their resistance to common antibiotics as well as cross-streaked to examine their antibiotic-producing capabilities. To date, 17 genera of bacteria belonging to 4 different phyla were isolated in pure culture. Isolates belonging to 7 of these genera were tested for antibiotic susceptibility on R2A and AIA plates using a disk diffusion assay with a total of 71.4% of the genera showing resistance to at least one antibiotic. Three isolates inhibited the growth of gram-negative bacteria suggesting possible antibiotic production. Future studies will continue to assess antibiotic production and further characterize strains showing either high levels of antibiotic resistance or production.