

DETERMINING THE MICRODIVERSITY OF SAR11 BACTERIOPLANKTON
WITHIN A COASTAL ZONE

A THESIS SUBMITTED TO
THE GLOBAL ENVIRONMENTAL SCIENCE
UNDERGRADUATE DIVISION IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF

BACHELOR OF SCIENCE

IN

GLOBAL ENVIRONMENTAL SCIENCE

August 2014

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ABSTRACT

The free-living marine bacterial clade known as SAR11 is one of the most abundant groups of microorganisms in seawater ecosystems across the globe. While its general ubiquity is well known, the nature of fine-scale SAR11 population structure and the forces that shape it are relatively unexplored and thus are not understood. In order to investigate high resolution, population-level microdiversity within the SAR11 clade, we developed an assay to amplify and sequence a portion of the gene encoding cytochrome b6 (*petB*) directly from both cultured isolates and natural populations of SAR11 cells. The assay was subsequently evaluated by amplifying, cloning, and sequencing SAR11 *petB* genes from coastal surface seawater near the island of Oahu, Hawaii, in the tropical Pacific Ocean, in parallel with Illumina-based sequencing of bacterial small subunit ribosomal RNA gene amplicons. Phylogenies based on *petB* sequences uncovered a robust subclade structure that extended well beyond the resolving power of the ribosomal RNA gene.