Isolating Hydrocarbon Metabolizing Bacteria from Oil Contaminated Soil and Seawater

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The purpose of this project was to isolate bacteria that have the capability to metabolize hydrocarbons, from hydrocarbon rich (oil contaminated) soil and seawater samples collected from various sites in Honolulu, Hawaii. Four samples (two soil and two seawater) were diluted at different concentrations and then plated on hydrocarbon selective media. A total of twenty-four colonies were selected to under-go cell-staining and microscopy. From those twenty-four colonies, four were selected based on their variety in cell color, shape, and gram-type. Then Colony Pick PCR on 16s rDNA gene was preformed from those four samples. An agarose gel run using electrophoresis showed that only two out of the four samples were successful. Those two were then purified through ethanol purification and sent out for sequencing at a local university. About 500 nucleotides were selected from each sample and entered into the BLAST database. It was found that the remaining two samples (one from soil collected at a construction site at Alamoana Beach Park, the other from seawater collected from Kewalo Basin harbor) were of genera known to have hydrocarbon metabolizing capabilities. A strain called Sphingobium Limneticum was found in the soil sample. An unknown strain in the genus Pseudomonas (a type of Gammaproteobacteria, a genus widely known for its medical usage as well for its ability to bio-remediate). It may be useful to consider the culturing of these isolated strains and ultimately their reintroduction to aid in oil pollution clean-up.

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