EXECUTIVE SUMMARY [NON-CONFIDENTIAL, NON-TECHNICAL ABSTRACT FOR PUBLIC INFORMATION OR PROGRAM PROMOTION]:

Polycyclic aromatic hydrocarbons (PAHs) are common pollutants that are frequently also carcinogens. Diverse bacteria are capable of PAH degradation, and a number of different genetic systems responsible for the breakdown of PAHs have been identified in freshwater and soil environments. Frequently, these genes are encoded on large plasmids that can be laterally transferred among different bacteria in a polluted site, thus enabling the bacterial community to use the pollutants as a carbon and energy source. This study seeks to identify the bacteria, genetic systems, and plasmids involved in PAH degradation in marine/estuarine environments, with a focus on Humboldt Bay, CA. Undergraduate researchers will isolate and characterize bacteria capable of PAH metabolism from PAH-impacted sites in Humboldt Bay. The students will use molecular genetic approaches to identify, characterize and compare the genes and plasmids responsible for PAH degradation. Greater understanding of these processes can assist with the development of new technologies and management strategies for use in the restoration and remediation of contaminated field sites.