Platform Presentation

Student Presenter

**Life stage-dependent ABC Transporter Expression Levels and Okadaic Depuration Rates in *Mytilus californianus*.** T.T, Truong, Nicklisch Lab, Department of Environmental Toxicology, Davis, CA.

Elevated temperatures, shifting seasons, and anthropogenic pollution can foster optimal conditions for phytoplankton growth in coastal areas. The increase of phytoplankton populations can lead to an abundance of biotoxin, posing challenges to coastal food consumption. Okadaic acid is one of the main biotoxins produced in California waters by *Dinophysis spp.*, marine dinoflagellate that is part of the phytoplankton that builds the basis of the marine food web. Shellfish are known to be sedentary filter feeders that consume plankton, including harmful biotoxins. As shellfish continuously filter feed on phytoplankton, the toxins bioaccumulate within their tissue and transfer up the food chain, influencing top-level consumers, including humans. In California, the Department of Public Health establishes the annual mussel quarantine, from May to the end of October. Its primary purpose is to protect consumer from various biotoxins that can be present in shellfish caught during recreational harvesting. Nonetheless, trace amounts of biotoxins can persist in shellfish due to their bioaccumulative capability and absence of preventative measures for toxin removal. To address health risks associated with mussel recreational harvesting, this project seeks monitoring the levels of key xenobiotic defense proteins, the ABC-type efflux transporters, during mussel development as a proxy to predict detoxification efficiency at different life-stages. Using Californian mussel (*Mytilus californianus*) as a model organism, we will employ combined liquid chromatography-mass spectrophotometry and qPCR to quantify biotoxin levels and the amount of ABC transporter expression in whole mussels, respectively. These results will inform regulatory guidelines on safe recreational shellfish harvesting for human consumption.