

## Metabolomics study of shellfish during a *Pseudo-nitzschia* bloom

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The shellfish industry in Rhode Island accounts for more than 12 million dollars in the economy each year. A changing climate and variations in environmental conditions in Narragansett Bay will likely increase the likelihood of toxic phytoplankton affecting the shellfish that we consume. Thus, it is important to understand how toxins produced by phytoplankton impact human health and how toxins affect the food chain. We monitored the levels of domoic acid in the tissues of mussels and clams in Narragansett Bay throughout a period of high *Pseudo-nitzschia* cell counts in June of 2021. While we did not find detectable concentrations of domoic acid in shellfish during this time when utilizing the SCIEX triple quadrupole linear ion trap, there is evidence of domoic acid isomers in these shellfish tissues. Additionally, we used a Thermo Scientific LTQ XL in tangent with the Global Natural Product Social Molecular Networking (GNPS) application to determine the metabolite composition of mussels and clams before, during, and after the *Pseudo-nitzschia* blooms. Future histological assessment of shellfish tissue will examine the reproductive organs during a bloom period with high levels of domoic acid detected in phytoplankton. Laboratory tests are currently ongoing to determine the rate of domoic acid uptake when shellfish are exposed to domoic acid-producing *Pseudo-nitzschia*. The results from this project will inform measures for regulation to protect consumers and producers of shellfish. It is essential to understand the effect of domoic acid on mussels and other shellfish to ensure the health of shellfish populations in Narragansett Bay. This work will also provide important information to the shellfishing industry and shellfish consumers concerning the potential of chronic domoic acid exposure.