Woods Hole Oceanographic Institution

# Biology Department Seminar

Thursday, June 20, 2024 – 12:00 Noon

# Marine Environmental Epigenomics: Lessons Learned from Coral Reefs and Future Applications for Fisheries Management


## Emma Strand

**Postdoctoral Scientist, Gloucester Marine Genomics Institute**



Epigenetics refers to changes to the structure of DNA without a change in the sequence itself that influences downstream gene expression and thus has the potential to influence organismal function. The study of environmental epigenomics in marine systems has become increasingly important as marine organisms, particularly corals, are experiencing stressful environmental conditions with more intensity and frequency (i.e., rising ocean temperatures). These environmental stressors cause a dysbiosis between the coral host and endosymbiont that results in the expulsion of symbionts, leaving a 'bleached' appearance that is characteristic of a physiologically stressed individual. A coral's stress response is likely influenced by genetics, symbiont communities, and physiological characteristics, but the extent to which epigenetics play a role in differential stress response is not well studied. In addition to investigating unknown epigenetic changes in an environmental context, the field of marine epigenetics can also take advantage of analyzing known changes in epigenetic state that can be predictive of a trait. In vertebrates (e.g., fish), changes in DNA methylation in specific areas of the genome can be correlated with age. This talk will dive into the use of environmental epigenomics in investigating organismal tolerance as well as describing the process of developing an 'epigenetic clock' that can be utilized in sustainable fisheries management. Studying both the unknown and known epigenetic changes and their interaction with organismal function presents the opportunity to improve conservation efforts and sustainable management within marine systems – from fisheries to coral reefs.


HYBRID! **In Person**: Redfield Auditorium **Zoom:** https://whoi-edu.zoom.us/j/97000865816 Meeting ID: 970 0086 5816 **By phone**: Find your local number: https://whoi-edu.zoom.us/u/adIvMow3LQ