Using DNA-barcoding to characterize marine biodiversity

Most people are unaware that the vast majority of living organisms on Earth remain undiscovered and unnamed. In the face of current biodiversity crisis biologists are challenged to quickly discover and describe hundreds of thousands of species to establish a baseline, in order to monitor how ecosystems are altered due to climate change and other impacts of human activity. The vast amount of undescribed diversity, vanishing taxonomic expertise, and the slow pace of traditional morphology-based taxonomy necessitates an alternative approach to biodiversity assessments and species descriptions. Application of molecular methods such as DNA-barcoding revolutionized species discovery and descriptions. REU interns in the Maslakova lab will have the opportunity to participate in current lab projects to characterize nemertean fauna of several distinct biogeographic regions — e.g. Red Sea, Arabian Sea, Gulf of Oman, Caribbean Sea, Eastern Tropical Pacific while learning universally applicable molecular techniques such as DNA extraction, PCR, gel electrophoresis, and DNA sequence analysis.
Dr. Svetlana Maslakova is an expert on the biology and systematics of nemerteans, a phylum of marine invertebrates with ~ 1300 described species. Nemerteans are important in marine ecosystems as top predators, and some species are economically significant as predators of commercially important species of crustaceans and clams. Nemerteans also have biomedical potential as toxin producers. To learn more about these beautiful and fascinating worms watch these short videos produced by Dr. Maslakova in collaboration with a professional videographer from the Smithsonian Institution: http://bocasarts.weebly.com/nemertean-tools.html.