

BIO 352: Project-Based Laboratory: Evolutionary Genetics

Using techniques relevant to evolutionary genetics, this laboratory-intensive course will focus on primary literature, experimental design, data collection and analysis, and science communication. In this course you will gain research experience in the field, in the laboratory, and in silico. We will start by collecting marine invertebrates at local marinas, then extract DNA from tissue, amplify genes using PCR (Polymerase Chain Reaction), visualize the PCR products using agarose gel electrophoresis, sequence the genes, edit and align the sequences, and finally analyze the sequences. First, we will determine the population structure of the species using population genetics software. Population structure is driven by the combined effects of the processes that disrupt Hardy Weinberg equilibrium: genetic drift, gene flow, non-random mating, mutation, and natural selection. Next, we will build phylogenetic trees and haplotype networks to visualize the relationships between the individuals of these species.

Units: 3

Prerequisites:

Instructor consent