

Unit 4: Evolution

What should I understand, know and be able to do?

	Got it ✓
By the end of the unit I will UNDERSTAND that...	
Successful change drives evolution and biodiversity.	
By the end of the unit I will KNOW that...	
Various scientists contributed to modern evolutionary thought (Miller and Urey, Margulis, Darwin, Lamarck, Malthus, Lyell and Hutton, Wallace).	
The fossil record, biogeography, and homologies (DNA, embryology, anatomy) provide evidence of evolution.	
Populations change over time in an orderly progression, as they adapt to changing environments.	
Biological fitness is an organism's ability to reproduce and pass their genes on to their next generation.	
The factors that drive natural selection: variation is inherited, a population produces more offspring than can survive, organisms compete for environmental resources and organisms differ in their biological fitness.	
Natural selection results in a change in the frequency of a trait in a population and is the driving force for evolution.	
An adaptation is an alteration to a species to become more suitable to its environment and survive.	
Speciation is the formation of new species.	
A mutation is any change to the genetic code of a cell.	
Gene flow is the change in the frequency of a trait within a gene pool and increases genetic diversity.	
Genetic drift is a random change in the frequency of a trait that occurs in small populations.	
Bottleneck effect reduces the population and results in a loss of diversity/genetic variation.	
Founder's effect is when a new population is established from a small group of individuals from a larger population and results in a decrease in genetic diversity.	
By the end of the unit I will BE ABLE TO...	
Research and describe the contributions of scientists that led to modern evolutionary thought. (Miller and Urey, Margulis, Darwin, Lamarck, Malthus, Lyell and Hutton, Wallace).	
Analyze DNA sequences, phylogenetic trees, and cladograms to determine evolutionary relationships among species.	
Use examples of the fossil record, biogeography/ zoogeography, and homologies to determine the evolutionary relationships among species.	
Model how natural selection selects for or against a certain phenotype using the factors that drive natural selection (variation is inherited, a population produces more offspring than can survive, organisms compete for environmental resources and organisms differ in their biological fitness).	
Model the various mechanisms for evolutionary change (gene flow/migration, genetic drift, and mutations) to show how they affect a population.	