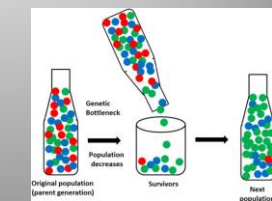
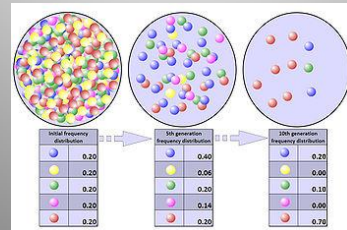


7.4 Population Genetics



ENDURING UNDERSTANDING


EVO-1 Evolution is characterized by a change in the genetic makeup of a population over time and is supported by multiple lines of evidence.



EVO-1.H Explain how random occurrences affect the genetic makeup of a population.

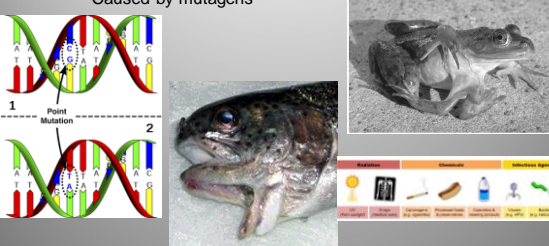
□ Evolution is also driven by random occurrences

- In addition to natural selection, chance and random events can influence the evolutionary process, especially for small populations.



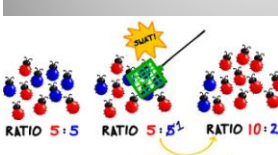
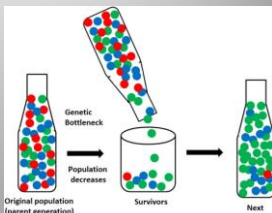
EVO-1.H Explain how random occurrences affect the genetic makeup of a population.

- Mutation is a random process that contributes to evolution
 - Change in DNA, producing totally new alleles
 - Changes gene pool by substituting one allele with another
 - Caused by mutagens



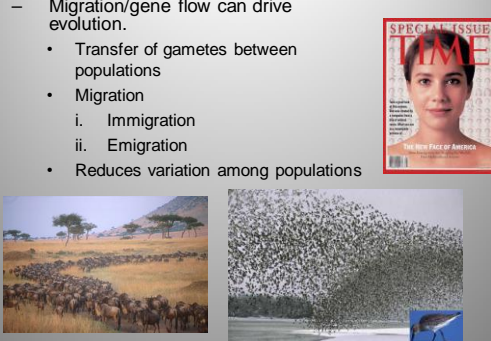
EVO-1.H Explain how random occurrences affect the genetic makeup of a population.

- Genetic drift is a nonselective process occurring in small populations
 - Change of allele frequencies due to random events
 - Bottlenecks create founder effects

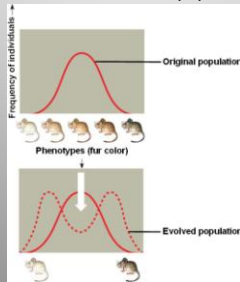
EVO-1.H Explain how random occurrences affect the genetic makeup of a population.

- Migration/gene flow can drive evolution.
 - Transfer of gametes between populations
 - Migration
 - i. Immigration
 - ii. Emigration
 - Reduces variation among populations



EVO-1.I Describe the role of random processes in the evolution of specific populations.

- Reduction of genetic variation within a given population can increase the differences between populations of the same species.



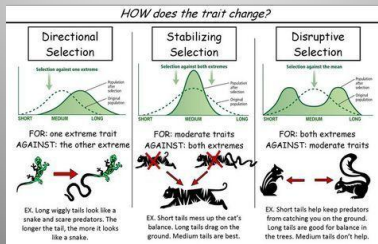
EVO-1.J Describe the change in the genetic makeup of a population over time.

- Mutation results in genetic variation, which provides phenotypes on which natural selection acts.



EVO-1.J Describe the change in the genetic makeup of a population over time.

- Effects of Natural Selection
 - Directional Selection- towards one extreme
 - Stabilizing Selection- towards the average
 - Disruptive Selection- away from the average



EVO-1.J Describe the change in the genetic makeup of a population over time.

- Sexual Selection
 - Females tend to choose
 - Creates sexual dimorphism

