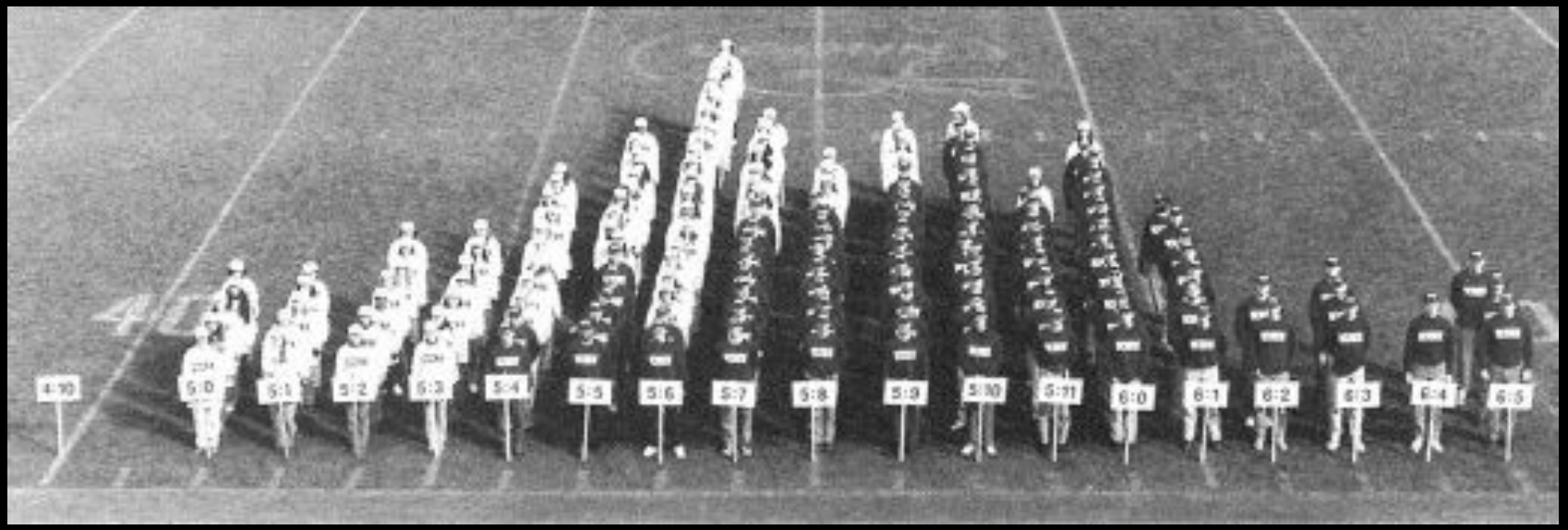
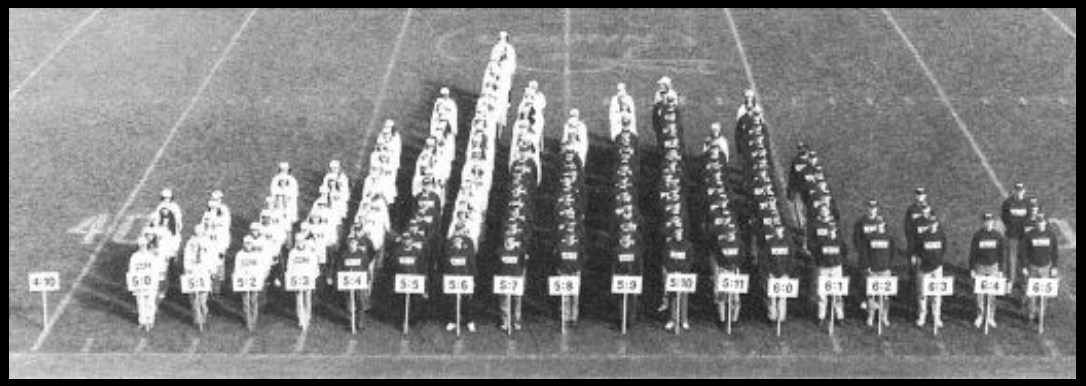
Natural Selection on Polygenic Traits



Learning Objectives

- Explain how natural selection affects polygenic traits
- Describe the three types of distribution

Polygenic Trait



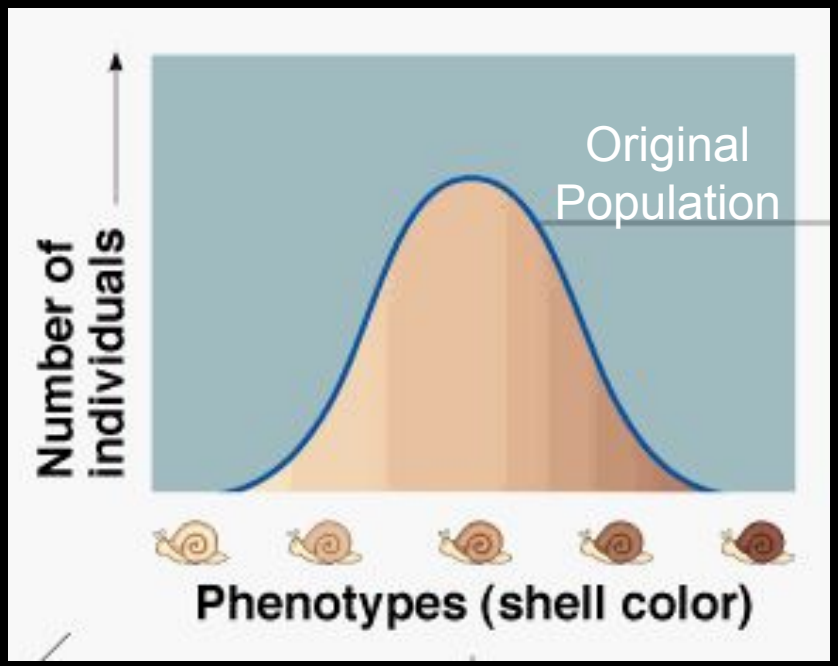
A polygenic trait is controlled by more than one gene. More than two phenotypes.

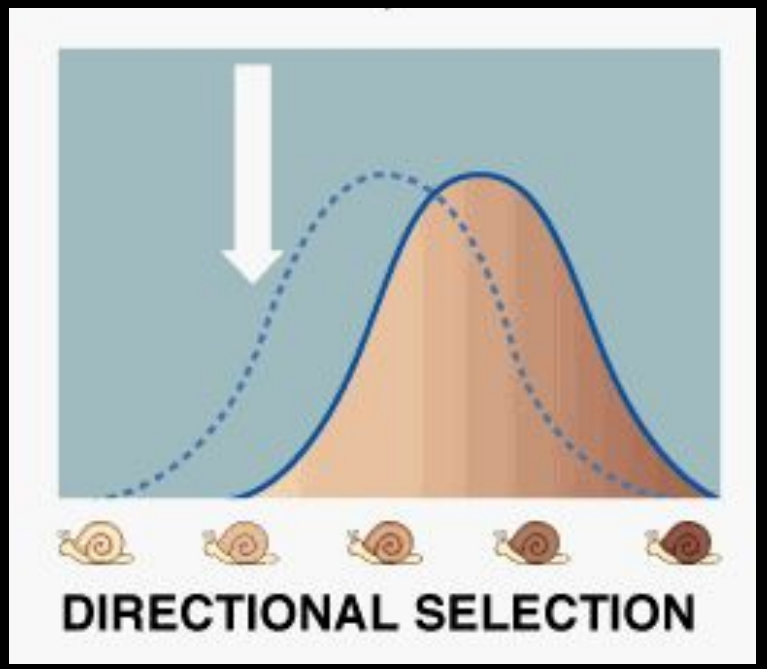
Natural Selection on Polygenic Traits

Natural selection can affect the distribution of phenotypes in any of three ways:

1. Directional Selection
2. Stabilizing Selection
3. Disruptive Selection

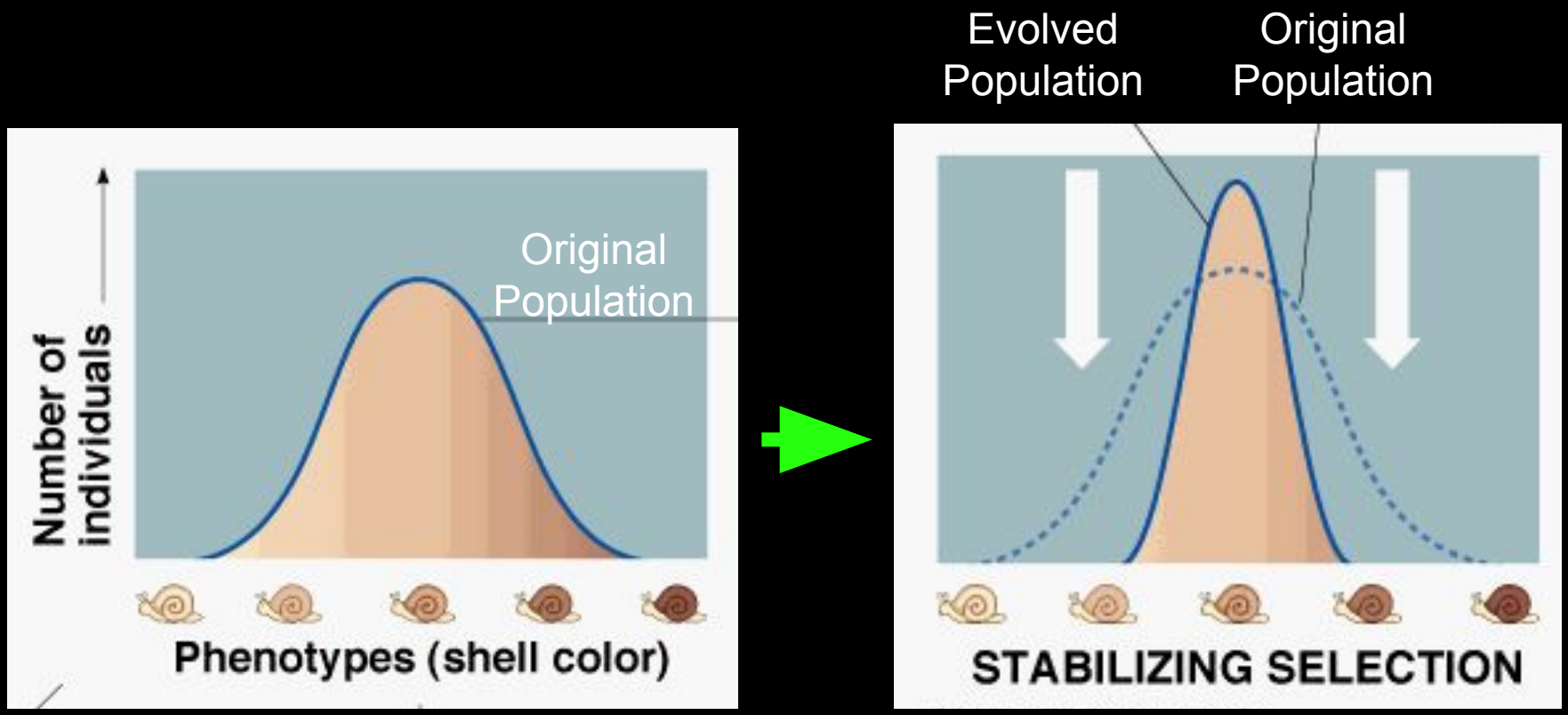
Directional Selection





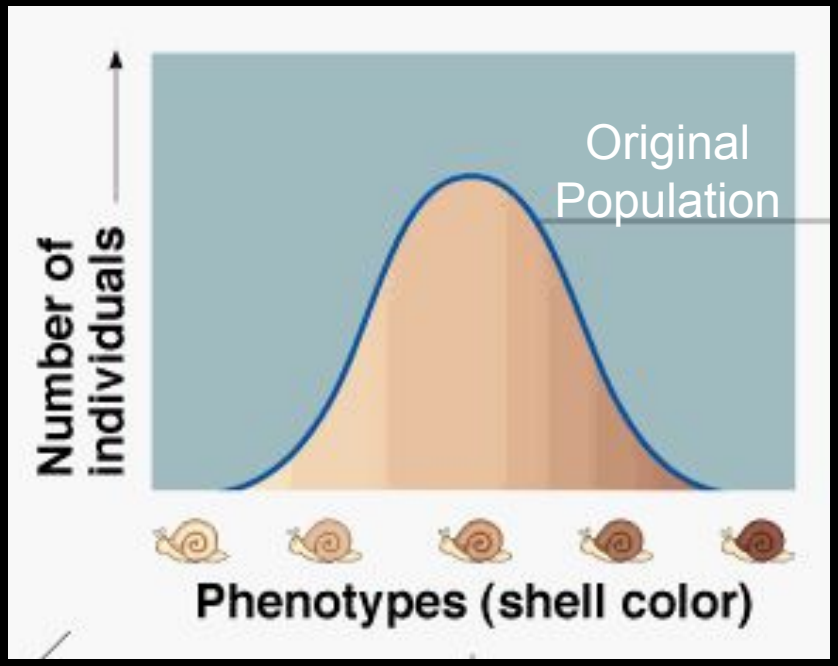
Individuals at one end of the bell curve have higher fitness than individuals in the middle or at the other end.

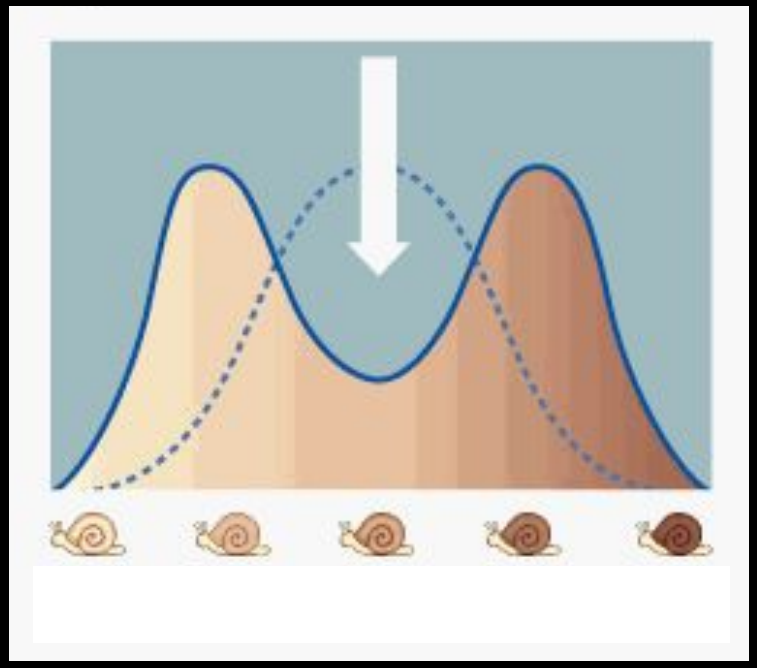
Stabilizing Selection



Individuals near the center of the bell curve have higher fitness than individuals at either end

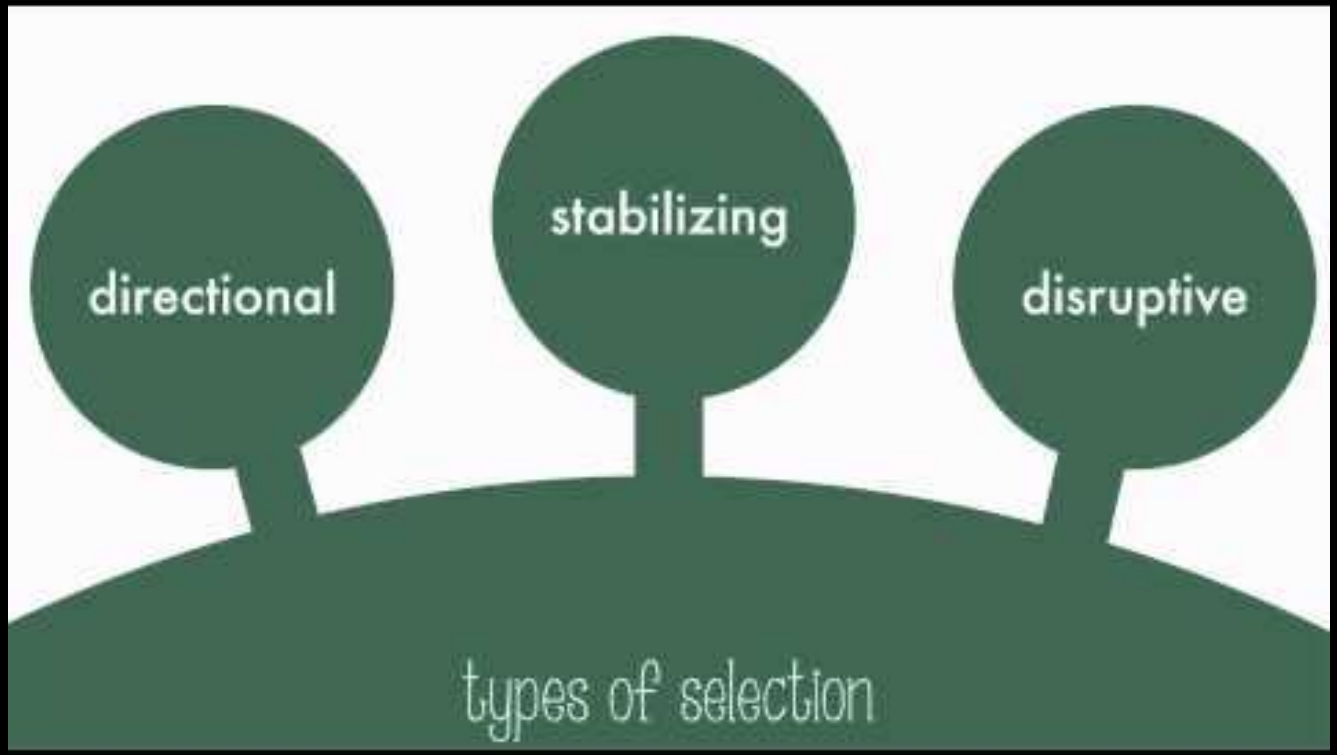
Disruptive Selection





Individuals at the upper and lower ends of the bell curve have higher fitness than individuals near the middle.

Types of Natural Selection



The Science of Skin Color

Polygenic Trait

Height is an example of a polygenic trait.

Class Height Measurement

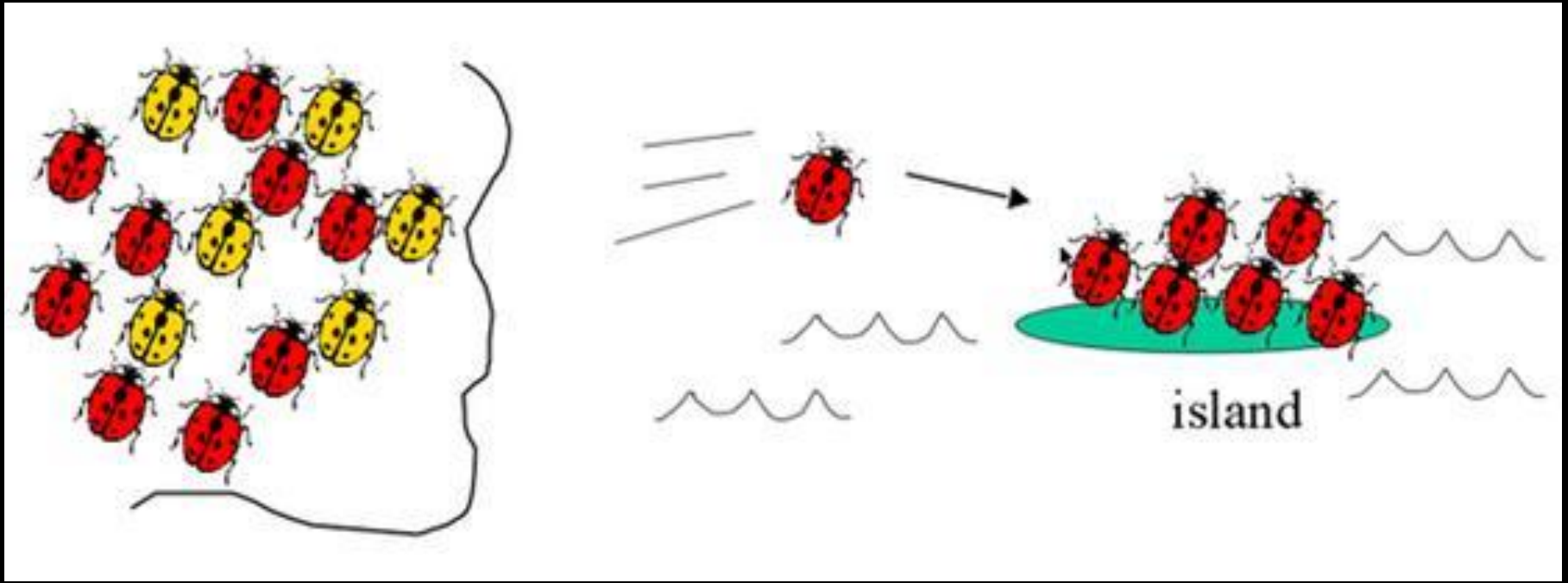
1. Each student will have their height measured.
2. Record the height of each student in data table.
3. Graph frequency (y-axis) vs. height (x-axis)

Stop Here

Genetic Drift

In small populations, an allele can become more or less common simply by chance rather than through fitness.

Founder Effect



Newly founded populations have allele frequencies different from original population.
Not a cause of natural selection, but chance.