

# Topic Review Guide: Natural Selection (Videos #1 and #2)

**To Think About:** How is natural selection a major mechanism of evolution?

**Watch:** [Mr. Andersen's "Natural Selection" video.](#)

**Then:** [Mr. Andersen's "Examples of Natural Selection" video.](#)

**Read:** Chapter 15, Hillis' [Principles of Life](#) 1<sup>st</sup> ed. (2012), p. 288-296.

## Supplementary Resources:

- [Crash Course's "Natural Selection" video.](#)
- Kimball's Biology Pages: [Evolution and Adaptation](#)
- HHMI Biointeractive: [Natural and Artificial Selection](#)

**Listen and Look:** Here is a list of key terms you will hear and see during this podcast. Get to know them! Be able to connect them to one another using a concept map.

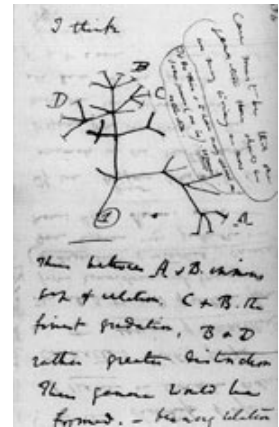
## KEY TERMS

Evolution                      Gene pool                      Natural selection                      Fitness  
Adaptations                      Selection                      Hardy-Weinberg Equilibrium  
Evolutionary theory

**Recall and Review:** Use the lecture in the video and your textbook to help you answer these questions in your BILL.

1. Describe the geological evidence that helped Darwin to develop the theory of natural selection.
2. Explain why populations are the smallest units of life that can evolve.
3. If the allele frequency in a population's gene pool does not change, what biological process is not occurring?
4. When an organism is said to have "fitness," what does that mean and how does this affect members of a population?
5. Using a diagram, illustrate the process of natural selection. Your diagram should include the following principles:
  - a. Variation among organisms
  - b. Competition
  - c. Adaptation
  - d. Overproduction of offspring
  - e. Limited environmental resources
  - f. "fitness"
6. **Explain** how mutations may actually benefit members of a population.
7. Mosquitos are known carriers of the West Nile virus. Municipalities in the Dallas-Fort Worth area are currently using the pesticide DUET to combat further spread of this virus by mosquitos. Using the example of bacterial antibiotic resistance demonstrated in the video, explain how it is possible for these mosquitos to become resistant to the pesticide DUET.
8. **Explain** why an adaptation is not always a physical characteristic.
9. **Explain** the meaning of the phrase "differential reproductive success."

10. Why do biologists call it “evolutionary theory” if the facts of evolution are undisputed? Why does evolutionary theory continue to create controversy?
11. The picture at right is a drawing Darwin created to illustrate the idea of common ancestry. **Explain** this idea, and **justify** your explanation with multiple examples of supporting evidence.
12. Explain how the following factors can affect the evolution of species:
- the environment
  - mutations in genes
  - fitness of organisms
  - human activities



Learn More: For more examples of natural selection, use the links below:

- [Examples of Natural Selection](#)
- UC Berkeley’s Understanding Evolution: [Mechanisms of Evolution](#) (until you get to “Microevolution”)
- PBS’ Evolution site: [An Origin of Species](#)
- Learn.Genetics: [Recipe for Evolution: Variation, Selection and Time](#)
- Discovery.com: [10 Examples of Natural Selection](#)

