High School Science Virtual Learning

College Biology
Chapter 13 Recap Part 2

May 7, 2020

High School College Biology
Lesson: May 7, 2020

Objective/Learning Target:
Students will be able to discuss how populations evolve and what evidence supports natural selection as the mechanism for evolution.

Let's Get Started:

1. What are the major pieces of evidence that support evolution?

2. Why are older fossils generally in deeper rock layers than younger fossils?

Answers:

1. Fossil Evidence, Homologies, Evolutionary Trees.

2. Sedimentation places younger rock layers on top of older ones.

Lesson Activity:

1. Read over pages 14-31 of the Chapter 13 Notes. ([Linked Here](#))- Start at Natural Selection as the Mechanism for Evolution

2. Watch this Crash Course video on [Natural Selection](#).

Practice:

1. Natural selection affects individuals, but individual organisms do not evolve. Explain what this means.

2. What is artificial selection and how did it aid Darwin in his understanding of evolution?

3. What are mutations and why are they important to evolution?

Practice Answers:

1. Individuals can be shaped by natural selection. Their features and behaviors can be affected. However, populations of organisms evolve from one generation to the next.
2. Artificial selection is when humans breed organisms based on the characteristics we want or need. Cash crop and livestock are prime examples. Darwin knew by studying artificial selection he could begin to understand the forces at work on natural populations.
3. Mutation is the ultimate source of genetic variation. Mutation provides the raw material for evolution.

More Practice:

1. In a population with two alleles for a particular genetic locus, B and b, the allele frequency of B is 0.7. If this population is in Hardy-Weinberg equilibrium, what is the frequency of heterozygous? What is the frequency of homozygous dominants? What is the frequency of homozygous recessive?

2. Define fitness from an evolutionary perspective

More Practice:

3. As a mechanism of evolution, natural selection can be most closely equated with
    a.   random mating.
    b.   genetic drift.
    c.   unequal reproductive success.
    d.   gene flow.

4. Compare and contrast how the bottleneck effect and the founder effect can lead to genetic drift.

More Practice:

5. In a particular bird species, individuals with average-sized wings are more likely to survive severe storms than other birds in the same population with longer or shorter wings. Of the three general outcomes of natural selection (directional, disruptive, or stabilizing), this example illustrates _____.

More Practice Answers:

1. Bb: 0.42   BB: 0.49   bb: 0.09
2. The fitness of an individual (or of a particular genotype) is measured by the relative number of alleles that it contributes to the gene pool of the next generation compared with the contribution of others. Thus, the number of fertile offspring produced determines an individual's fitness.
3. C
4. Both effects result in populations small enough for significant sampling error in the gene pool for the first few generations. A bottleneck event reduces the size of an existing population in a given location. The founder effect occurs when a new, small population colonizes a new territory.
5. Stabilizing selection

Review Tools:

-[Kahoot 2](#)
-Bozeman Science Video [Microevolution](#)
-Bozeman Science Video [Hardy-Weinberg Equations](#)