

Making of the Fittest: Natural Selection and Adaptation

1. How long ago did the eruptions happen making lava flows in the desert? _____
2. What is likely to happen to a light colored mouse if it ends up on the dark volcanic rock? _____
3. What color are the mice most commonly found on the dark rock? _____
4. Do mice themselves have a preference for light or dark rocks? _____
5. What kind of animal makes the difference in which mice are found on the rocks? _____
6. How did the dark color arise in the first place? _____
7. Quiz: Why did dark-colored rock pocket mice first appear in a population of light colored pocket mice? (Circle the best answer)
 - A. They have a genetic mutation that affects fur color
 - B. There is dark lava rock in the area where they live
 - C. Individuals change color to blend in with the environment
 - D. Predators eat light-colored rock pocket mice
8. Why do dark-colored rock pocket mice on dark lava flows have white bellies?
 - A. There is no selection for dark bellies by visual predators
 - B. Mutations causing dark bellies do not occur
 - C. There is a reproductive advantage to having a dark belly
 - D. White bellies are an important part of camouflage
9. Mutations are always
 - A. Good
 - B. Bad
 - C. Neutral
 - D. A change in an organism's DNA
10. If dark mice have just a 1% advantage, how many years will it take for 95% of the mice to be dark? _____
11. Which of the following is true?
 - A. Dark colored rock pocket mice, in this population, have fewer offspring than light colored rock pocket mice
 - B. If dark-colored rock pocket mice had a competitive advantage of 0.1%, it would take more than 1000 years for 95% of the population to have dark fur
 - C. If dark-colored mice had a competitive advantage of 5%, it would take more than 1000 years for 95% of the population to have dark fur
 - D. If dark-colored mice had a competitive advantage of 10%, it would take more than 1000 years for 95% of the population to have black fur
12. Are mutations random?
13. Is natural selection random?
14. What does Dr. Carrol mean by, "while mutation is random, natural selection is not?" (more than one answer is correct)
 - A. Mutations are caused by changes in the environment
 - B. Natural selection can favor some mutations and not others
 - C. Selection can change depending on the environment
 - D. Mutations for advantageous traits are more likely to be passed on to the next generation
15. Dark color in distant populations of mice was caused by two different genes. What does this tell you? (more than one answer is correct)
 - A. Dark color evolved only once in rock pocket mice
 - B. There are at least two genes involved in creating dark-colored mouse fur
 - C. Dark fur color evolved independently on each lava flow
 - D. Different mutations in two different genes cannot generate the same phenotype
 - E. Under similar conditions, natural selection can favor similar adaptations