

Lab 18. Environmental Change and Evolution: Which Mechanism of Microevolution Caused the Beak of the Medium Ground Finch Population on Daphne Major to Increase in Size From 1976 to 1978?

Use the following information to answer questions 1–3.

The beach mouse (*Peromyscus polionotus*), shown in the figure below, is a small rodent found in the southeastern United States. It lives primarily in old fields and on white sand beaches. The fur of the beach mouse ranges from dark brown to very light brown. The darkest-color mice tend to live inland, and the lighter-color mice tend to live on light sand beaches.



A dark brown beach mouse

Some scientists think the trend in the coloration of the beach mouse is due to natural selection, and others think it is due to genetic drift.

1. Describe the process of natural selection, and explain how this process could result in darker-color mice living inland and lighter-color mice living on light sand beaches.

2. Describe the process of genetic drift and explain how this process could result in darker-color mice living inland and lighter-color mice living on light sand beaches

3. Describe a test that you could conduct to determine if pattern in mouse coloration is due to natural selection or genetic drift.

4. Scientists often use existing models or develop a new model to help understand a system. Explain why models are useful in science, using an example from your investigation about environmental change and evolution.

5. The structures that make up an organism's body are not related to the function they perform.
- a. I agree with this statement.
 - b. I disagree with this statement.

Explain your answer, using an example from your investigation about environmental change and evolution.

6. A scientific law describes the behaviour of a natural phenomenon, and a scientific theory is a well-substantiated explanation of some aspect of the natural world.
 - a. I agree with this statement.
 - b. I disagree with this statement.

Explain your answer, using an example from your investigation about environmental change and evolution.

7. There is no universal step-by-step scientific method that all scientists follow; rather, the choice of method depends on the objectives of the research. Explain why scientists need to use different types of methods to answer different types of questions, using an example from your investigation about environmental change and evolution.