

# Lesson Self-Check

## CAN YOU EXPLAIN IT?

**FIGURE 23:** The orchid mantis (*Hymenopus coronatus*) resembles a flower in shape. But it attracts flies for another reason. Its color appears to be more important than its shape.



Recall the orchid mantis, the insect that resembles the flower after which it is named. It is easy to assume that the insect has high fitness because it looks like a flower. In fact, researchers have found that when placed beside the most common flower in its habitat, the orchid mantis attracts insects more often than the flower.

Why would insects be more attracted to the mantis than a flower? Apparently, it has more to do with the mantis's bright color than its flowerlike shape. Many insects have brains that are more attuned to color than to complex shapes. If an insect sees a color it thinks is a nectar-bearing flower, it flies in to investigate. That is when the orchid mantis makes its move—it captures the insect with lightning-fast speed.



**Explain** Refer to the notes in your Evidence Notebook and use what you have learned about natural selection to make a claim for how this trait could have evolved over time. Include a discussion of each of the principles of natural selection and how they led to the adaptations we see in modern-day orchid mantises.

1. State your claim.
2. Use evidence to support your claim.
3. Explain how the evidence you cited supports the claim you are making.

## CHECKPOINTS

### Check Your Understanding

1. Which two processes that occur during the formation of gametes contribute to increasing diversity within a population's gene pool?
  - a. independent assortment
  - b. cell signaling
  - c. transformation
  - d. crossing over
  - e. segregation of alleles
  
2. If the climate were to change in an environment, it is more likely that some individuals within a population will survive if \_\_\_\_\_.
  - a. the individuals reproduce sexually.
  - b. the individuals are genetically identical.
  - c. there is genetic variation within the population.
  - d. the individuals reproduce asexually.
  
3. The work of \_\_\_\_\_ most helped Charles Darwin understand how bands of seashells could be found in rock strata high above sea level.
  - a. Malthus
  - b. Lyell
  - c. Mendel
  - d. Leclerc
  
4. Which of the following are key elements of Darwin's theory of evolution by natural selection? Select all correct answers.
  - a. genetic variation
  - b. genetic engineering
  - c. fitness
  - d. adaptation
  - e. overproduction
  
5. Explain how mutations lead to genetic variation.
  
6. Construct an explanation as to how natural selection might produce an effect of the giraffe's neck length changing over time.
  
7. How did the work of farmers and breeders in England influence the work of Charles Darwin? Use examples to support your explanation.

8. What effect did Darwin's travels to the Galápagos Islands have on the development of his theory of natural selection?
  
9. Draw a timeline of events that influenced Darwin's work and the people whose work he built upon.
  
10. Develop a model that can be used to illustrate natural selection. Explain how your model demonstrates the four main principles of natural selection.

### MAKE YOUR OWN STUDY GUIDE



In your Evidence Notebook, design a study guide that supports the main ideas from this lesson:

Many scientists had made observations and developed ideas about evolution, but it was Charles Darwin who developed the theory of evolution by natural selection.

Natural selection is a process in which overproduction, variation, and competition lead to the adaptation of populations over time.

Remember to include the following information in your study guide:

- Use examples that model main ideas.
- Record explanations for the phenomena you investigated.
- Use evidence to support your explanations. Your support can include drawings, data, graphs, laboratory conclusions, and other evidence recorded throughout the lesson.

Consider how the models you observed demonstrate the four main principles of natural selection.