

## Section 18–2 Modern Evolutionary Classification (pages 451–455)

*This section explains how evolutionary relationships are important in classification. It also describes how DNA and RNA can help scientists determine evolutionary relationships.*

### Introduction (page 451)

1. What traits did Linnaeus consider when classifying organisms? \_\_\_\_\_

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### Which Similarities Are Most Important? (page 451)

2. What problems are faced by taxonomists who rely on body-structure comparisons?

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### Evolutionary Classification (page 452)

3. Is the following sentence true or false? Darwin's theory of evolution changed the way biologists thought about classification. \_\_\_\_\_

4. How do biologists now group organisms into categories? \_\_\_\_\_

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5. Is the following sentence true or false? Genera placed within a family should be less closely related to one another than to members of any other family. \_\_\_\_\_

6. The strategy of grouping organisms together based on their evolutionary history is called \_\_\_\_\_.

### Classification Using Cladograms (page 453)

7. Circle the letter of each sentence that is true about cladistic analysis.

a. It considers only traits that are evolutionary innovations.

b. It considers all traits that can be measured.

c. It considers only similarities in body structure.

d. It is a method of evolutionary classification.

8. Characteristics that appear in recent parts of a lineage, but not in its older members, are called \_\_\_\_\_.

- 9. A diagram that shows the evolutionary relationships among a group of organisms is called a(an) \_\_\_\_\_.
- 10. Is the following sentence true or false? Derived characters are used to construct a cladogram. \_\_\_\_\_

**Similarities in DNA and RNA** (page 454)

- 11. Is the following sentence true or false? Some organisms do not have DNA or RNA.  
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- 12. How do similarities in genes show that humans and yeasts share a common ancestry?  
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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Molecular Clocks** (page 455)

- 13. A model that uses DNA comparisons to estimate the length of time that two species have been evolving independently is known as a(an) \_\_\_\_\_.
- 14. A molecular clock relies on the repeating process of \_\_\_\_\_.
- 15. Why are only neutral mutations useful for molecular clocks? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 16. Is the following sentence true or false? The degree of dissimilarity in DNA sequences is an indication of how long ago two species shared a common ancestor.  
\_\_\_\_\_
- 17. Why are there many molecular clocks in a genome instead of just one?  
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