

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



### Key Concepts

- How are evolutionary relationships important in classification?
- How can DNA and RNA 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.  
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17. Why are there many molecular clocks in a genome instead of just one?

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