Section 16–3 The Process of Speciation (pages 404–410)

This section explains how species evolve and describes the process of speciation in the Galápagos Islands.

Introduction (page 404)

1. What is speciation?

2. Is the following sentence true or false? Individuals in different species can have the same gene pool. 

3. What does it mean for two species to be reproductively isolated from each other?

4. What must happen in order for new species to evolve?

5. List three ways that reproductive isolation occurs.
   a.
   b.
   c.

6. When does behavioral isolation occur?

7. Is the following sentence true or false? Eastern and Western meadowlarks are an example of behavioral isolation.

8. When does geographic isolation occur?

9. Abert and Kaibab squirrels in the Southwest are an example of isolation.

10. Is the following sentence true or false? Geographic barriers guarantee the formation of new species.

11. What is an example of temporal isolation?


12. Is the following sentence true or false? The basic mechanisms of evolutionary change cannot be observed in nature.
13. Circle the letter of each hypothesis about the evolution of Galápagos finches that was tested by the Grants.
   
   a. The finches’ beak size and shape has enough inheritable variation to provide raw material for natural selection.
   
   b. The different finch species are the descendants of a common mainland ancestor.
   
   c. Differences in the finches’ beak size and shape produce differences in fitness that cause natural selection to occur.
   
   d. The evolution of the finches is proceeding slowly and gradually.

**Speciation in Darwin’s Finches**  (pages 408–410)

14. Complete the flowchart to show how speciation probably occurred in the Galápagos finches.

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Founders arrive

Separation of populations

Changes in the gene pool

Reproductive isolation

Ecological competition

Continued evolution
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15. How could differences in beak size lead to reproductive isolation? 
   
   ___________________________________________________________________________________
   
   ___________________________________________________________________________________
   
   ___________________________________________________________________________________

**Studying Evolution Since Darwin**  (page 410)

16. Why is the study of evolution important? 
   
   ___________________________________________________________________________________
   
   ___________________________________________________________________________________
WordWise
Test your knowledge of vocabulary terms from Chapter 16 by solving the clues. Then, copy the numbered letters in order to reveal the hidden message.

<table>
<thead>
<tr>
<th>Clues</th>
<th>Vocabulary Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of isolation that prevents Eastern and Western meadowlarks from interbreeding</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Type of selection that acts against individuals of an intermediate type</td>
<td>5 6 7</td>
</tr>
<tr>
<td>Term that means the formation of new species</td>
<td>8 9</td>
</tr>
<tr>
<td>Type of selection that causes an increase in individuals at one end of the curve</td>
<td>10</td>
</tr>
<tr>
<td>Type of selection that keeps the center of the curve at its current position</td>
<td>11 12</td>
</tr>
<tr>
<td>Kind of pool that contains all the genetic information in a population</td>
<td>13 14 15</td>
</tr>
<tr>
<td>Type of isolation that prevents species from interbreeding</td>
<td>16 17</td>
</tr>
<tr>
<td>Type of isolation that led to the evolution of the Kaibab squirrel</td>
<td>18</td>
</tr>
<tr>
<td>Type of equilibrium that occurs when allele frequencies do not change</td>
<td>19</td>
</tr>
<tr>
<td>Name of the principle stating that allele frequencies will remain constant unless factors cause them to change</td>
<td>20 21 22 23 24</td>
</tr>
<tr>
<td>Type of trait produced by more than one gene</td>
<td>24</td>
</tr>
</tbody>
</table>

Hidden Message:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
19 20 21 22 23 24