

## Chapter 22—The Origin of Species

1) Define *speciation*.

2) Distinguish between *microevolution* and *macroevolution*.

### **22.1 The biological species concept emphasizes reproductive isolation**

3) Use the biological species concept to define *species*.

4) What are *hybrids*?

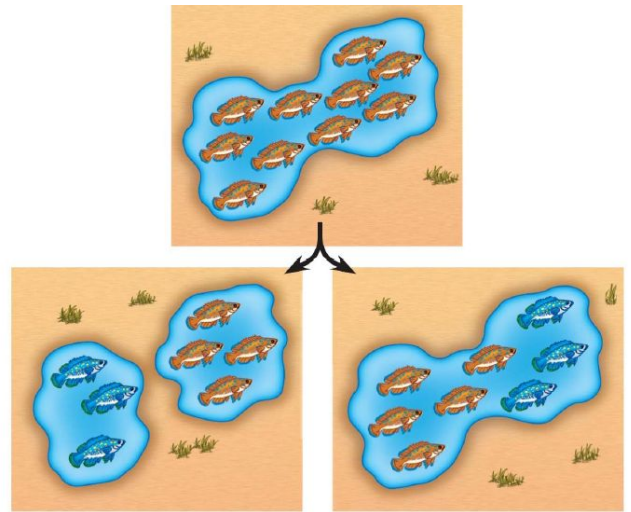
5) Explain the two types of barriers that maintain *reproductive isolation*.

6) The following charts summarize the various ways that *reproductive isolation* is maintained. Explain and give an example of each type of isolating mechanism (figure 22.3 will help).

<b>Prezygotic Reproductive Barriers</b>	<b>Explanation</b>	<b>Example</b>
Habitat Isolation		
Temporal Isolation		
Behavioral Isolation		
Mechanical Isolation		
Gametic Isolation		
<b>Postzygotic Reproductive Barriers</b>	<b>Explanation</b>	<b>Example</b>
Reduced Hybrid Viability		
Reduced Hybrid Fertility		
Hybrid breakdown		

**22.2 Speciation can take place with or without geographic separation**

7) Gene flow can be interrupted in two main ways. Explain and give an example of each by labeling and annotating this figure, which shows an ancestral species of fish and then the two modes of speciation



8) What type of speciation is caused by a barrier such as the Grand Canyon? \_\_\_\_\_.

9) *Sympatric speciation* occurs in populations that live in the same geographic area. How is this possible?

10) How can polyploidy lead to speciation?

**22.4 Speciation can occur rapidly or slowly and can result from changes in a few or many genes**

11) *Stephen Jay Gould* and *Niles Eldredge* coined the term *punctuated equilibria*. What is meant by a punctuated pattern?

12) This figure shows 2 different views of speciation. Label this figure, and explain how each of the pictures explains speciation.

