

Name: \_\_\_\_\_

AP Biology

## **Chapter 22 Active Reading Guide** **The Origin of Species**

### ***Overview***

1. What was Darwin's "mystery of mysteries"?
2. Define speciation.
3. Distinguish between microevolution and macroevolution.

### ***Section 1***

4. Use the biological species concept to define species.
5. What is required for the formation of new species?
6. What are hybrids?
7. Explain the two types of barriers that maintain reproductive isolation.

8. The following charts summarize the various ways that reproductive isolation is maintained. Explain and give an example of each type of isolating mechanism.

<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		

## **Section 2**

9. Gene flow can be interpreted in two main ways. Use Figure 22.5, which shows an ancestral species of fish and then the two modes of speciation, to explain each type.

10. What type of speciation is caused by a barrier such as the Grand Canyon?

11. Sympatric speciation occurs in populations that live in the same geographic area. How is this possible?
  
12. Your response to question 11 should have listed polyploidy, habitat differentiation, and sexual selection. These are not easy concepts to understand. so let's spend some time with each of them. To begin, use the figure on page 442 to explain autopolyploidy.
  
13. Now, use the next figure on page 442 to explain allopolyploid speciation
  
14. Before we leave allopatric and sympatric speciation, explain what happens in sexual selection, and how this process can drive sympatric speciation.

### **Section 3**

15. What are hybrid zones?

### **Section 4**

16. Stephen Jay Gould and Niles Eldredge coined the term punctuated equilibria. What is meant by a punctuated pattern?
  
17. Using Figure 22.16 explain how each of the pictures explains speciation.