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| **Following the Big Ideas** | |
| **Big Idea 1** | Microevolution, is measure as change in allele frequencies over generations |

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| **Essential Questions** |
| * What is the connection between change in the environment and change in allele frequencies? * How can the Hardy Weinberg model be used to analyze genetic drift and effects of selection in the evolution of populations? |

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| **Vocabulary** | | |
| 1. Microevolution 2. Cline 3. Population 4. Gene Pool 5. Genetic drift | 1. founder effect 2. bottleneck effect 3. Relative fitness 4. Directional Selection 5. Disruptive Selection | 1. Stabilizing Selection 2. Sexual Selection 3. Intrasexual selection 4. Intersexual selection 5. Heterozygote advantage |

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| **Chapter Outline and Reading Guide** | |
| **Section 1**   1. Because Darwin did not know about the work of Gregor Mendel, he could not explain how organisms pass heritable traits to their offspring. In looking at genetic variation, what are discrete characters, and what are quantitative characters? 2. Using the techniques of molecular biology, what are the two ways of measuring genetic variation in a population? 3. What external factors might produce a cline? 4. Why does the existence of a cline suggest natural selection?   **Section 2**   1. The greater the number of fixed alleles, the lower the species’ diversity. What does it mean to say that an allele is fixed? 2. Summarize Hardy-Weinbergs principle. 3. What conditions must be met in order for a population to maintain Hardy-Weinberg equilibrium? | **Section 3**   1. Three major factors alter allelic frequency and bring about evolutionary change. List each factor, and give an explanation. 2. Which of the factors above results in a random, nonadaptive change in allelic frequencies? 3. Which of the factors above tends to reduce the genetic differences between populations and make populations more similar? 4. Of the three factors you listed above, only one results in individuals that are better suited to their environment. Which is it?   **Section 4**   * Summarize this section in your own words |

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| **After You Have Read…** |

1. What are the three main mechanisms that can cause changes in allele frequency?
2. What is the only mechanism that is adaptive, or improves the match between organisms and their environment?
3. Give four reasons why natural selection cannot produce perfect organisms. Explain.