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| **Following the Big Ideas** |
| **Big Idea 1** | Inheritance of genes within a population is a cornerstone of a species ability to change over time |
| **Big Idea 3** | Gregor Mendel’s scientific approach allowed him to establish the basic principles of heredity |

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| **Essential Questions** |
| * What is the relationship between genes are their passage from parent to offspring to natural selection and evolution?
* How does the behavior of chromosomes during meiosis explain Mendel’s laws of segregation and independent assortment?
* How does an understanding of Mendelian genetics help us understand the link between genes and human disorders?
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| **Vocabulary** |
| 1. Chromosome theory of inheritance
2. Law of segregation.
3. Law of independent assortment
4. Sex Linked Genes
5. Barr Body
 | 1. X inactivation
2. Linked genes
3. Linkage map
4. Map unit
5. Nondisjunction
6. aneuploidy
 | 1. aneuploidy
2. monosomy
3. trisomy
4. polyploidy
5. duplication
6. inversion
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| **Chapter Outline and Reading Guide** |
| **Section 1** 1. Thomas Hunt Morgan selected Drosophila melanogaster as his experimental organism. List at least three reasons the fruit fly is an excellent subject for genetic studies.
2. What unusual result suggested that the eye-color trait is located on the X chromosome?
3. What does this discovery lead to?

**Section 2** 1. What is the SRY gene? Where is it found, and what does it do?
2. In humans, how has that term sex linkage been historically modified?
3. Name and describe three human sex-linked disorders.
4. Why do human females show a Barr body in their cells?
5. X inactivation maintains the proper gene dosage. How is the X chromosome inactivated?
6. Why can you say that all calico cats are females?
 | **Section 3**1. What are linked genes? Do linked genes sort independently?
2. Alfred H. Sturtevant, a student of Thomas Hunt Morgan, used assumptions from observations of crossovers to map genes. What is a linkage map?

**Section 4**1. What causes Down syndrome? What are four characteristics of Down syndrome?
2. For each of the sex chromosome combinations, determine the disorder and the physical appearances of these individuals.
3. XXY
4. XXX
5. XO
6. XYY
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| **After You Have Read…**  |

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