Chapter 10 Study Guide

# Important Ideas

* DNA is the genetic material. (Module 10.1)
* DNA and RNA are polymers of nucleotides. (Modules 10.2-10.3)
* The structure of DNA is related to how it replicates. (Modules 10.4-10.5)
* When the genetic blueprint is “read”, certain segments of DNA are transcribed into RNA molecules; some are translated into proteins. (Modules 10.6-10.15)
* Mutations can change the expression of genes. (Module 10.16)

Learning Objectives

Upon successful completion of **Chapter 10** you will be able to

1. Label a given diagram of a deoxyribonucleotide.
2. Identify the overall structure and label a diagram of a double-stranded DNA molecule.
3. Identify the number assigned to each carbon of ribose and deoxyribose sugar in a nucleotide and the significance of the, 3’, and 5’ carbon.
4. Define and recognize examples of the following terms: double helix, hydroxyl, hydrogen bonding, and base pairing.
5. Compare and contrast the structures and functions of DNA and RNA.
6. Describe the mechanism of semiconservative replication of DNA. Include parental (template) strands, direction of daughter strand replication (5’ to 3’ end).
7. Redefine the terms genotype and phenotype in terms of molecular genetics.
8. Define the terms transcription and translation and state where each occurs in prokaryotic and in eukaryotic cells.
9. Explain what is meant by the phrase “the genetic code is redundant and universal,”.