Biotechnology NAME_____
Dr. Senegar-Mitchell
TEXT: Barnum, *Biotechnology 2e*
Chapter 2

From DNA to Proteins

Learning Objectives

1. Compare eukaryotic with prokaryotic cells, and know the major organelles that make up eukaryotic cells.
2. Know the structure of the cell's macromolecules, and how they are constructed: Lipids, carbohydrates, proteins, and nucleic acids.
3. Compare and contrast the structures of the nucleic acids DNA and RNA.
4. List the steps, and where the steps occur, in the central dogma of molecular biology.
5. List the steps of DNA replication on both the leading and lagging strands, focusing on the enzymes involved.
6. List the steps of transcription, and list how RNA is processed after transcription. What are exons and introns? What are the three types of RNA, and what are their functions?
7. List the steps of translation, knowing what happens in each site of the ribosome at each step. Are there any differences between prokaryotes and eukaryotes? What is the importance of the genetic code?
8. Be familiar with the methods of prokaryotic gene expression in the form of operons.
9. Be familiar with the methods of eukaryotic gene expressions, such as transcriptional control, regulation of RNA processing and transport out of the nucleus to the cytoplasm, translational control, and posttranslational control.