

Biology I Advanced  
Obj Chapter 10  
DNA and Protein Synthesis



1. List the functions of DNA, and how each function relates to life. Identify when each function occurs in the life of the cell.
2. Draw a diagram of a DNA nucleotide and an RNA nucleotide. Be sure to include a phosphate group, a sugar, and a base. Label each part.
3. Name the four nitrogenous bases for both DNA and RNA.
4. Draw and label a short segment of a strand of DNA. Demonstrate complementary base pairing on the strand. Explain why bases only bond with their complementary base. Be able to fill in a missing side of a strand of DNA.
5. Describe five differences between DNA and RNA.
6. Describe three steps in the replication of DNA.
7. Define these terms as they relate to DNA Replication-  
Helicase      DNA Polymerase      DNA Ligase      5'→3'      Semi-conservative replication-
8. Name three types of RNA, describe the function, and structure of each.
9. Describe the events of transcription. Include the location, and the terms *RNA Polymerase*, *RNA nucleotides*, *DNA*, *code*, *codon*, and *mRNA* in the description.
10. Describe RNA processing. Include guanine caps, poly-A tails, introns, and exons in the description.
11. Describe the events of translation. Include the location, and the terms *rRNA*, *mRNA*, *tRNA*, *ribosomes*, *amino acids*, *codon*, *anti-codon*, *peptide bond*, and *polypeptide* in the description.
12. In terms of translation, explain the meaning of *initiation*, *elongation*, and *termination*.
13. Explain why the genetic code is said to be redundant. What are the advantages of a redundant code? Cite specific examples.
14. Explain what is meant by substitution, deletion, and insertion mutations. Which of these are frame-shift mutations? What possible effects can be caused by each type of mutation?
15. Given a series of DNA code and a table of codons, be able to determine the codon, anti-codon, and polypeptide produced.