Chapter 13
DNA Structure and Function

I. DNA Structure

- A. What are the Components of DNA?
  - 1. DNA is composed of four kinds of _____, each of which consists of:
    - a. A _____-deoxyribose
    - b. A _____ group
    - c. One of four bases – adenine (_____), guanine (_____), thymine (T), cytosine (C)
  - 2. The nucleotides are similar, but T and C are _____ pyrimidines;

    A and G are _____ purines
  - 3. The four kinds of _____ bases making up a DNA molecule differ in relative amounts from species to species.
  - 4. The amount of _____, and the amount of ___=C.
  - 5. DNA exists as a _____, thin molecule of _____ diameter.
  - 6. The structure is _____ repetitive.
  - 7. DNA is helical.
- B. Patterns of Base Pairing

1. _____ used numerous sources of data to build models of DNA.

- 2. The following features were incorporated into their models.
  - a. Single-ringed _____ was hydrogen bonded with

    double-ringed _____, and single-ringed _____ with

    double-ringed _____, along the entire length of the molecule.

- b. The _____ was made of chains of sugar phosphate linkages.

- c. The molecule was _____ stranded and looked like a ladder with a twist to form a double helix.

II. DNA Replication and Repair

- A. How is a DNA Molecule Duplicated?

  - 1. First, the two strands of DNA _____ and expose their bases.

    - a. Then _____ nucleotides pair with exposed bases.

    - b. Thus, replication results in _____ molecules that consist

    of one _____ strand and one _____ strand; this is designated as "semiconservative replication"

  - 2. Several _____ participate in the replication:

    - a. One kind of enzyme (_____) unwinds the two nucleotide strands.

    - b. DNA _____ attach free nucleotides to the growing strand.

    - c. DNA _____ seal new short stretches of nucleotides into one continuous strand.

- B. Monitoring and Fixing the DNA

  - 1. _____ and other enzymes engage in DNA repair.
  - 2. DNA polymerases "proofread" the new bases for _____ pairs, which are replaced with correct bases.

- End of Chapter 13.