

## Chapter 13: DNA Structure & Function

### The History of DNA

- \_\_\_\_\_ the story of the discovery of DNA's structure in your book!
- There had been many \_\_\_\_\_ about the importance of DNA
- \_\_\_\_\_ were considered to possibly carry \_\_\_\_\_ information
- Many, many scientists \_\_\_\_\_
- \_\_\_\_\_ & \_\_\_\_\_ published their \_\_\_\_\_ description in \_\_\_\_\_

### The Structure of DNA

- DNA is a \_\_\_\_\_ of repeating \_\_\_\_\_ in a double chain
- DNA contains \_\_\_\_\_ different nucleotides; each made of:
  - \_\_\_\_\_, a 5-carbon sugar
  - A \_\_\_\_\_ group
  - One of four different nitrogenous \_\_\_\_\_: Adenine, Cytosine, Guanine, or Thymine
- All nucleotides are similar, but there are some differences in the \_\_\_\_\_
  - C and T are \_\_\_\_\_-ringed structures called \_\_\_\_\_
  - A and G are \_\_\_\_\_-ringed structures called \_\_\_\_\_
- Edwin Chargaff, in 1949, noticed \_\_\_\_\_ major clues about the structure and function of DNA:
  - The \_\_\_\_\_ of each base making up the DNA varied from species to species
  - The percent of \_\_\_\_\_ always equaled the percent of \_\_\_\_\_; also, the percent of \_\_\_\_\_ always equaled the percent of \_\_\_\_\_

• Rosalind Franklin used \_\_\_\_\_ diffraction to discover three major facts about DNA molecules, all \_\_\_\_\_ 1953:

- DNA is \_\_\_\_\_ and \_\_\_\_\_, with a uniform \_\_\_\_\_
- The structure is highly \_\_\_\_\_
- DNA is \_\_\_\_\_

• Watson and Crick took Franklin's data without her \_\_\_\_\_ or \_\_\_\_\_

• The \_\_\_\_\_ helix model of DNA includes certain key features:

- Single-ringed \_\_\_\_\_ will hydrogen bond with double-ringed \_\_\_\_\_
- Single-ringed \_\_\_\_\_ will hydrogen bond with double-ringed \_\_\_\_\_
- These " \_\_\_\_\_ " will repeat throughout a long molecule with a \_\_\_\_\_ / \_\_\_\_\_ backbone
- The overall \_\_\_\_\_ structure is \_\_\_\_\_
- The base pair \_\_\_\_\_ carries info

## DNA Replication

• In order to make new DNA molecules, the original DNA must \_\_\_\_\_ and " \_\_\_\_\_ " to expose the \_\_\_\_\_

• New, unattached \_\_\_\_\_ come in and pair up with the original bases

• Eventually, replication will form \_\_\_\_\_ molecules that are made up of one " \_\_\_\_\_ " strand and one " \_\_\_\_\_ " strand

- This is called " \_\_\_\_\_ " replication

• A closer look:

- In \_\_\_\_\_ or viruses, the DNA unzips at \_\_\_\_\_ starting point (the “\_\_\_\_\_”)
- Eukaryotic cells unzip at \_\_\_\_\_ origins, simultaneously
- Strand assembly occurs in \_\_\_\_\_ directions outward from each \_\_\_\_\_
- DNA \_\_\_\_\_ is the enzyme that builds and “\_\_\_\_\_” the DNA
- The free nucleotides exist in the form of \_\_\_\_\_, which provide \_\_\_\_\_

**Chromosome Structure**

- Each chromosome contains \_\_\_\_\_ DNA molecule (before replication)
- The DNA must be highly \_\_\_\_\_ to prevent entangling and \_\_\_\_\_
- A type of protein called \_\_\_\_\_ are used as “\_\_\_\_\_” to wind the DNA (forming beads called \_\_\_\_\_)
- A beaded chain is formed, which then \_\_\_\_\_ upon itself (using \_\_\_\_\_)
- The looped chain then \_\_\_\_\_ around yet more \_\_\_\_\_