Name:

Date:

base

phosphate

#### Unit 4A: DNA Structure and Replication **Quiz Study Guide**

Structure of DNA:

Be able to define and label a nucleotide.

The monomer of a nucleic acid-phosphate, sugar, base

Practice drawing a nucleotide in the box to the right.

- How can nucleotides differ? 4 dif. Nitrogenous bases
- What do they have in common? Sugar and phosphate

Know the 4 different bases and their complementary base pairs.

Adenine, thymine cytosine, guanine

- A pairs with \_\_T\_\_\_\_; C pairs with \_\_G\_\_\_\_.
- Which bases are pyrimidines (one ring base)? Cytosine, thymine
- Which bases are purines (two ring bases)? Adenine, guanine
- One strand of a DNA molecule has the following sequence: C C G T A T A C C G

What is the sequence of the complementary strand?

GGCATATGGC

deoxyribose sugar

Review DNA's structure and function, DNA is a nucleic acid, made of nucleotides, that codes for proteins

What is a gene? A section of the DNA that codes for a certain polypeptide/protein

Covalent vs. hydrogen bonds: when are they used to build a DNA molecule?

Covalent bonds are strong and connect nucleotides into a strand. Hydrogen bonds are weak and connect two strands together between the nitrogenous bases.

Who were the scientists that played a major role in the discovery of DNA's structure?

- Erwin Chargaff- be familiar with his rule and how to apply it to a problem. Amount of A= amount of T; amount of C= amount of G
- Rosalind Franklin-x-ray diffraction picture of DNA as a double helix
- Watson and Crick- created the first accurate model of DNA's structure with the aid of Chargaff and Franklins work.

What is the Human Genome Project?

13 year project to sequence the entire human genome- all 3 billion base pairs

What did it determine?

20,000-25,000 genes; only 2% of DNA is genes (codes for protein); couldn't cure all diseases

Forms of DNA:

Be able to differentiate between the different forms of DNA.

- Prokaryotic DNA is circular loop.
- Eukaryotic DNA consists of multiple linear/straight strands, found in 2 forms.
  - 1. Chromosomes
  - 2. Chromatin

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**Arshad Iqbal** 

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