

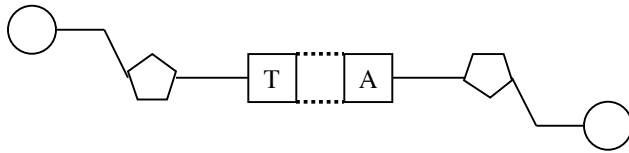
Name _____ Date _____ Hour _____

DNA Replication

1. A double stranded DNA molecule has been split. The following is the base sequence on one strand of a DNA molecule (just write complimentary letters):

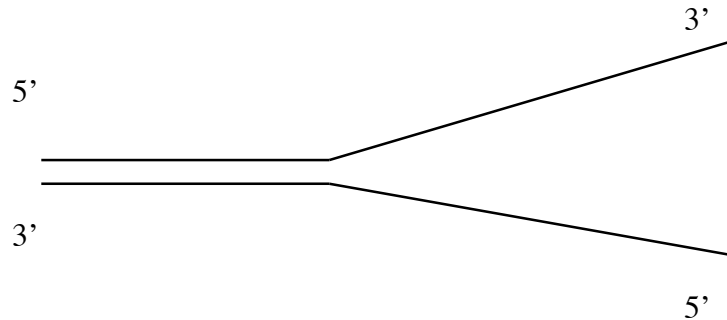
A T G C A G T G G T C

2. Draw the double stranded DNA molecule from #1 showing the appropriate sugars, phosphates, and nitrogenous bases. The first nucleotide pair of the sequence has been drawn for you. Label the 3' and 5' ends of each side of the molecule.



3. How does the molecule above demonstrate antiparallel orientation?
4. Why is the process of DNA replication considered semi-conservative?

5. The diagram below represents a DNA molecule that has been split and is ready to replicate. Because replication always proceeds in the 5' to 3' direction of the **new DNA** that is being laid down, one new strand (leading) moves into the replication fork while the other new strand (lagging) moves away from the replication fork. Draw an arrow representing the direction of replication for both the leading and lagging strand and label them as such. Also label the 3' and 5' ends of the new DNA.



6. Explain why the lagging strand must be replicated in small sections that are joined together later. Why not make one continuous lagging strand?
7. Prokaryotes have only one origin of replication on their single chromosome. Eukaryotes have multiple origins of replication on each of their chromosomes. Why might this be?
8. The following represents the nitrogenous bases of a molecule of DNA:

T A C G G C C A C C A T
A T G C C A G T G G T A

What is wrong with the strand?

What process can be done to fix the problem?

Hypothesize the effects on the function of the DNA if the error is not corrected.