

## Replication of DNA

Ms. Johnston

Name: \_\_\_\_\_

Due: \_\_\_\_\_

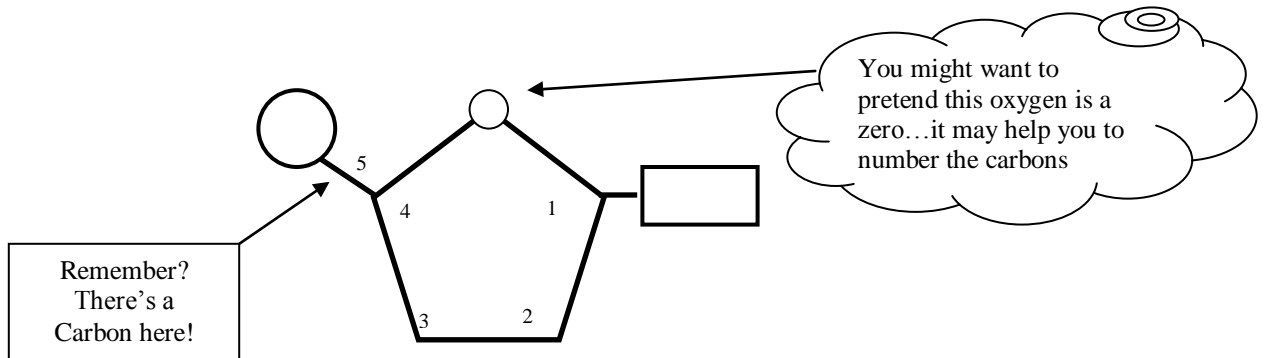
Bio. 12, Block: \_\_\_\_\_

You WILL confuse replication with RNA making in protein synthesis. Pay close attention NOW and learn this so you won't make errors later.

1. Get a DNA molecule (handout), a bunch of nucleoplasm (full of nucleotides), and a blank sheet to glue it all onto.
2. Follow the instructions for DNA replication as written in your notes and replicate the DNA molecule. Here are some specifics...
  - a) You will be making 2 DNA molecules from 1. Get prepared by cutting out all the nucleotides from the nucleoplasm.
  - b) Cut ONE (AND ONLY ONE) hydrogen bond at the top of the DNA molecule.
  - c) Find a complementary nucleotide to the exposed one (on the left-hand side of the DNA molecule).
  - d) Attach the new nucleotide to the DNA molecule at the base (figure out a way to do this...either glue them both down to the long paper or staple them or something).
  - e) Cut another hydrogen bond in the parent DNA strand, find another matching nucleotide and attach it.
  - f) Do this until one entire side of the DNA molecule is replicated.
  - g) In the end, this new  $\frac{1}{2}$  DNA strand should be glued onto the long sheet of paper.
  - h) Draw in the bonds joining the phosphates properly to the deoxyribose molecules.
  - i) Now, build the OTHER new DNA strand. *You MUST build the molecule from top to bottom. In other words be sure you have the oxygens all pointing UP when you begin.*
  - j) Glue the other new DNA molecule onto the BACK of the page.

Over →

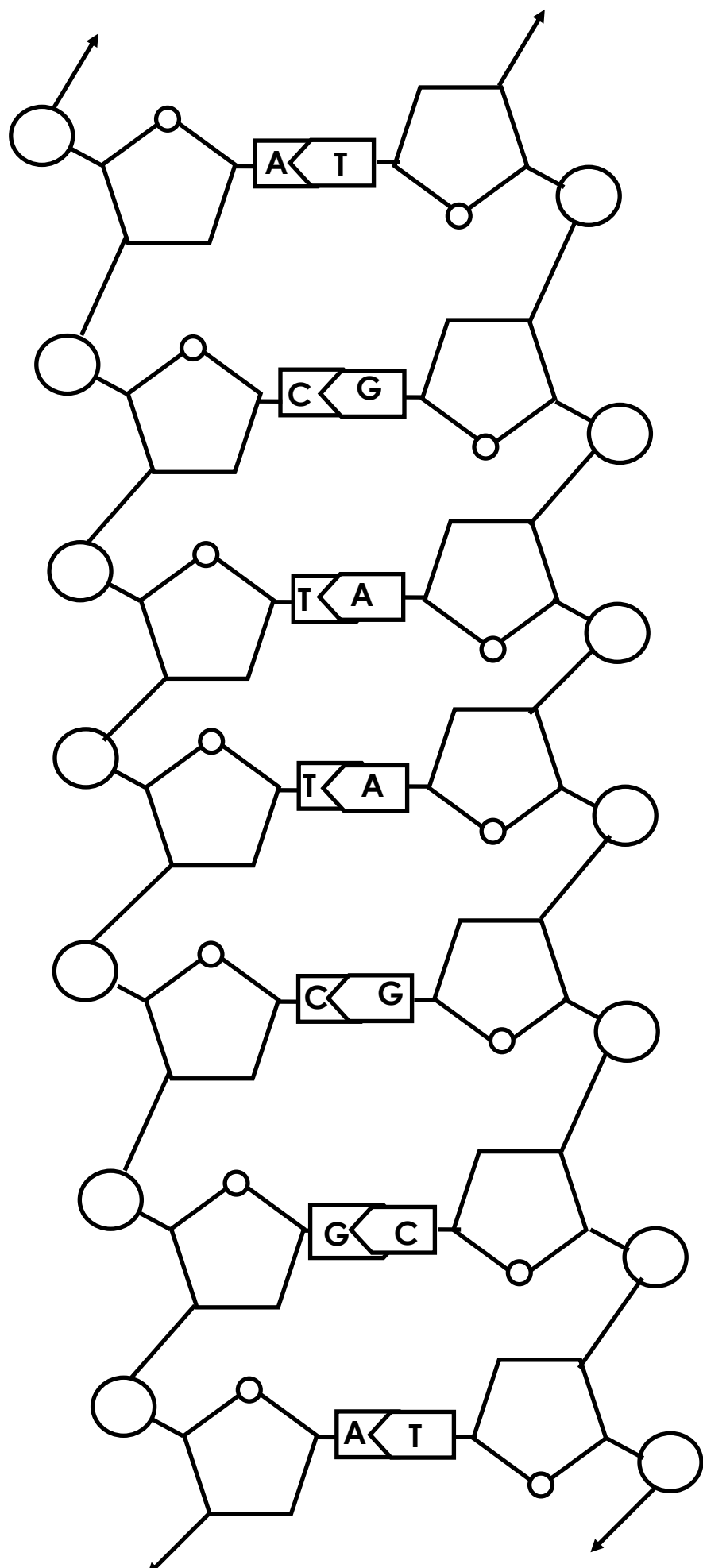
3. Define what nucleoplasm is: \_\_\_\_\_  
\_\_\_\_\_
4. In what way is the task you just did a SEMICONSERVATIVE replication?
5. Draw in the oxygens on ALL the deoxyriboses.
6. Number the carbons on 3 nucleotides of each new DNA strand.



7. When a DNA strand replicates, the new nucleotides can only be added in ONE direction. With the oxygens pointing UP, this direction is downwards (just as I had you build your replicas). Biologically speaking this is termed 5-prime to 3-prime. (or 5' to 3' )

The 5' end is the one with the #5 carbon closest to the top (oxygen at top). The 3' end is the one with the #3 carbon closest to it.

Label the 5' and 3' ends of each strand of each new DNA molecule.



NUCLEOPLASM...

