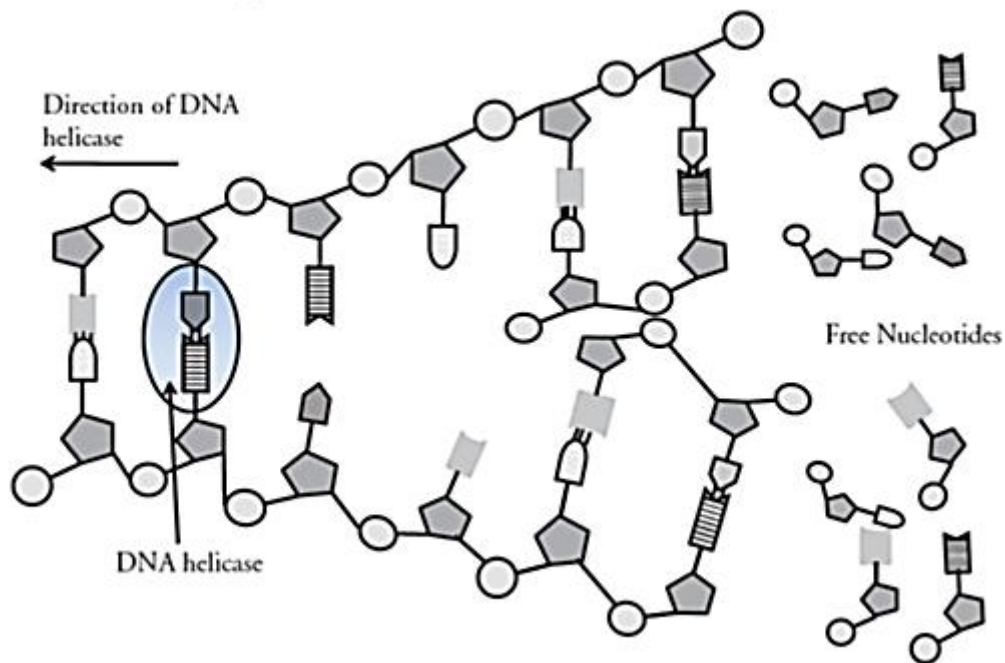


# DNA Replication Extension

## Model 2 – DNA Replication



1. Examine Model 2. Number the steps below in order to describe the replication of DNA in a cell.
  - \_\_\_\_\_ Hydrogen bonds between nucleotides form.
  - \_\_\_\_\_ Hydrogen bonds between nucleotides break.
  - \_\_\_\_\_ Strands of DNA separate.
  - \_\_\_\_\_ Free nucleotides are attracted to exposed bases on the loose strands of DNA.
2. Locate the DNA helicase on Model 2.
  - a. What type of biological molecule is DNA helicase?
  - b. What is the role of DNA helicase in the replication of DNA?
3. What rule is used to join the free nucleotides to the exposed bases of the DNA?
4. This type of replication is called **semi-conservative replication**. Considering the meaning of these words (semi—half; conserve—to keep), explain why DNA replication is called semi-conservative.

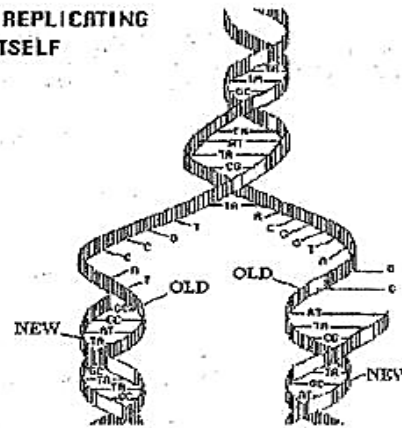
## Glue DNA Replication Extension Here

5. DNA molecules can be tens of thousands of base pairs in length. Mistakes in DNA replication lead to mutations, which may or may not be harmful to an organism. How does semi-conservative replication help prevent mutations during DNA replication?
  
6. The proportions of the bases are consistent within a species; however they do vary between species. Using the base-pair rules, complete the following table to show the percentage of each type of base in the five different organisms.

| Organism | Percentage of each type of base |         |          |         |
|----------|---------------------------------|---------|----------|---------|
|          | Adenine                         | Guanine | Cytosine | Thymine |
| Human    | 31                              |         | 19       |         |
| Cow      | 28                              | 22      |          |         |
| Salmon   |                                 |         | 21       | 29      |
| Wheat    | 27                              |         |          |         |
| Yeast    | 31                              | 19      |          |         |

7. How is the "new" strand of DNA formed from the "old" strand?

### DNA REPLICATING ITSELF



8. Why is it important that the "new" strand is formed from the "old" strand?

9. What is the result of DNA replication?

10. Why must DNA replicate?

11. What is the complementary strand to this DNA strand: T G C G A T T C G ?