

Thurs Dec 15/Fri Dec 16

4.1 Quiz today!

Come do cleaning for a 4!

Starter:

What are these pictures?



# Thurs Dec 15/Fri Dec 16

## 4.1 Quiz today!

### Come do cleaning for a 4!

Started  
What



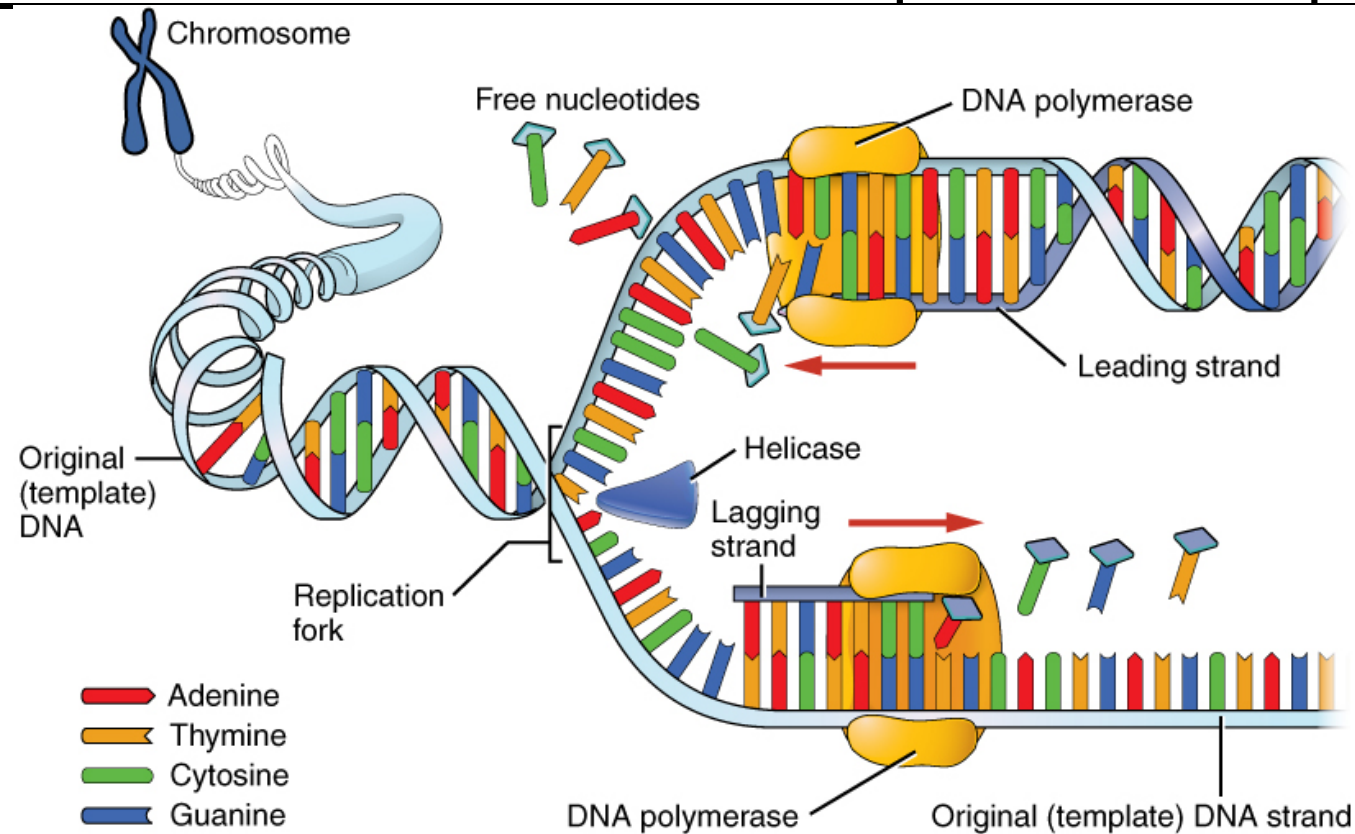
# 4.2 DNA Replication

## Standard Objectives:

- I can diagram the process of DNA replication
- I can describe why DNA replication is called “semi-conservative”
- I can explain the importance of DNA replication in the cell

# 4.2 DNA Replication

## Why Would a Cell Need to Replicate/Copy Its DNA?

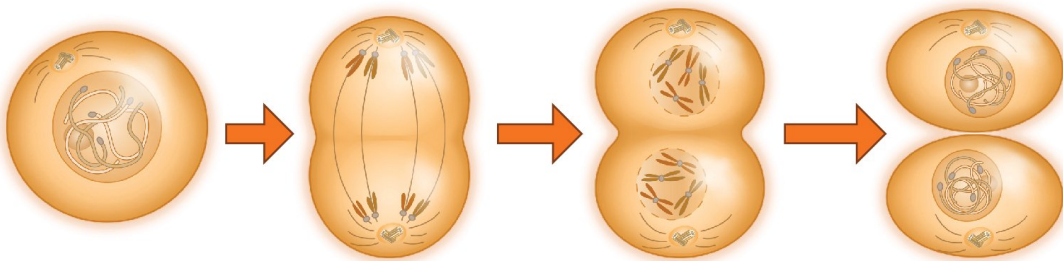


# 4.2 DNA Replication

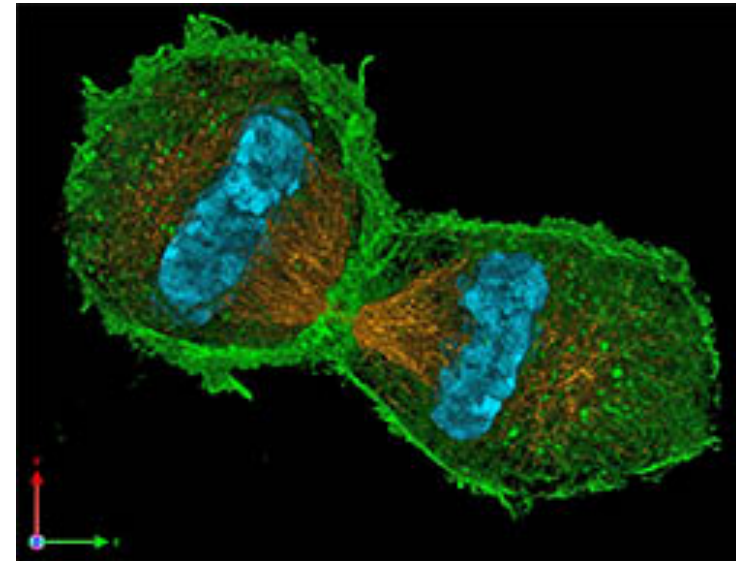
Why Would a Cell Need to Replicate/Copy Its DNA?

As a cell divides, both daughter cells need full copies of ALL genetic info!

Cell division



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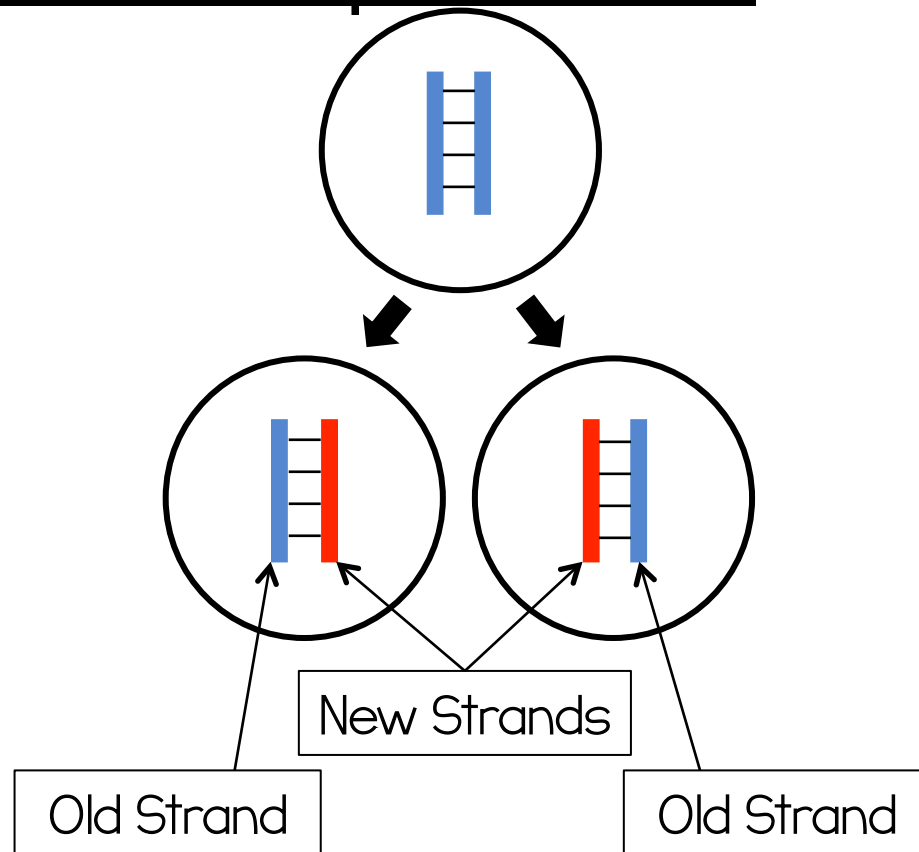
# 4.2 DNA Replication

## Semi-Conservative Replication

Semi = Some

Conservative = Saved

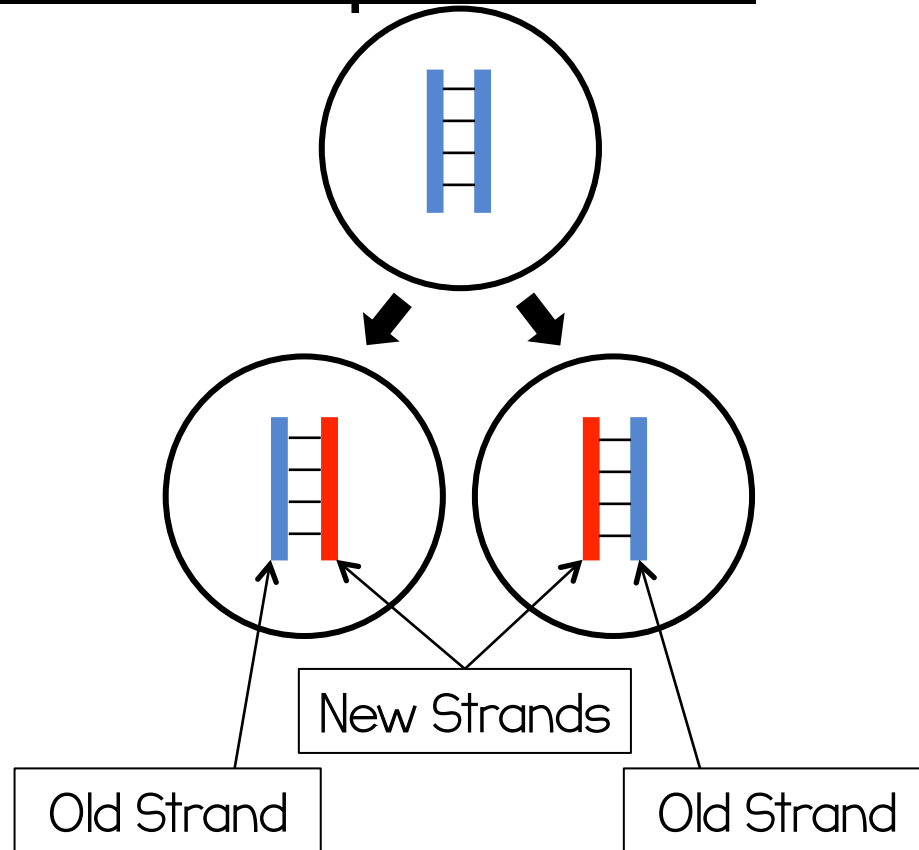
Replication = Copying



# 4.2 DNA Replication

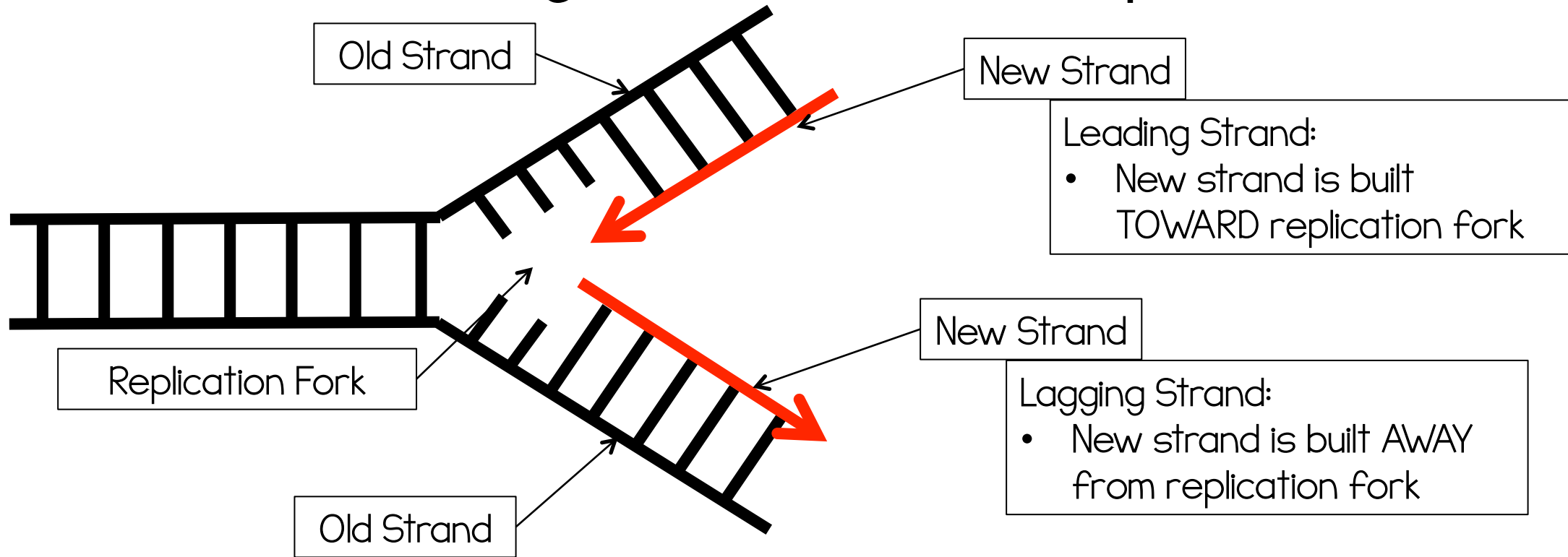
## Semi-Conservative Replication

- \*DNA duplicates by using each strand/side as a template or pattern for a new strand
- \*"Old" strand is saved or conserved in each new cell



# 4.2 DNA Replication

## Basic Diagram of DNA Replication





# 4.2 DNA Replication

## Enzymes Needed for Replication

### Helicase

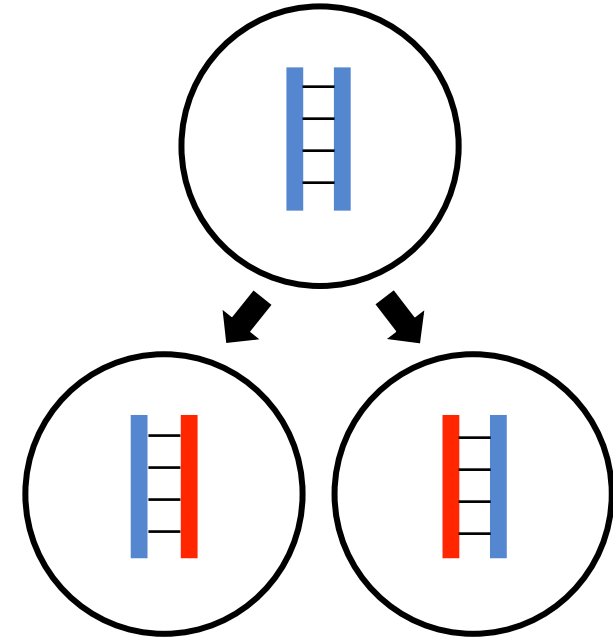
Breaks H-bonds of helix  
Creates replication fork

### DNA Polymerase

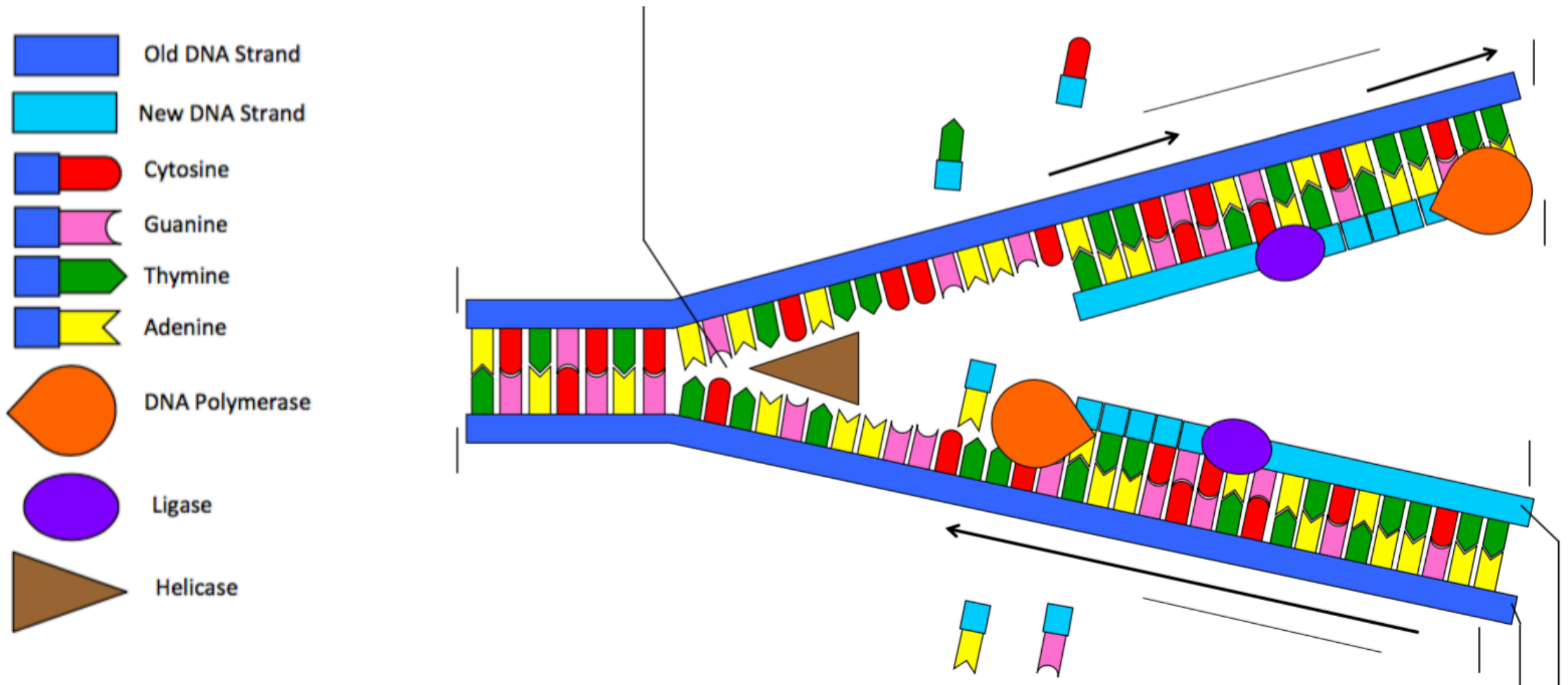
Lays down new nucleotides  
to synthesize new DNA strand

### Ligase

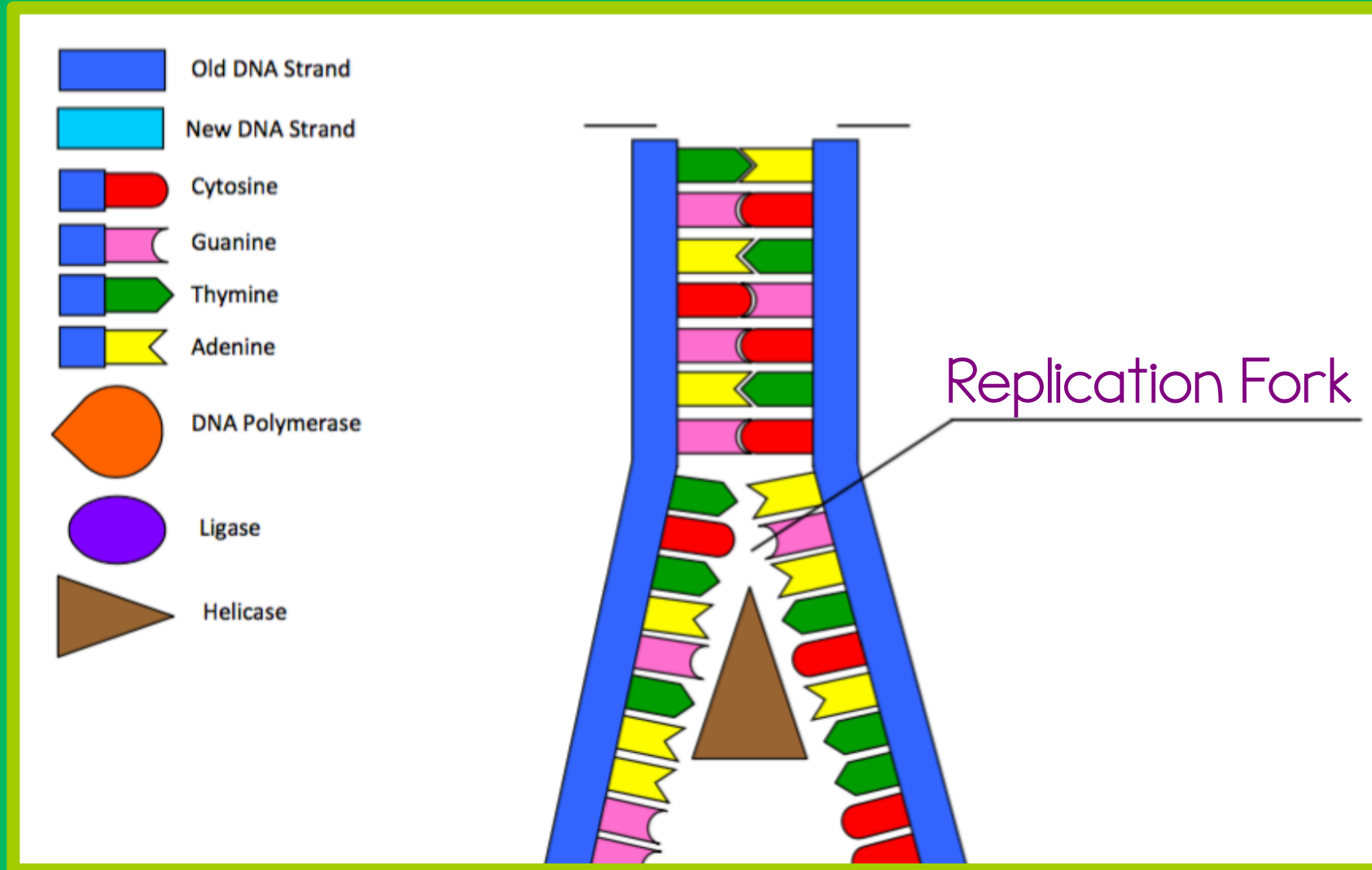
“Glues” backbone of new nucleotides  
together by forming new covalent bonds



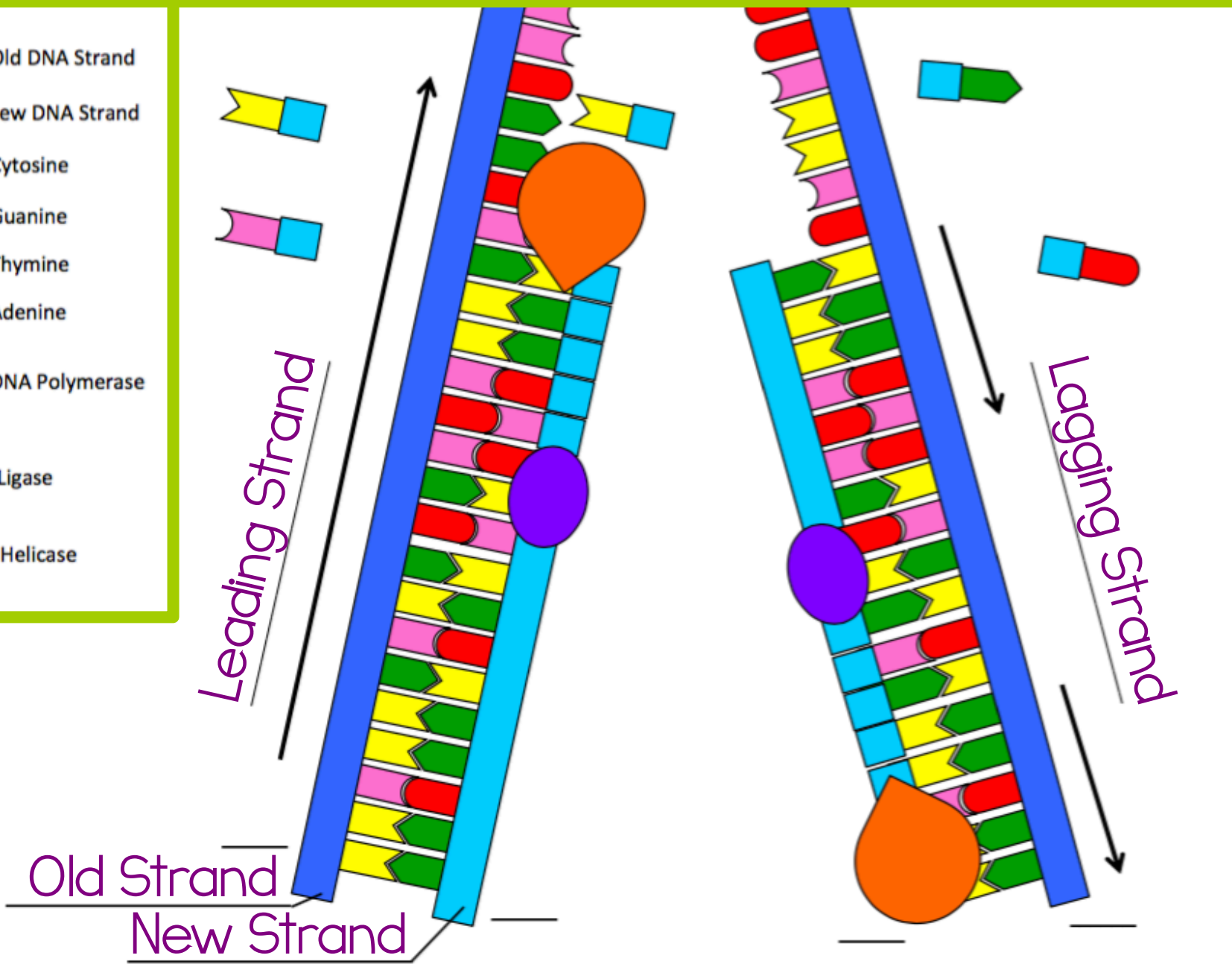
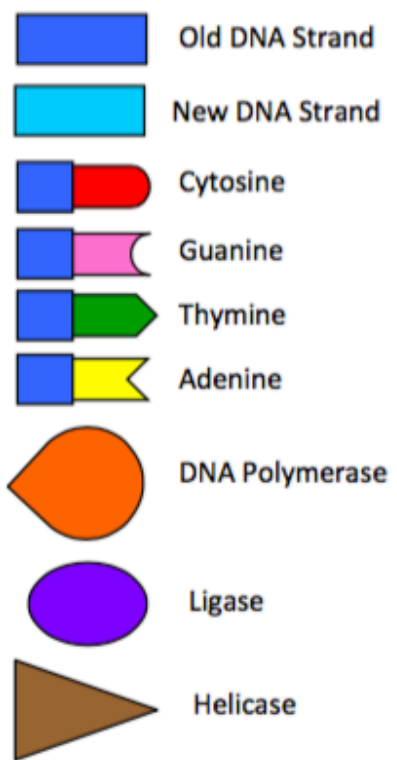
# 4.2 DNA Replication



# 4.2 DNA Replication



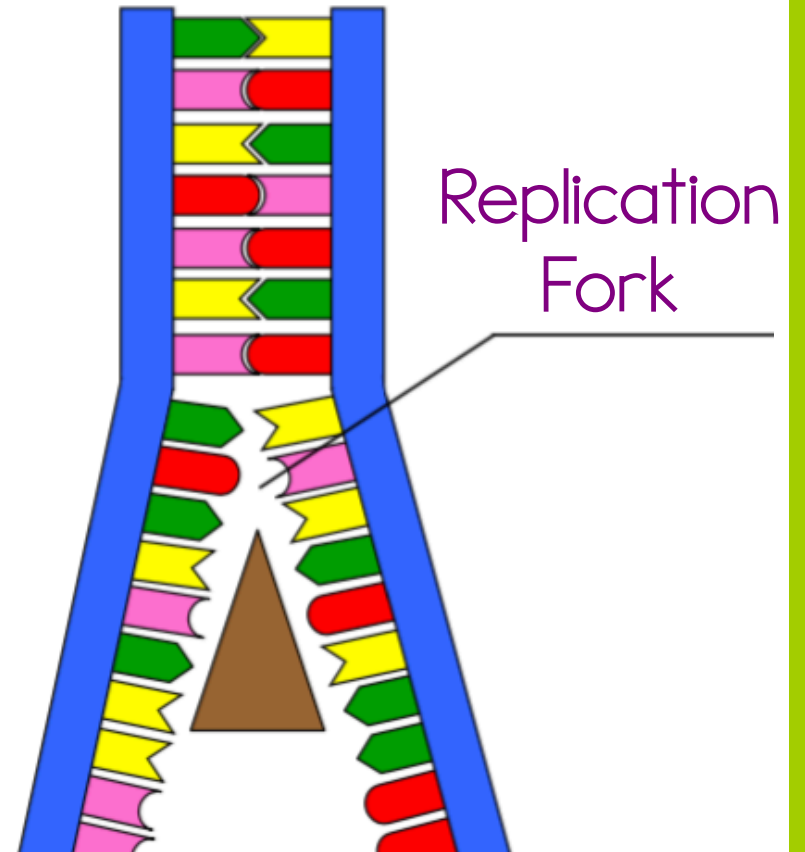
# 4.2 DNA Replication



# 4.2 DNA Replication

## Steps for DNA Replication

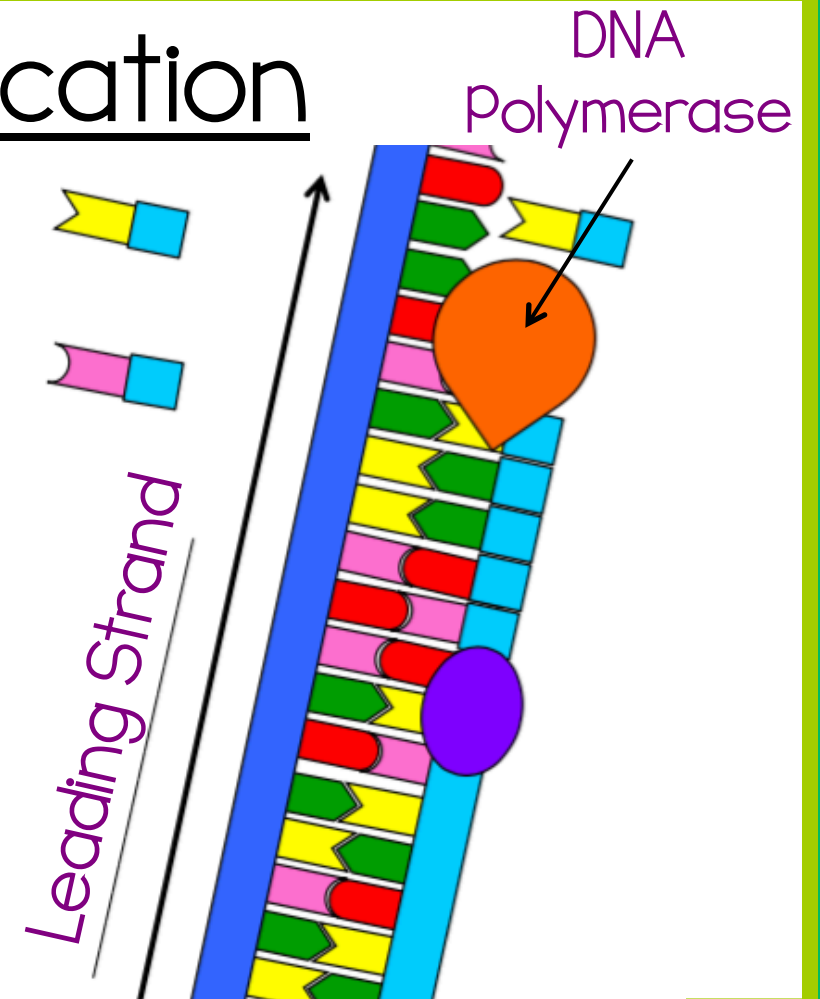
I. Helicase separates two strands in helix to create the replication fork.



# 4.2 DNA Replication

## Steps for DNA Replication

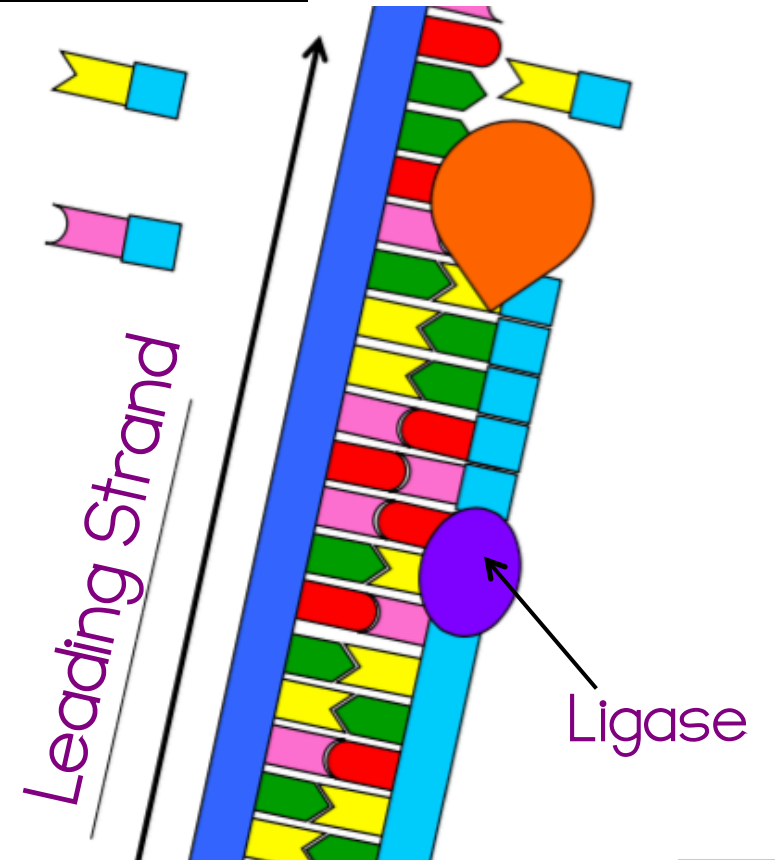
2. On the leading strand, DNA polymerase lays down new nucleotides that are complimentary to old strand



# 4.2 DNA Replication

## Steps for DNA Replication

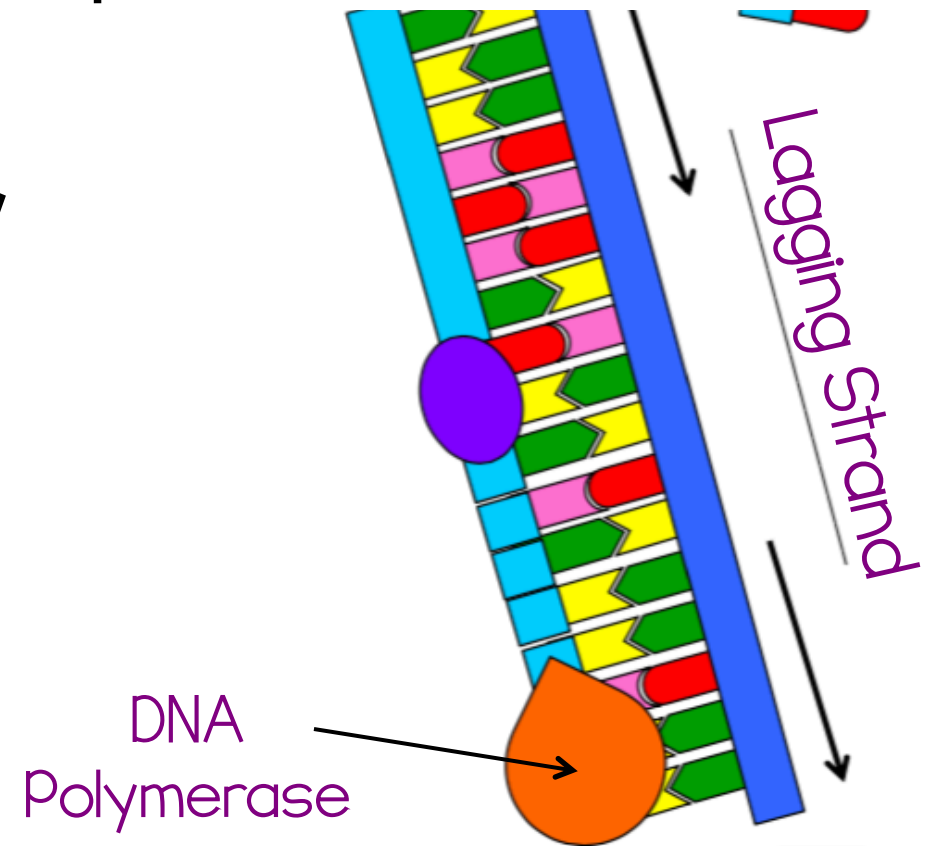
3. Ligase follows and glues the backbone together of new strand.



# 4.2 DNA Replication

## Steps for DNA Replication

4. On the lagging strand, DNA polymerase can't lay nucleotides in the same direction like on leading, so must run in opposite direction.

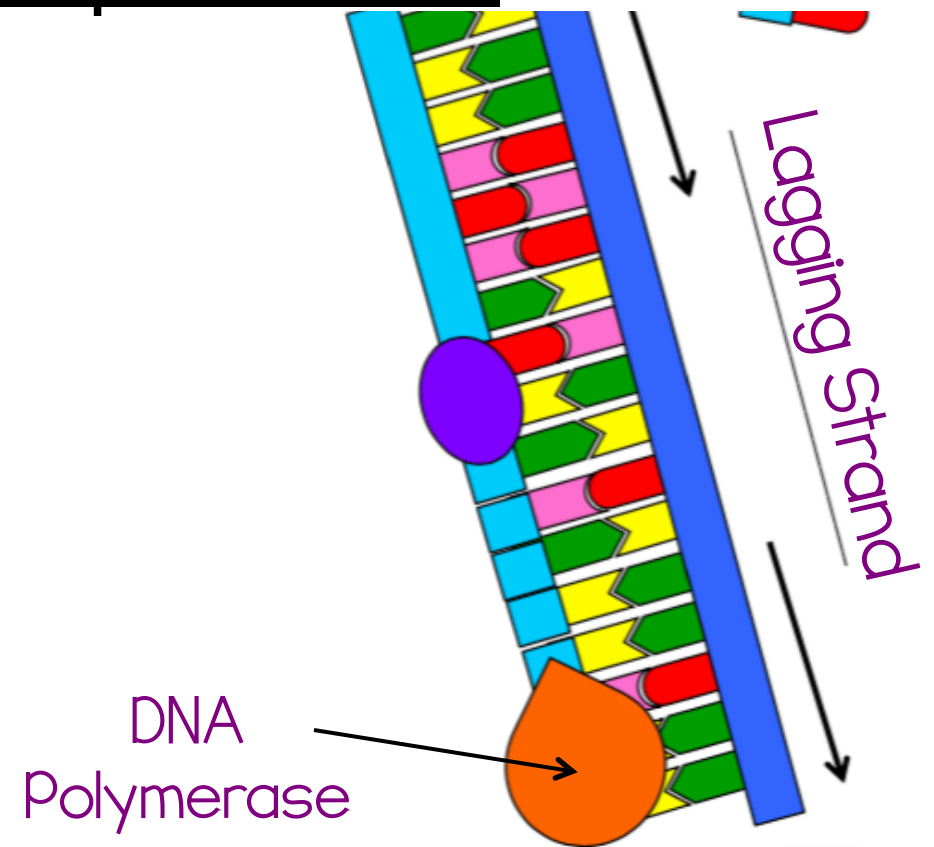




# 4.2 DNA Replication

## Steps for DNA Replication

5. DNA polymerase on lagging strand lays down new nucleotides moving away from the replication fork.

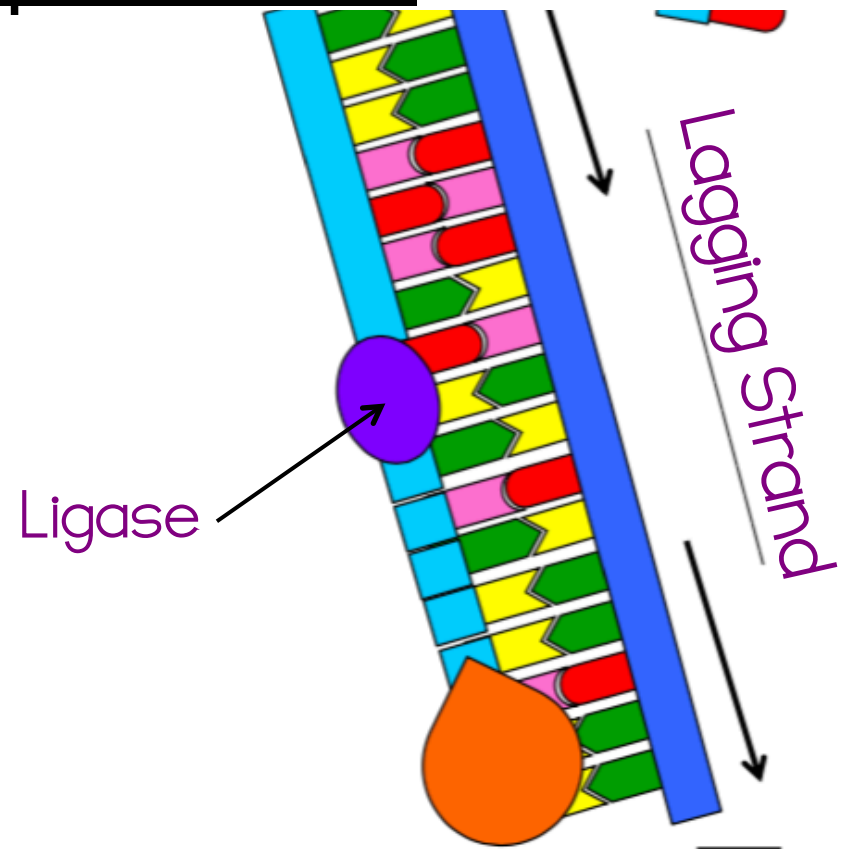


# 4.2 DNA Replication

## Steps for DNA Replication

6. Ligase follows and glues the backbone together.

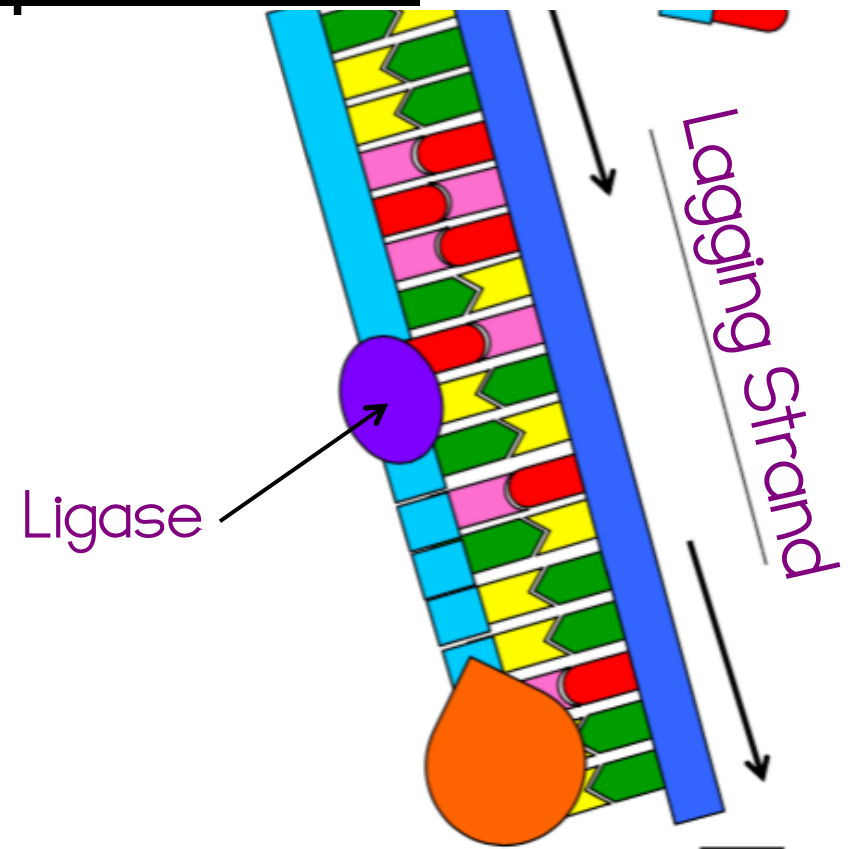
(\*Cross out #7)



# 4.2 DNA Replication

## Steps for DNA Replication

8. When replication is complete, DNA pol., ligases, and helicase enzymes release.



# 4.2 DNA Replication

## Steps for DNA Replication

9. Two new double helices are made; each has a new strand and an old strand

→ semi-conservative replication

