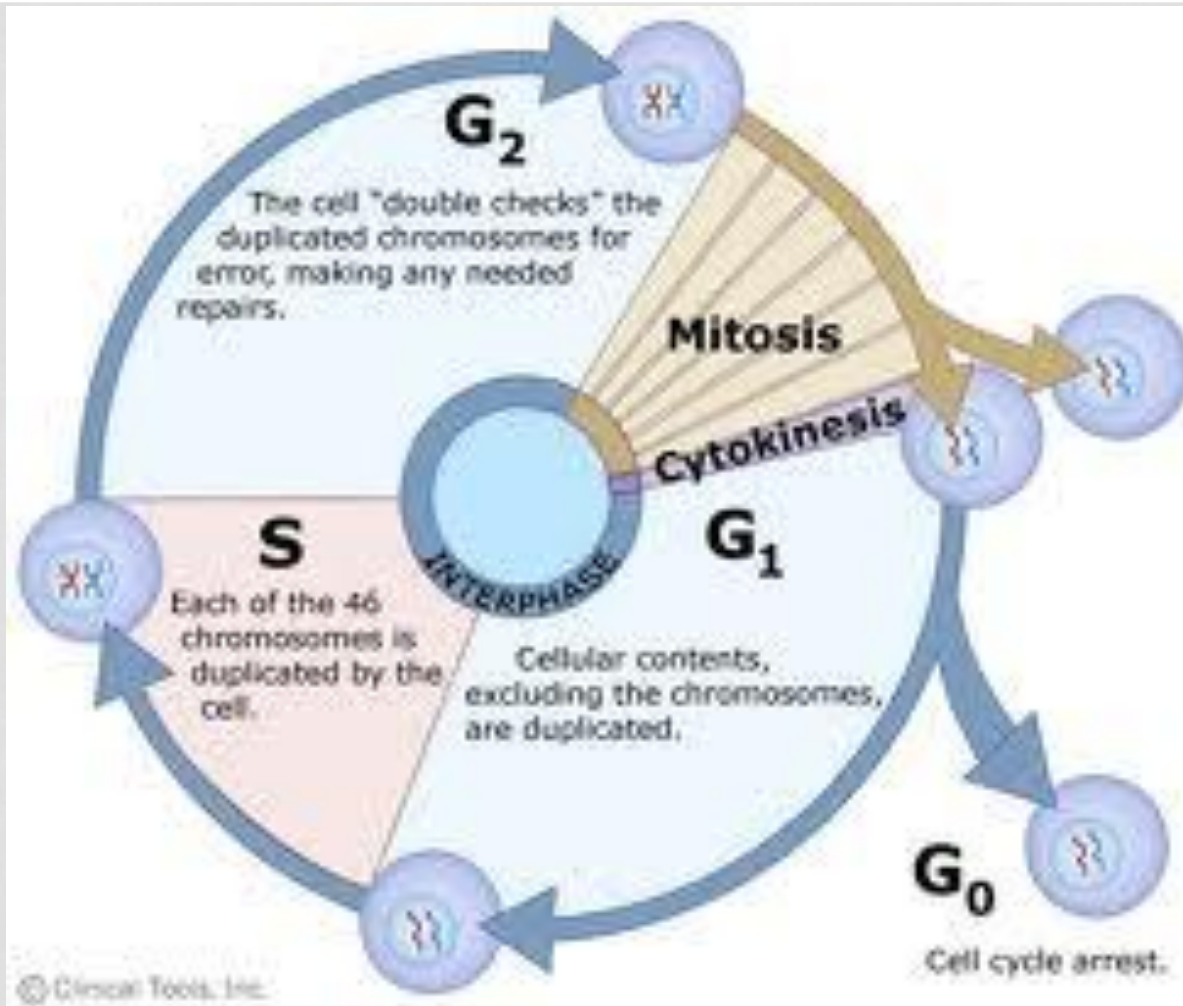


Where is DNA found within the cell?

Quick Question #1

Lets refresh our knowledge of DNA structure

<http://www.youtube.com/watch?v=ZGHkHMoyC5I>

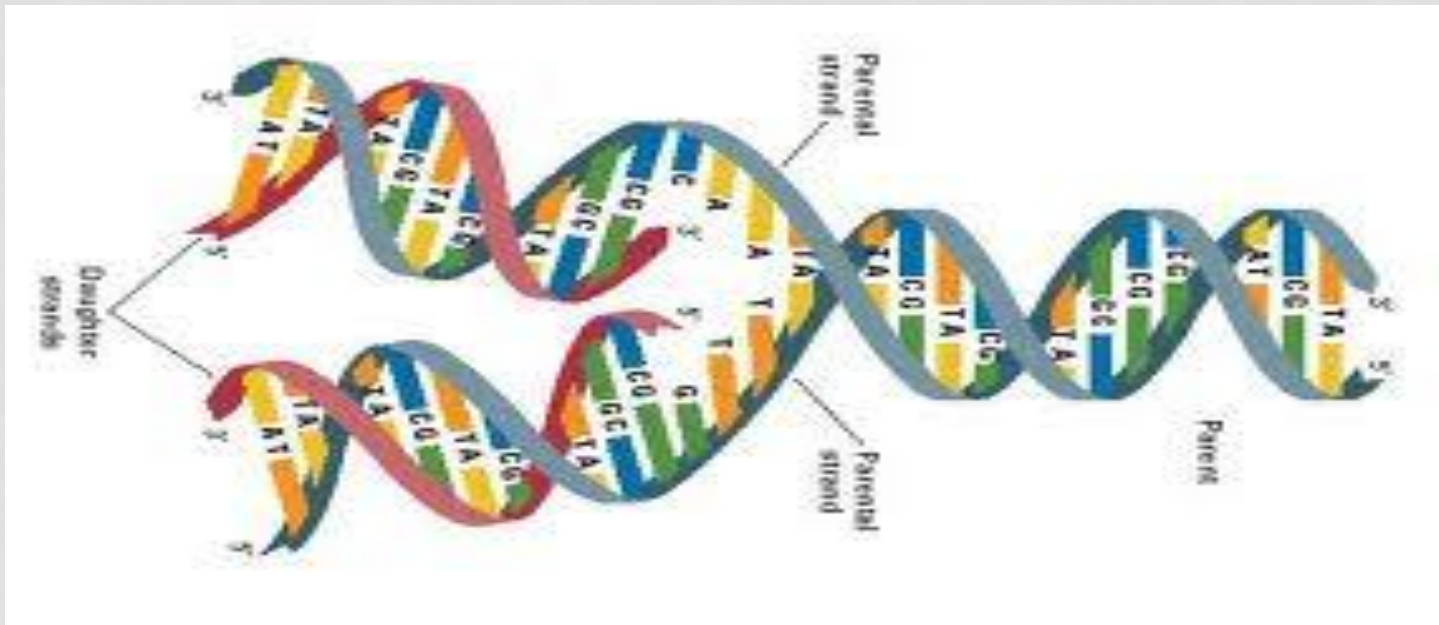


Quick Question #2

What occurs during the cell cycle?

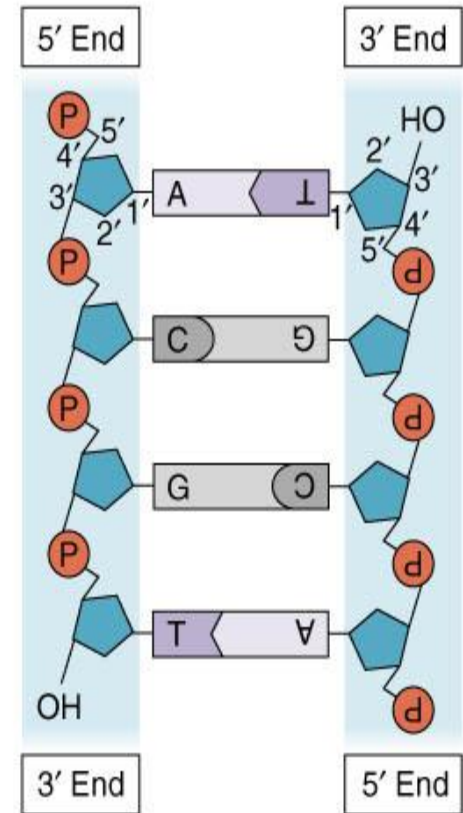
WHAT IS DNA REPLICATION?

- Copying of DNA
- An extremely precise process
- Copies in sections, not from one end to the other
- Basis of biological inheritance

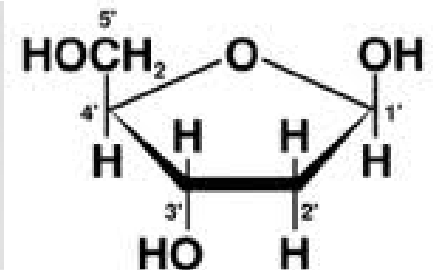


REPLICATION PROCESS

- Three step process
- Each step controlled by one of three enzymes (enzymes always end in -ase so look out for them in these notes)
- Directional: always starts at a 5' end of the new DNA strands and builds onto the 3' end:
 - Copies both strands simultaneously starting at the replication fork.



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What do you think needs to happen in order for replication to start

Quick Question #3

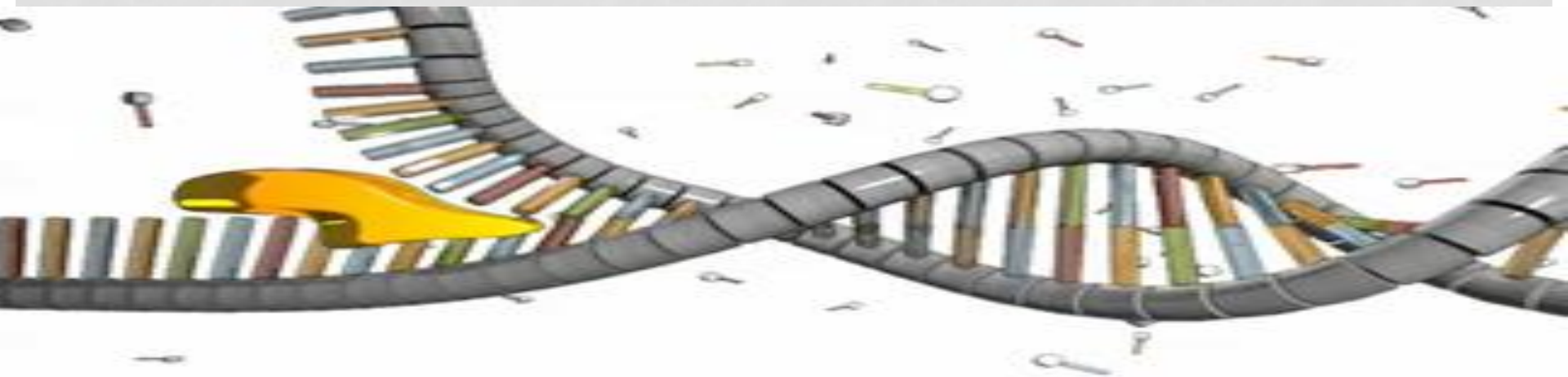
REPLICATION: STEP ONE

FACILITATED BY: **HELICASE**

- Helicase enzyme unwinds and unzips DNA strands
 - breaks hydrogen bonds

QQ#4

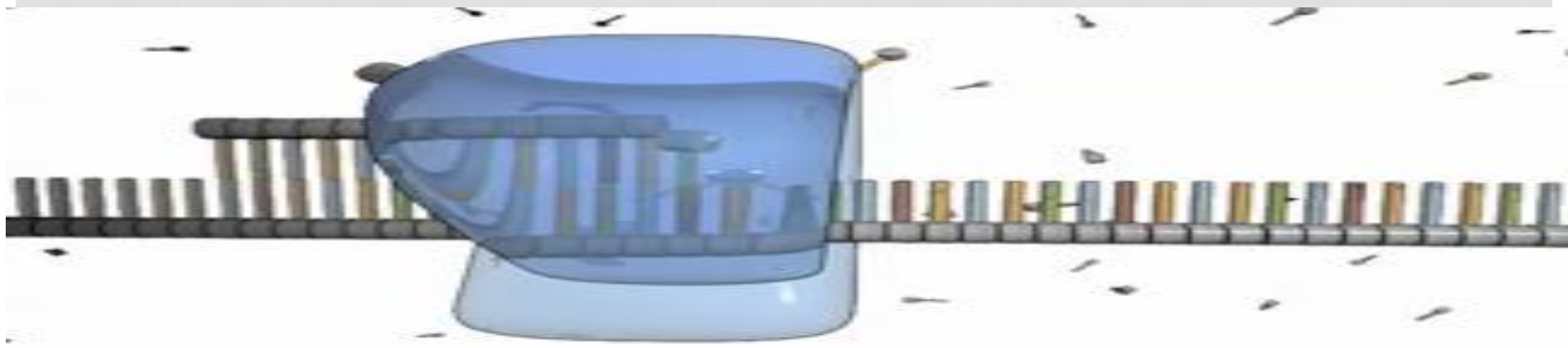
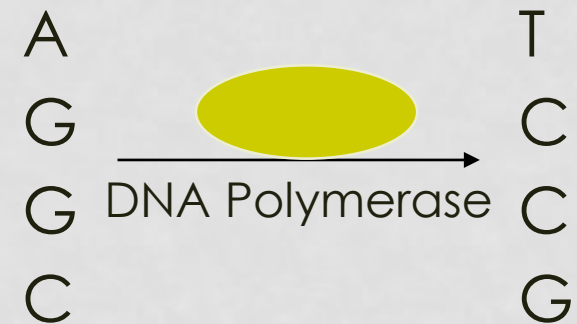
What do you think occurs to allow the DNA to “unzip”?



REPLICATION: STEP TWO

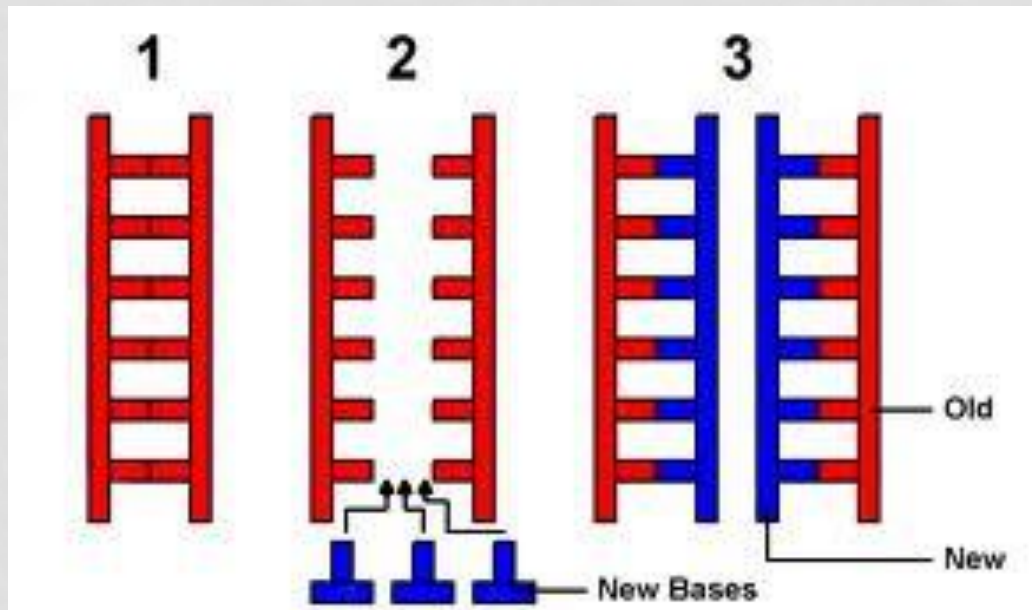
FACILITATED BY: DNA POLYMERASE

- DNA Polymerase enzyme:
 - reads a base on one side
 - Then adds a new nucleotide with a complementary (matching) base to the new side
 - Creates the new strand by creating a covalent bond between sugar and phosphate along the new backbone



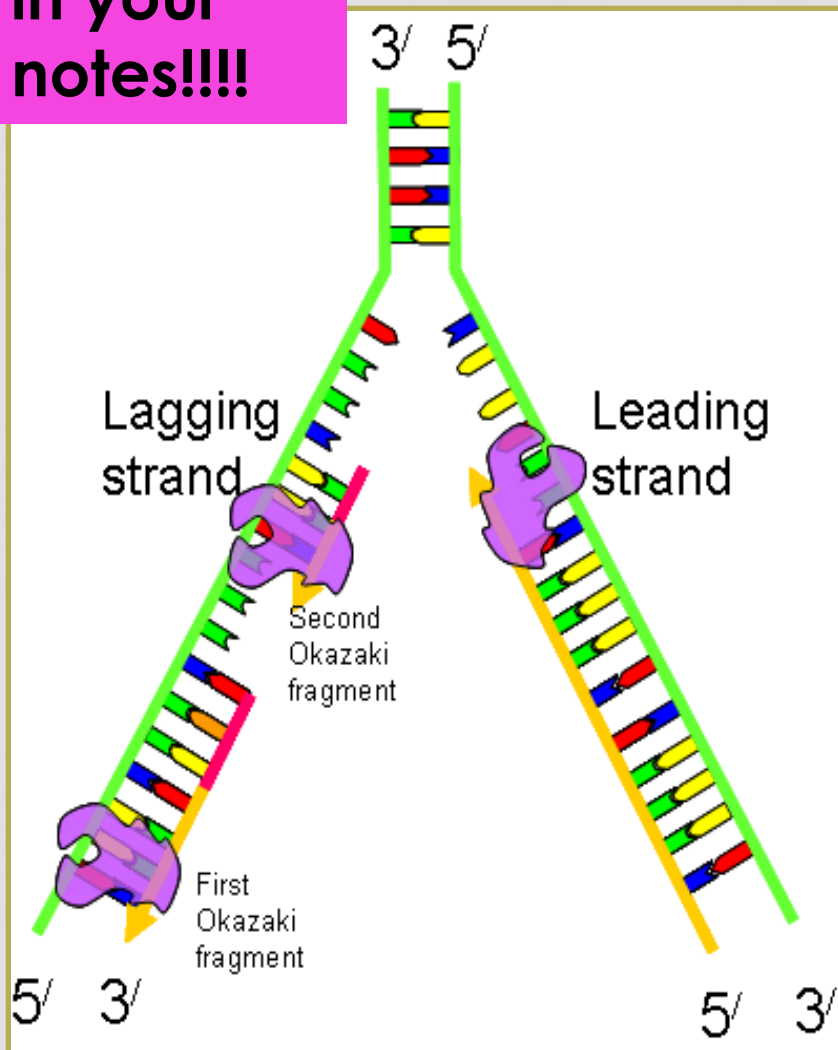
STEP 2 CONTINUED

- Both sides replicated to create two new strands of DNA **each with**:
 - -One **original** and One **new** strand



Draw and Label this diagram in your notes!!!!

STEP 2 CONTINUED

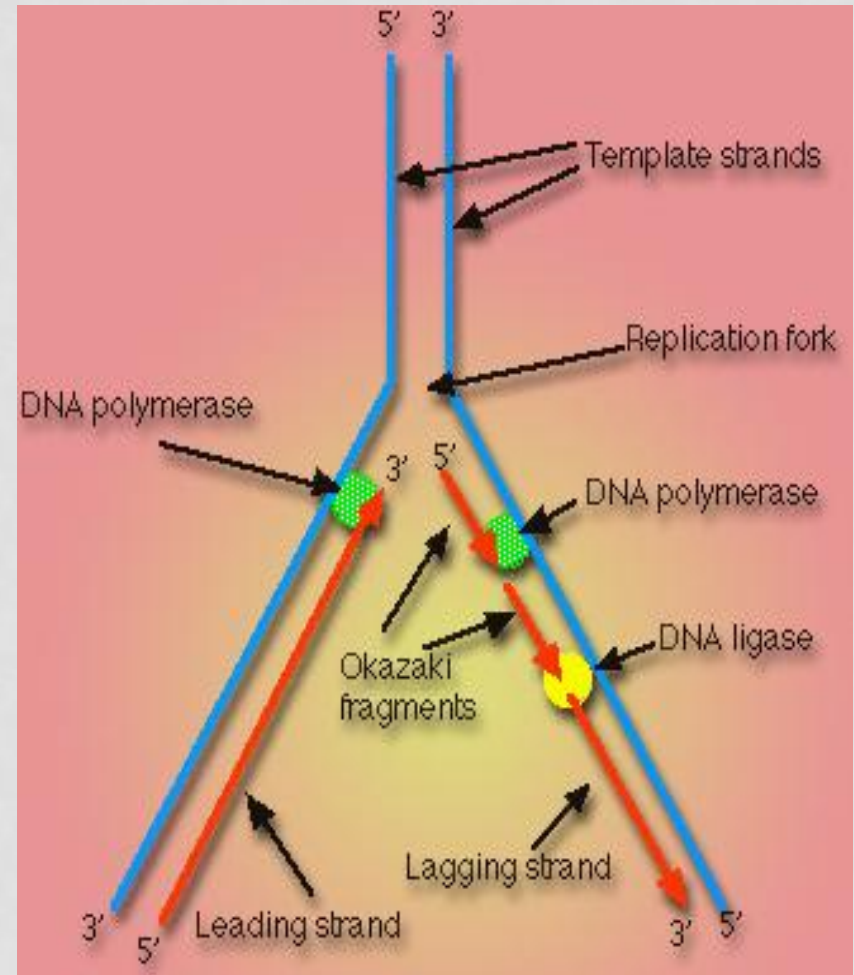


- Strands are replicated from 5' to 3' and go in opposite directions
- One side is replicated in a **continuous** piece:
 - -**Leading Strand**
- Other side is replicated in **short pieces**:
 - -**Lagging Strand**
 - Okazaki Fragments

REPLICATION: STEP THREE

FACILITATED BY: **LIGASE**

- Ligase enzyme
 - Glues (ties) DNA all together
 - Very important for Okazaki Fragments-closes any gaps between them



Draw a visual that helps YOU remember the 3 steps of replication

Quick Question #5

OVERALL PROCESS OF REPLICATION

<http://www.youtube.com/watch?v=teV62zrm2P0>

<http://www.youtube.com/watch?v=hyl2mYfbbxk>

