

## DNA Replication Re-enactment

Starting positions:

**Helicase/Ligase** stands in front of the DNA strand (the desks)

**DNA Polymerases** and **Primase** stand to the side of the desks at the origin of replication

**DNA Nucleotides** stand along the sides of the DNA strand, but leaving enough room for the desks to separate

Steps of Replication:

**Helicase:** Push 3 desks apart and remain between the desks

**Primase:** Add RNA Primer to the 1<sup>st</sup> desk on the 3' side and the 3<sup>rd</sup> desk on the 5' side. Move out from between the desks and stand on the 5' end of the original DNA strand.

**Both DNA Polymerases:** DNA Polymerases will stand by the RNA Primers on each side of the DNA strand. Call out the nucleotides needed in order. (Example: T on the desk will need an A to stand beside it) REMEMBER: DNA Polymerase on the 3' side will move TOWARDS the replication fork, while the other enzyme builds away.

**DNA Nucleotides:** Listen for your letter to be called and stand by the matching desk. This should be on the inside of the pushed out rows. Hold hands with the person next to you as the chain grows.

**Helicase:** Push the next 3 desks apart.

**Primase:** Add 1 RNA Primer to the 6<sup>th</sup> desk on the 5' side. Move out from between the desks and again stand on the 5' end of the original DNA strand.

Repeat the directions for the **DNA Polymerase** and **DNA Nucleotides**

Continue the same directions from **Helicase** to **DNA Nucleotides** one more time until all the desks are separated.

**DNA Polymerase** from the 5' end: remove the RNA Primers and call out the matching DNA Nucleotide

**DNA Nucleotides:** DO NOT grab hands with the Okazaki fragment next to you

**Ligase** (was previously Helicase): Force each of the fragments to bind together by having them hold hands

**Conclusion: Two identical strands of DNA!**