

Lesson 1: Monday, March 23, 2020. Biology MHS

AIM: What is the structure of DNA, and how does this allow for DNA replication? Why is DNA replication necessary?

- DNA is a *double-stranded* molecule.
- Each strand of DNA is made from a *sequence of bases*.
- The two strands of DNA are **complementary** to each other, and are held together by “**base-pairs**”
- **G** always pairs with **C**
- **A** always pairs with **T**
- During DNA replication, the two strands separate. The “other side” of each strand is re-built using the *rules of base-pairing*. Each strand serves as a “**template**” for the other strand.
- DNA **replication** is *necessary for cell division*- this includes meiosis AND mitosis!
- During mitosis, the DNA replicates, the cell splits, and each cell gets an **identical** copy of the DNA
- In meiosis, the DNA is replicated, then the DNA crosses over and **genetic recombination** takes place, then the cell splits *twice* to create 4 sex cells, each with a unique half of the parent’s DNA.

This picture shows double-stranded DNA. We can figure out the bases on “strand X” because the two strands are complementary to each other!	Here is another picture that shows that DNA is double-stranded. The strands are held together by base-pairs.	Here is another Regents picture that emphasizes that the two strands of DNA are complementary. Each strand is a template for the other strand.
This picture shows just a portion of a DNA molecule. The letters A, C, G, and T represent the 4 bases that are found in DNA.	This graph represents stages of meiosis. The final stage has HALF of the DNA. But, we can see in stage 2 that DNA was <i>first replicated prior to cell division</i>.	This graph represents stages of mitosis. DNA is <i>first replicated</i>, then the final cells get the same amount of DNA as the original cell. The final cell is identical to the original cell.