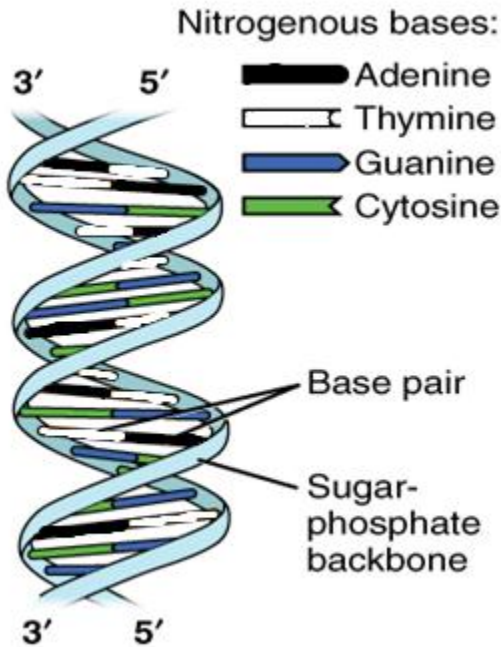


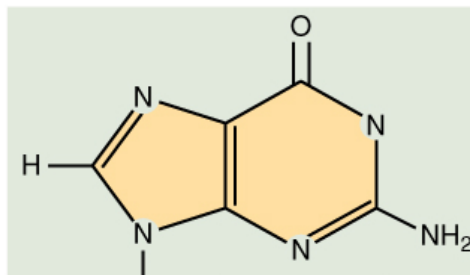
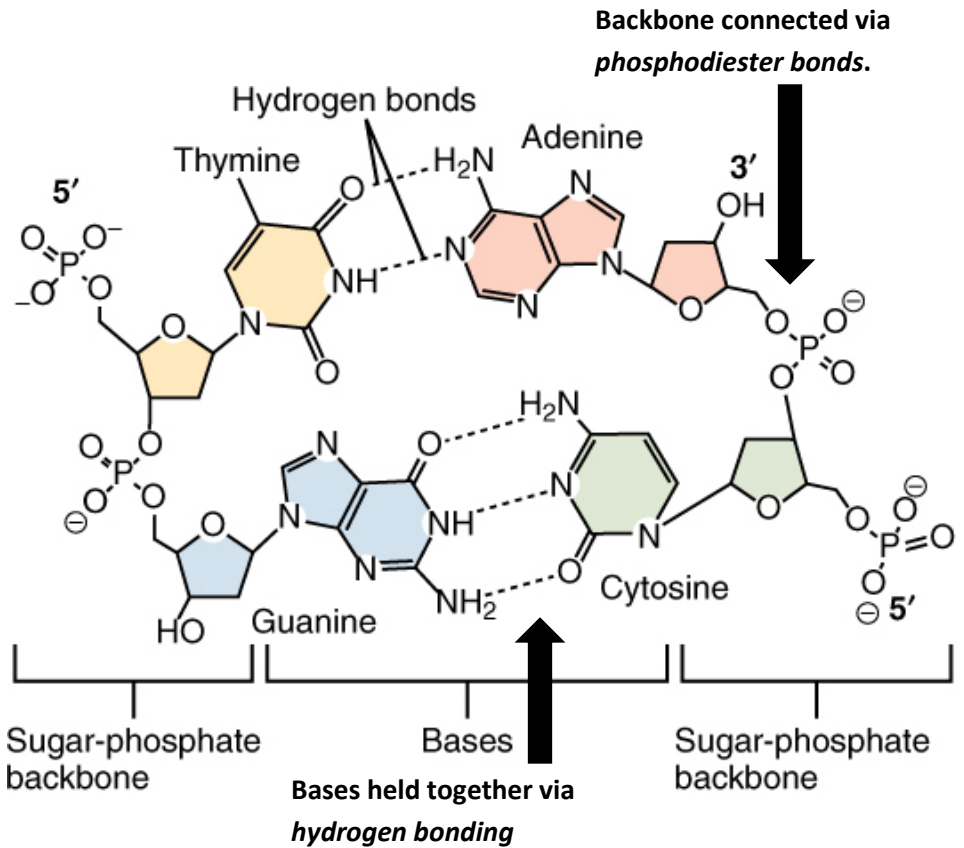
# DNA and DNA Replication

## DNA – The Genetic Material

5' → 3' = Phosphate Group to OH Group  
3' → 5' = OH Group to Phosphate Group



Double-stranded DNA molecule.  
Polymer of nucleotides. Strands are *anti-parallel*.

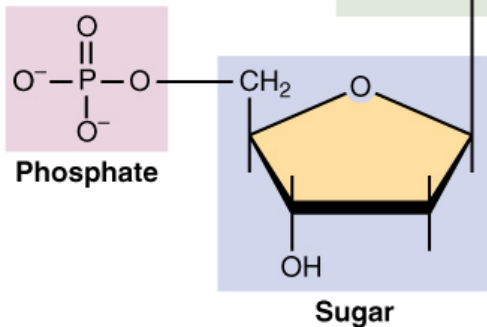


Purines: Adenine (A) and Guanine (G)

Pyrimidines: Thymine (T) and Cytosine (C)

Purines pair with Pyrimidines. A & T, C & G

Sequence of bases → basis for genetic coding of traits

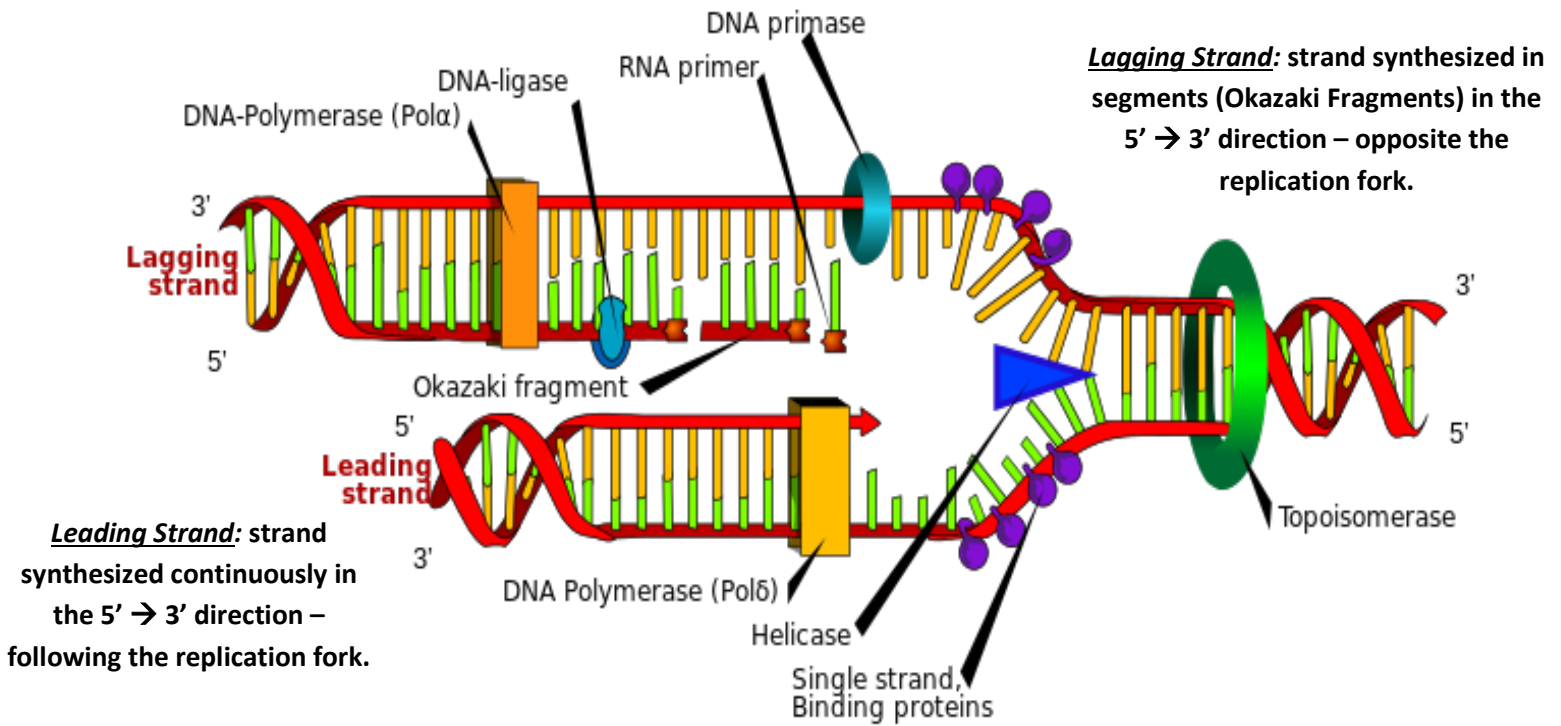


DNA is a polymer of nucleotide monomers.

*Nucleotides contain a phosphate group, 5 carbon sugar (deoxyribose), and a nitrogenous base.*

## DNA and DNA Replication

### DNA Replication



DNA Replication begins at “replication bubbles” also known as *origins of replication*.

Enzyme/Protein	Function in DNA Replication
<b>DNA Helicase</b>	Unwinds DNA double helix at the Replication Fork "unzips the genes"
<b>DNA Polymerase</b>	Builds new DNA strand by adding nucleotides 5'--> 3' Proofreading, error correction Different enzymes for leading/lagging strand
<b>Single Strand Binding Proteins</b>	Maintains strand separation
<b>Topoisomerase</b>	Relaxes DNA from its super-coiled nature
<b>DNA Ligase</b>	Joins Okazaki Fragments of the lagging strand Re-joins the semi-conservative strands
<b>Primase</b>	Lays down RNA primer for DNA Polymerase to begin synthesis of the new strand