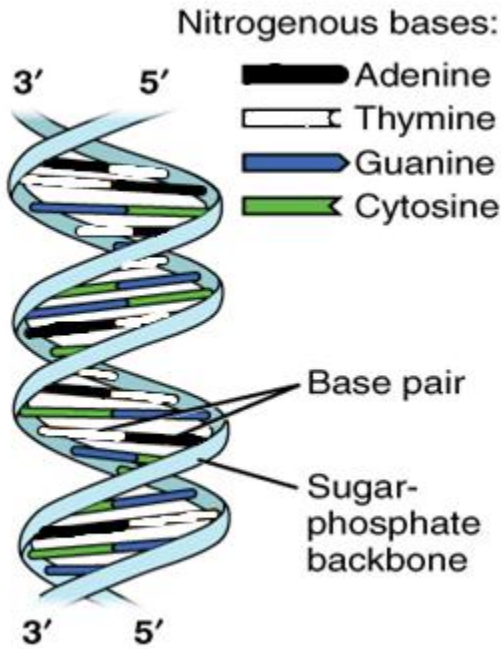


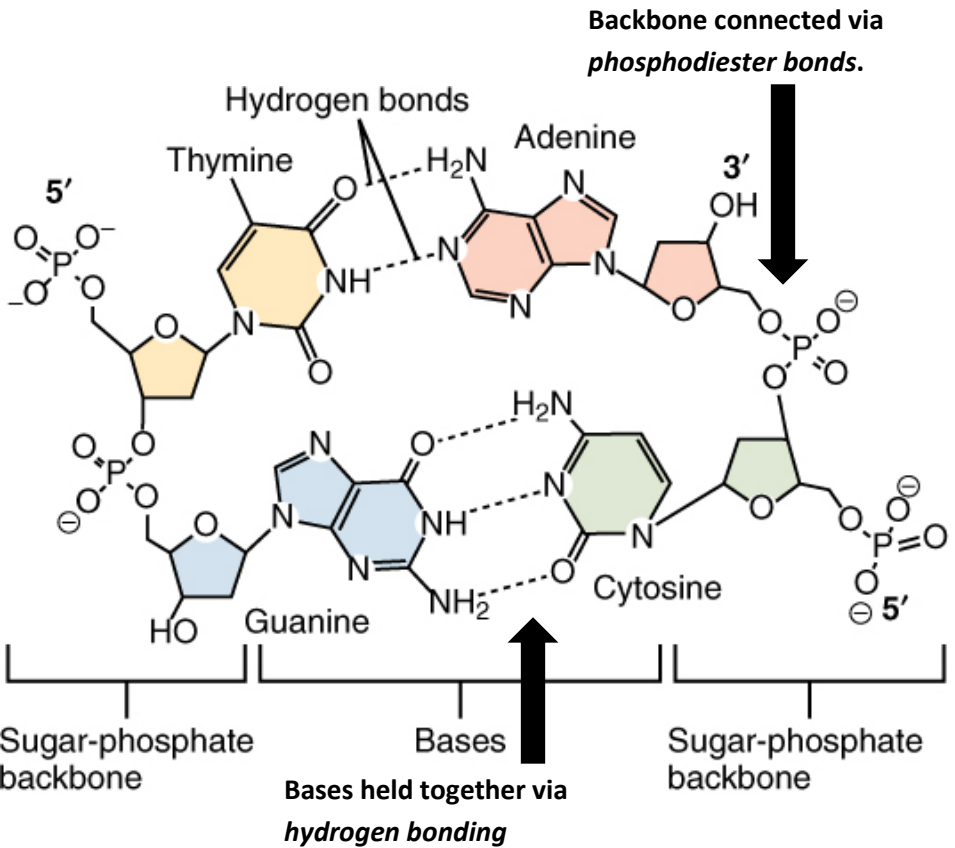
DNA and DNA Replication

DNA – The Genetic Material

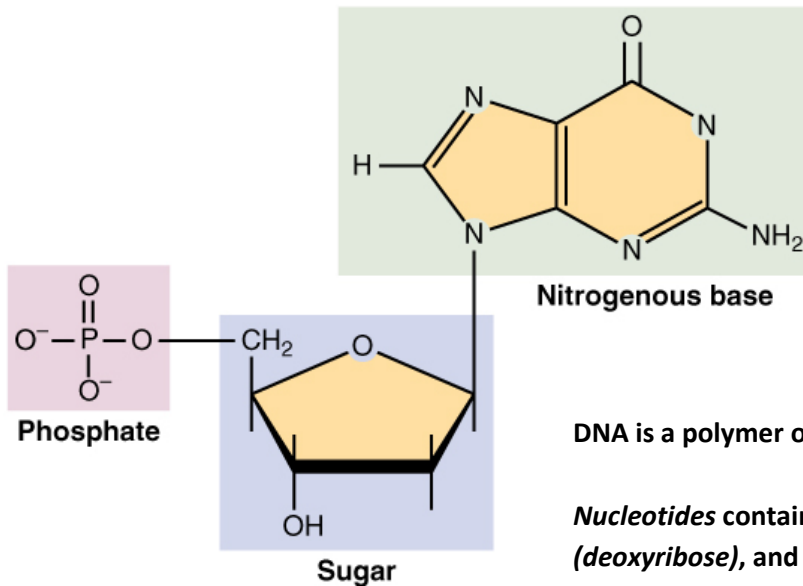
5' → 3' = Phosphate Group to OH Group
 3' → 5' = OH Group to Phosphate Group



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



Backbone connected via *phosphodiester bonds*.



Purines: Adenine (A) and Guanine (G)

Pyrimidines: Thymine (T) and Cytosine (C)

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

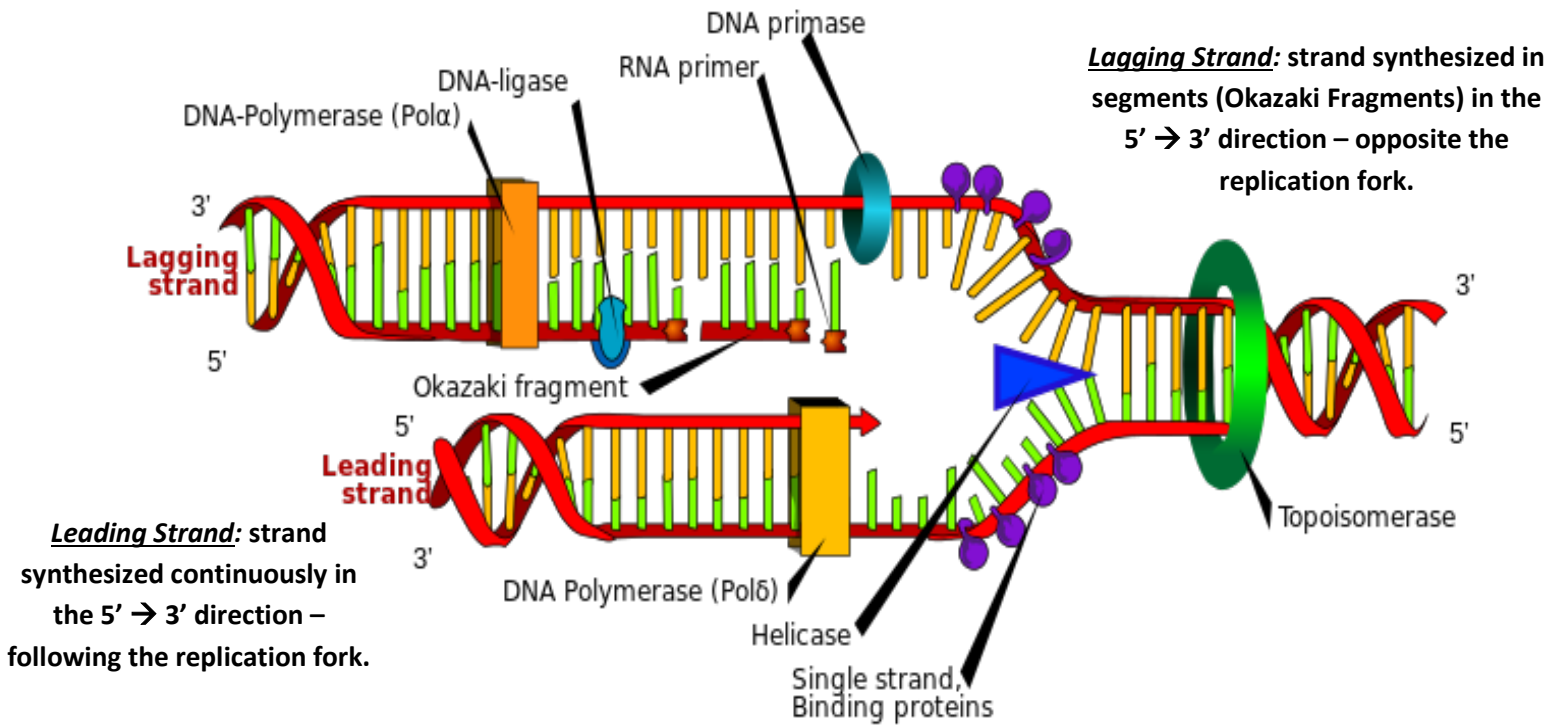
Sequence of bases → basis for genetic coding of traits

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