Nucleic Acids

Nucleotides: basic building block of all nucleic acids

- Made up of:
  - Phosphate
  - Sugar
  - Nitrogenous base

DNA: deoxyribonucleic acid

- Double stranded molecule
- Exists in the form of a double helix
- Makes up chromosomes that are housed in the nuclei of eukaryotic cells
- Carries hereditary information in the form of a code found in the sequence of nitrogenous bases. This code contains instructions on how to synthesize proteins.
- When untwisted, the DNA molecule resembles a ladder.
  - The sides of the ladder are made up of alternating phosphate and 5 carbon sugar molecules (deoxyribose)
  - The rungs of the ladder are made up of nitrogenous bases that are paired up – adenine (A) to thymine (T); guanine (G) to cytosine (C)

RNA: ribonucleic acid

- Single stranded molecule
- Composed of repeating nucleotides that differ from DNA in two ways:
  - Contains ribose sugar instead of deoxyribose
  - Differs in its nitrogenous bases – instead of thymine (T), RNA has Uracil (U) as well as adenine (A), guanine (G), and cytosine (C)
  - When RNA is made from a DNA template, G joins with C and A joins with U.
- RNA is involved with carrying the instructions from the DNA in the nucleus to the ribosomes in order to make proteins.

Types of RNA

- ***There are three types of RNA***
  - **mRNA** (messenger RNA): carries the code from DNA to the ribosome
  - **rRNA** (ribosomal RNA): along with certain proteins, makes up the structure of the ribosome
  - **tRNA:** (transfer RNA): interprets the code on the mRNA and brings the correct amino acids to the ribosome to build up a polypeptide.