Mr. Krueger 2.3 Supplemental Notes

**2.3 Carbon Based Molecules: Organic Compounds**

*Key Concept: Carbon based Molecules are the foundation of Life*

* **Organic** means Carbon
  + Sugar is organic
* Carbon atoms have unique bonding properties.
  + Carbon forms covalent bonds with up to four other atoms, including other carbon atoms.
  + Carbon based molecules have three general types of structures.
    - Straight chain
    - Branched chain
    - Ring
  + Many carbon based molecules are made of small subunits bonded together
    - **Monomers** are the individual subunits (mono- one)
    - **Polymers** are made of many monomers (poly- many)
* Four types of Carbon-based molecules are found in living things.
  + **Carbohydrates** are made of carbon, hydrogen, and oxygen.
    - Carbohydrates includes sugars and starches
    - Monosaccharides are simple sugars
    - Polysaccharides include starches, cellulose and glycogen.
    - Carbohydrates can be broken down opt provide energy for cells.
    - Some carbohydrates are part of the cell structure.
  + **Lipids:** non-polar molecules that include fats, oils, and cholesterol
    - Many contain carbon chains called fatty acids.
    - Fats and oils contain fatty acids bounded to glucose

**Lipids have several other functions.**

* Source of stored chemical energy
* Make up cell membrane
* Used to make hormones

**Fats and oils have different types of fatty acids**

* Saturated fatty acids: more solid fat, not good for us
* Unsaturated fatty acids

**Phospholipid make up the cell membrane**

* Polar Phosphate “head”
* Nonpolar fatty acid “tail”

**Proteins: Polymers of amino acid monomers.**

* Twenty different amino acids are used to build proteins in organisms
* Proteins are essential parts of organism and participate in virtually every cell process.
* Proteins are used for:
  + Cell movement.
  + Cell structure
  + Digestion (enzymes)
  + Eyesight

**Nucleic Acids: Polymers of monomers called nucleotides**

* DNA stores the information for putting amino acids together to make protons.
* RNA helps build protein
* The order of nucleotides provide the code for proper assembly of proteins