BIOCHEMISTRY

Enduring Understandings

- Chemical reactions regarding four biomolecules are an essential part of life

Essential Questions

- How are the four biomolecules structurally different?
- How is the stability/reactivity of an atom determined?
- How does each of the four biomolecules function in living things?
- How are macromolecules formed and how are they broken apart?
- How does this unit provide evidence of the relatedness of living things in the world?

Targets

1. Define the following terms: acid, amino acid, atom, base, carbohydrate, cellulose, compound, dehydration synthesis reaction, covalent bond, disaccharide, DNA, enzyme, glycogen, hydrogen bond, hydrolysis, ion, ionic bond, isomer, isotope, lipid, metabolism, mixture, molecule, monosaccharide, nucleic acid, nucleotide, nucleus, peptide bond, pH, polar molecule, polymer, polysaccharide, protein, RNA, solution, starch.

2. Given an element, use the periodic table to diagram its electron clouds and figure the number of protons and neutrons in the nucleus.

3. Be able to determine the atomic mass, atomic number, or number of protons if you are given the other two.

4. Define covalent, ionic and hydrogen bonds. Be able to compare and contrast them.

5. Be able to give the monomers, functional groups, and clues of what to look for, for each of the four polymers we studied. Also be able to give and recognize examples of these four types of organic molecules.

6. Be able to determine the class of organic molecule by looking at a 3D or 2D model of it. Be able to explain what characteristics enabled you to make your decision.

7. Be able to define hydrolysis and demonstrate on 3D or 2D model(s) of organic molecules where/how hydrolysis would take place.

8. Be able to define dehydration synthesis and demonstrate on 3D or 2D model(s) of organic molecules where/how dehydration synthesis would take place.

9. Be able to diagram the range of the pH scale and label the areas of high acidity and low acidity, high basicity and low basicity, and neutrality. Know the difference between a strong acid and a strong base.

10. Explain what is meant by the statement "We live in a Carbon-based world."

11. Be able to compare ions and isotopes.

12. Through testing in the lab, be able to determine what type of organic molecule an unknown substance is.