

Chapter 2 Chemical Components of Cells

I. Chemical bonds

A. Atoms

1. electrons
2. protons
3. atomic number
4. atomic weight
5. molecular weight

B. Outermost electrons

1. electron shell
2. 2, 8, 8
3. chemical bonds

C. Ionic bonds

1. ions
2. anions
3. cations
4. electrostatic attraction

D. Covalent bonds

1. molecule
2. single, double, triple bonds

E. Hydrogen bonds

1. hydrophilic
2. hydrophobic

F. Acids and Bases

1. pH scale
2. OH⁻
3. buffers

II. Molecules in Cells

A. Carbon

B. Sugars - carbohydrates

1. glycosidic bonds
2. oligosaccharide & polysaccharides
3. energy storage
4. structural
 - a. cellulose
 - b. chitin
5. glycoproteins
6. glycolipids

C. Lipids

1. Fatty acid & glycerol
2. amphipathic
3. saturated & unsaturated
4. triacylglycerol
5. steroids
6. phospholipids

D. Proteins

1. amino acids
2. peptide bond
3. N-terminus & C-terminus

E. Nucleic acids

1. nucleotide
 - a. base
 - 1) A, C, G, T, & U
 - b. sugar
 - c. phosphate
2. ATP

III. Macromolecules

A. Subunits

1. sequence

B. Macromolecule shape

1. conformations
2. noncovalent bonds
 - a. hydrogen bonds
 - b. van der Waals attractions
 - c. hydrophilic, hydrophobic interactions