Insta-Review: Unit 1

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Bonding
Water Properties
Macromolecules

Bonding: Ionic Bonds

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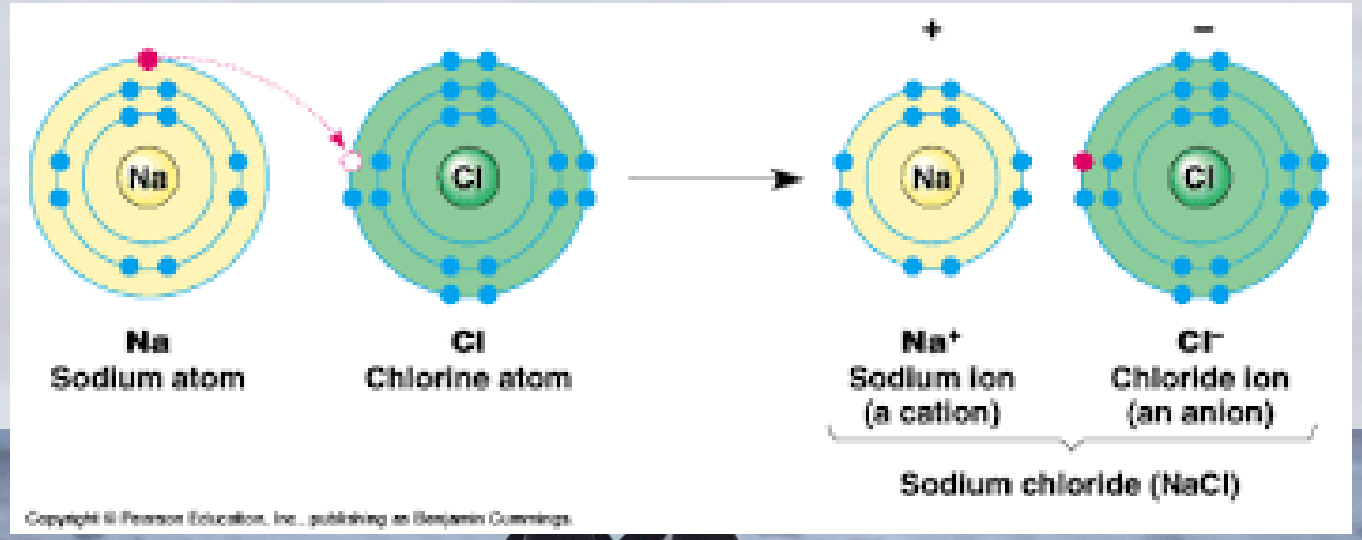
- Ionic Bonds: transfer of electron resulting in ions
  - Cation: Positive Charged Ion
  - Anion: Negative Charged Ion



Bonding: Covalent Bonds

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- Covalent Bonds: Sharing of valence electrons
  - Polar: Unequal sharing
    - Yields partially positive and partially negative charged
  - Nonpolar: Equal sharing
    - AKA NO difference in NOnpolar

Bonding: Hydrogen Bonds

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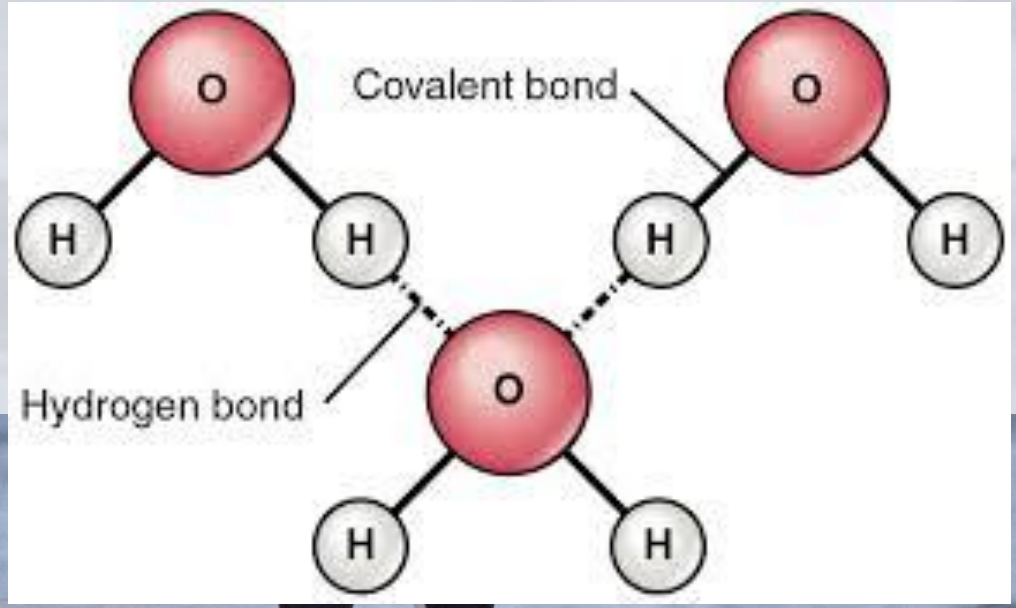
- Hydrogen Bonds: Attractive bond between electronegative atom (partially negative) and hydrogen (partially positive) bonded to electronegative atom



Water Properties

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- Cohesion – attraction between water molecules
  - Surface Tension
- Adhesion – attraction between water and polar molecules
- High Specific Heat
  - Evaporative Cooling
- Less Dense when frozen

Carbohydrates

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- Atoms:
  - Carbon, Hydrogen, Oxygen
  - 1:2:1
- Monomer: Monosacharride
- Examples: Glucose, Starch, Cellulose, Ribose, Deoxyribose, Chitin, Glycogen
- IMPORTANT: We can't break beta linkages in cellulose

Lipids

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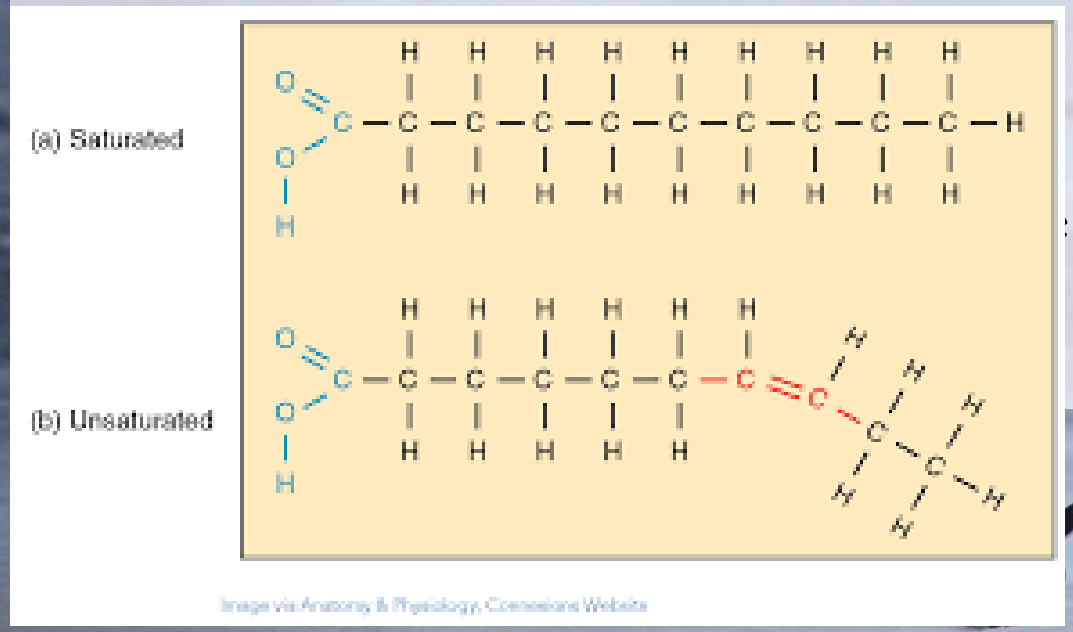
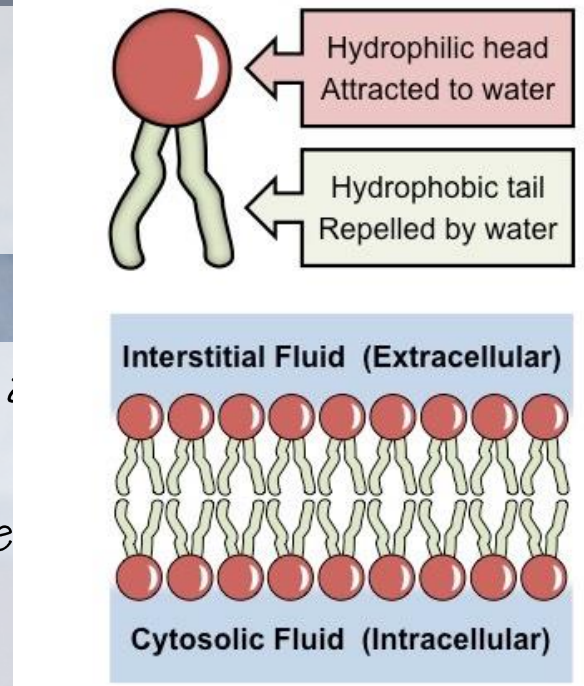
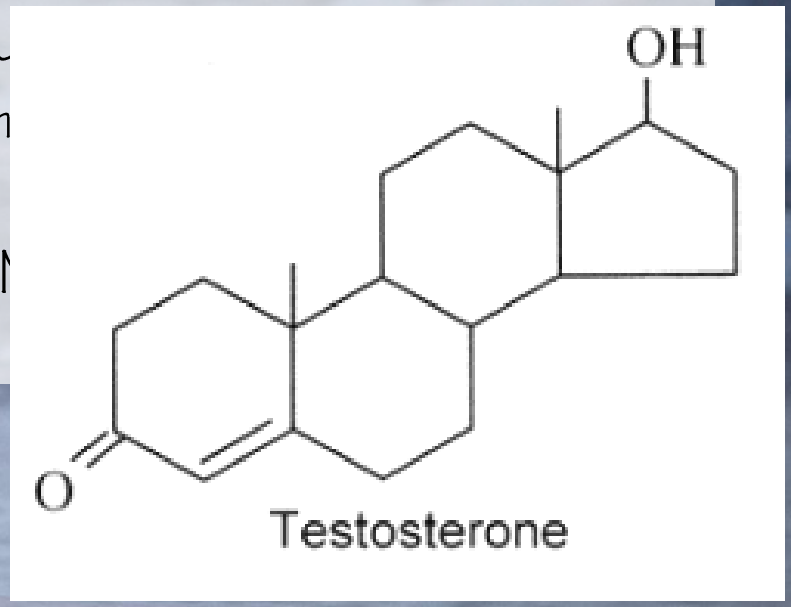
- Atoms:
  - Carbon, Hydrogen, Oxygen
  - 1:2:few
- Monomer: NONE (it is not a polymer)



- Phospholipids: 2 fatty a
  phosphate, & glycerol
  - Main component of the
    membrane
  - Amphipathic
- Steroids: 4 fu
  - Example: Ch
    Estrogen
- IMPORTANT: N





Proteins

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- Atoms:
  - Carbon, Hydrogen, Oxygen, Nitrogen, Sulfur (sometimes)
- Monomer: Amino Acid
  - Hydrogen, Carboxyl, Amino, & R group
- Levels of Structure
  - Primary: String of amino acids
    - Peptide bonds between amino acids
  - Secondary: alpha helix or beta pleated sheet
    - Hydrogen bonds between backbone
  - Tertiary: final 3D structure
    - Any bonds between R groups

Nucleic Acids

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- Atoms:
  - Carbon, Hydrogen, Oxygen, Nitrogen, Phosphorus
- Monomer: Nucleotide
  - Phosphate, Pentose Sugar, & Nitrogenous Base
- Examples:
  - DNA
  - RNA

- Nitrogenous Bases
  - Purines: double ring structure
    - Adenine & Guanine
  - Pyrimidines: single ring structure
    - Cytosine, Uracil, & Thymine
- Pentose Sugar
  - DNA: deoxyribose
  - RNA: ribose
- Base Pairing: AT, AU, CG