BIOCHEMISTRY

ATOMS
TYPES OF BONDS
WATER
pH

PERIODIC TABLE OF THE ELEMENTS

Basic Chemistry

Electrons
Protons
Neutrons

Atomic Number
Atomic Mass
Ions
ISOTOPES
TYPES OF CHEMICAL BONDS

IONIC - atoms become charged and opposite charges attract

- Can be strong or weak, dissolve in water

COVALENT - atoms share electrons (strongest bonds)

- Strong - do not dissolve in water...in fact, water molecules are held together by this type of bonding...more in a bit...

HYDROGEN BONDS - bonds between a hydrogen atom in one molecule and a negatively charged atom from another molecule.
Water & pH

OH⁻  \[\delta^-\]  \[\delta^+\]  Hydroxide Ion

H⁺  \[\delta^+\]  \[\delta^-\]  Hydrogen Ion

a.k.a. Proton

Basic

High OH⁻ concentration

Acidic

High H⁺ concentration
BIOLOGICAL MOLECULES

LIPIDS (Fats, Waxes, Oils)

(a) Dehydration synthesis linking a fatty acid to glyceroxl

(b) A fat molecule
20 possible side groups:
- Hydrophobic
- Hydrophilic
- Positive charge
- Negative charge
- Polar
- Non-polar

Backbone

Side Groups

PRIMARY STRUCTURE
Like proteins, nucleic acids have a backbone and "side groups."

For nucleic acids, these side groups are called "bases" and there are only 4 of them.