GENERAL BIOLOGY Lecture 4 - Inorganic & organic chemistry

I. Life and chemistry

A. What elements are important?

1.	**C**	**7.**	**S**	**13.**	**Cu**
2.	**H**	**8.**	**Ca**	**14.**	**Zn**
3.	**O**	**9.**	**Fe**	**15.**	**Cl**
4.	**P**	**10.**	**Mg**	**16.**	**Mo**
5.	**K**	**11.**	**B**	**17.**	**I**
6.	**N**	**12.**	**Mn**		

I C HOPKNS CaFe Mg B Mn CuZn Cl Mo
C, H, & O - 96% of Human weight
Water (H_2O) - 75 - 85% of cell weight

B. What makes elements important?

1. Metabolism - photosynthesis, respiration, & other metabolism
2. Heredity and evolution
3. Growth and development
4. Growth regulation
5. Physiological ecology

II. General chemistry

A. Composition of elements

1. Atoms - smallest portion of an element
a) Protons
b) Electrons
c) Neutrons

B. Function of atoms

1. Electron excitation (energy)
2. Chemical bonds
a) Covalent - share electrons
b) Ionic - charges attract
c) Hydrogen - weak attraction of H & O

C. Important chemical phenomena

1. Acid / base pH
a) Equilibrium **pH = pKa + log[Products]/[Reactants]**
b) Availability & solubility of ions
c) Buffering capacity
2. Oxidation / reduction
a) Donate / accept electrons

III. Types of chemistry

A. Inorganic
B. Organic
1. Biochemistry

IV. Where is chemistry found? (everywhere)

A. In the cell

1. Organelles
2. Cytoplasm
3. Membrane
4. Cell walls