

## November 13 - Water (day 1)

\* Most of water's function stem from its chemical structure.

\* molecule is electrically neutral

\* H bonds covalently with O

\* H = 1Pt                      O = 8Pt

Polarity : an unequal distribution of charges that renders the H<sub>2</sub>O molecule slightly neg at the "O" side and pos at the "H" side  
Oxygen will pull the e- toward its nucleus!

Polar Compound - a compound with uneven pattern of charge (water)

What is the significance of polarity?

sub. is good at dissolving things

Why is this important?

Water dissolves substances like sugars, proteins, and ionic compounds

Breaking up ionic compounds **frees ions** so they can participate in biological reactions

ie muscle contraction, nerve impulses

Hydrogen Bonding- a weak attraction  
between water molecules (1/5 charge)

\*Oxygen = delta neg (see coloring)

e- spend **more** time around "O"

\*Hydrogen = delta pos (see coloring)

e- spend **less** time around "H"

Hydrogen bonds are weak...but they are very  
important! 1/5 charge can do work!

# ATTRACTIVE FORCES

1) cohesion - att. forces btwn **like** particles

\*surface tension - water clings to itself

2) adhesion- att. forces btwn **unlike** particles

\*water clings to sides of container

3) capillarity -co/ad to move substances upward through narrow tubes

\* water moves through stems to outer parts of plant

# TEMPERATURE MODERATION

When water is heated, thermal energy absorbed must **first...** break hydrogen bonds between molecules

**then...** motion of molecules can increase

**then...** temp. of water is raised

Water's ability to absorb large amt. of energy helps keep cells at an even temperature (homeostasis)

