Transport through the Cell

* this section describes **how** substances get in and out of the cell

WHAT DO CELLS NEED IN ORDER TO SURVIVE?

WHAT DO CELLS NEED TO GET RID OF IN ORDER TO SURVIVE?

2 ways materials move across the membrane:

1. **Passive Transport –** uses NO energy
* moves substances from high concentration to

low concentration (going with the concentration gradient)

 DIFFUSION – the movement of particles from high to low conc.

 can be made faster by:

1. increasing the temperature – hot bread can be smelled across the house; more energy, faster movement
2. increase the concentration – more particles hit each other

 faster and therefore move faster

1. increasing the pressure – stirring will move particles faster
2. Simple Diffusion – moving oxygen and carbon dioxide through

 the membrane

* moves through the phospholipids – Oxygen in & carbon dioxide out
1. Facilitated Diffusion - moving glucose into the cell through carrier

 proteins (attach to protein, it changes shape

 to bring glucose in t the cell)

1. Osmosis – the diffusion of WATER through a selectively permeable

 Membrane

 -water moves through pore/channel proteins EITHER in or out

View: How Diffusion works, Facilitated Diffusion, and Osmosis take each quiz after viewing each section

[Animation- How Diffusion#185ED](http://highered.mheducation.com/sites/0072495855/student_view0/chapter2/animation__how_diffusion_works.html)

 Movement of water depends on the concentration of the solute in

 the solution:

SOLUTION = SOLVENT (does the dissolving) + SOLUTE (substance that

 Is dissolved)

Solutions = 100%, so if solute is 40%, then solvent is 60%

 If solute is 10%, then solvent is \_\_\_\_\_\_\_

If a cell is 20% solute and is put into a solution that is 0% solute, what will happen to that cell?

If a cell that is 20% solute is put into a solution that is 50% solute, what will happen to that cell?

If a cell that is 20% solute is put into a solution that is 20% solute, what will happen to that cell?

**II. Active Transport –** uses energy to move particles across membrane

 - move substances from **low to high concentration**

 - moves against the concentration gradient

1. Na-K Pump – moves these ions from low to high concentrations
* this pump uses about 1/3 of all of our energy
* this allows messages to be sent along our nerves



Along the axon, the pump allows a message t be received.

Once a message is sent, the pump works to return the ions to back to their side of the axon so another message can be received

1. Endocytosis – bringing a particle in the cell that cannot get in

 through the membrane



if the particle is a solid, then it is called Phagocytosis

if the particle is a liquid, then it is called Pinocytosis

1. Exocytosis – to get rid of particles that cannot get out

 through the cell membrane

