Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour: \_\_\_\_\_\_\_\_\_\_\_\_

Cell and Transport Webquest

Part 1- Cell membrane

<http://www.wisc-online.com/objects/index_tj.asp?objid=AP1101>

1. Why does the cell membrane have transport proteins?
2. Draw a diagram of the phospholipid bilayer and **explain** what it means.
3. Why is cholesterol in the membrane?

Answer the questions on the website.

***Part 2: Fluid Mosaic Model***

***Go to*** [***http://www.susanahalpine.com/anim/Life/memb.htm***](http://www.susanahalpine.com/anim/Life/memb.htm) ***and view animation.***

1. What do you notice about the proteins that are imbedded in the phospholipid bi-layer? (Hint: think about their relative position to each other!)

Part 3 Solutions   
<http://www.chem4kids.com/files/matter_solution.html>  
  
1. What is a solution?

2. Explain the difference between the solute and solvent.

3. Explain how solutions are related to the cell.

Part 4 Diffusion and Osmosis   
<http://www.mun.ca/biology/Osmosis_Diffusion/tutor2.html>  
  
1. Read the overview and define all the terms below

Diffusion -

Osmosis –

Passive Transport –

Concentration Gradients -

2. Scroll down to example #1 (how perfume spreads throughout a room) and read it. What is the name of this process?

3. Next scroll down to example #2 (salt dissolving in water) and read it. In your OWN words, why do Na and Cl ions (from salt) dissolve in water?

Next scroll down to example #3 (diffusion will occur through a permeable membrane)  
2. What is the solute concentration in side A (percent in figure 4.2)?\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is the solvent concentration in side A (percent in figure 4.3)?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. What is the solute concentration in side B( percent in figure 4.2)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
What is the solvent concentration in side B(percent in figure 4.3)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Draw a diagram of the two sides (A and B) and show the **movement** of solute and solvent (with an **arrow**) across the permeable membrane. **Label the concentrations of solute and solvent under both sides.**

Part 5: Diffusion and osmosis

**Google to find the answers.**

**Read the intro:**

1. What is the difference between passive and active transport? (include both the energy requirement and the direction of movement)
2. What is equilibrium?
3. What happens to the movement of molecules when they reach equilibrium?
4. How does facilitated diffusion differ from regular diffusion?
5. How are facilitated diffusion and regular diffusion the same?

**Part 6- How stuff moves through the cell membrane.**

**Go to** [**http://www.teachersdomain.org/asset/tdc02\_int\_membraneweb/**](http://www.teachersdomain.org/asset/tdc02_int_membraneweb/)

**After clicking on each type of molecule and viewing how they move, list how the following molecules enter/exit the cell membrane. If needed, indicate what type of membrane protein allows the molecule to enter/exit the cell.**

Water

Oxygen

Carbon Dioxide

Glucose

Sodium/Potassium Ions

Part 7- osmosis

**Go to** [**http://www.stolaf.edu/people/giannini/flashanimat/transport/osmosis.swf**](http://www.stolaf.edu/people/giannini/flashanimat/transport/osmosis.swf) **(“Cell biology animations”) and select “osmosis” under** “cell transport”.

1. In the basic animation, describe the movement of the water molecules across the membrane. Consider the volume of fluid on each side.

***Now click on “Add salt” and observe what happens.***

1. After salt (in reality there would be many Na+ and Cl- ions) is added, how do the water molecules move across the membrane? Is there an overall direction of movement (where do most of the molecules end up?)

**Part 8- Plant cells**

**Now go to** [**http://www.kscience.co.uk/animations/turgor.htm**](http://www.kscience.co.uk/animations/turgor.htm) **Watch the animation loop to understand what happens with plant cells**

1. Plant cells depend on being in hypotonic solutions to build turgor pressure, which helps them to stand up. What is turgor pressure?
2. What structure in a plant cell allows it to take in a great deal of water without diluting materials in the cytoplasm too much?
3. What structure keeps a plant cell from exploding due to being in a hypotonic solution?

Part 9 Osmosis   
<http://biologyjunction.com/tonicity%20animations.htm>

1. Look at the first diagram.

What type of solution is the cell in (hypertonic, hypotonic, or isotonic)?\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Run the animation)   
Which way does the water move? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What happens to the cell? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Look at the second diagram.

What type of solution is the cell in (hypertonic, hypotonic, or isotonic)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Run the animation)  
Which way does the water move? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
What happens to the cell? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Look at the third diagram.

What type of solution is the cell in (hypertonic, hypotonic, or isotonic)?\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Run the animation)  
Which way does the water move? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
What happens to the cell? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_