**CELL MEMBRANE & CELL TRANSPORT**

 **PASSIVE and ACTIVE Activity**

**Day 1**

**PART I: CELL MEMBRANE**

**PART I: CELL MEMBRANE**



**WEBSITE #1:**

[**http://www.wisc-online.com/objects/index\_tj.asp?objID=AP1101**](http://www.wisc-online.com/objects/index_tj.asp?objID=AP1101)

1. What is the BASIC UNIT of LIFE?

2. What are the TWO MAIN COMPONENTS that make up the CELL MEMBRANE?

 A.

 B.

3. What types of molecules can EASILY go through your cell membrane or are

PERMEABLE to the cell membrane?

 A.

 B.

 C.

4. What types of molecules CANNOT easily go through your cell membrane?

 A.

 B.

 C.

6. (On a separate paper) DRAW THE PHOSPHOLIPID BILAYER of the CELL MEMBRANE, labeling and listing the function of each component.

**Quiz 1**

7. TRUE OR FALSE: CARBOHYDRATES also make up part of the cell

membrane...What is their FUNCTION?

**Day 2**



**WEBSITE #2:** [**http://www.wiley.com/college/pratt/0471393878/student/animations/membrane\_transport/index.html**](http://www.wiley.com/college/pratt/0471393878/student/animations/membrane_transport/index.html)

1. TRUE or FALSE: Some of the metabolically important molecules your body needs in

order to survive CANNOT pass through the lipid bilayer of the cell membrane. Explain why.

2. The main component of the cell membrane is made of a WATER LOVING

(hydrophilic) or WATER HATING (hydrophobic) molecule.

What is the name of this molecule?

**Quiz 2**

 (On a separate paper) Draw and explain its structure.

3. Which part of the membrane might function to transport hydrophilic or WATER

LOVING substances into the cell? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. What are TWO REASONS why a substance cannot make through the LIPID

BILAYER?

A.

B.

5. What is facilitated transport (facilitated diffusion)?

6. Facilitated Transport ALWAYS involves what part of the CELL MEMBRANE?

7. In terms of energy, what is the difference between ACTIVE TRANSPORT vs.

PASSIVE TRANSPORT?

8. ACTIVE TRANSPORT is like moving \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_because it requires

the input of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

9. What is the energy used to facilitate ACTIVE TRANSPORT? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 What it stands for?

**Day 3**

**PART II: PASSIVE TRANSPORT**



**WEBSITE #1:**

[**http://programs.northlandcollege.edu/biology/Biology1111/animations/transport1.html**](http://programs.northlandcollege.edu/biology/Biology1111/animations/transport1.html)

 **Choose PASSIVE TRANSPORT FIRST**

1. Define **PASSIVE TRANSPORT:**

2. What are **three types of PASSIVE TRANSPORT?**

A.

B.

C.



**PRESS “NEXT”**

**PARTS of a CELL MEMBRANE:**

3. What is the significance of the membrane fluidity?

4. What is the function of INTERGRAL PROTEINS?

5. Cell Membranes are said to be **SEMIPERMEABLE,** what does that mean?



**PRESS “NEXT”**

**DIFFUSION**

1. Define simple diffusion.

2. Define a **CONCENTRATION GRADIENT.**

**PRESS “NEXT”**

**3. Identify THREE factors that can have an effect on the RATE of DIFFUSION:**

**a.**

**b.**

**c.**

4. What is meant by the term **EQUILIBRIUM**?

5. (On a separate paper) Draw PICTURES showing a CELL before diffusion, during diffusion, and after diffusion (in equilibrium)

**Quiz 3**

**Day 4**



 **PRESS “NEXT”**

**FACILITATED DIFFUSION**

1. Define facilitated diffusion.

2. Does facilitated diffusion take energy from the cell?

3. What molecules within the cell membrane play a VITAL ROLE in FACILITATED

DIFFUSION? Explain how they FACILITATE the movement of molecules.

**Quiz 4**

4. (On a separate paper) Draw and label the three steps of facilitated diffusion.



**PRESS “NEXT”**

**OSMOSIS**

1. Define osmosis:

2. Explain how osmosis is a UNIQUE form of diffusion.

3. Identify hypotonic, hypertonic, and isotonic solutions.

4. Draw a labeled diagram showing a cell is in a HYPOTONIC solution, a cell in Hypertonic solution, and a cell in Isotonic solution….DRAW a BEFORE

and AFTER PICTURE to show the change in size of the cell.

**Day 5**

**WEBSITE #2:**

[**http://www.vivo.colostate.edu/hbooks/cmb/cells/pmemb/osmosis.html**](http://www.vivo.colostate.edu/hbooks/cmb/cells/pmemb/osmosis.html)

**Scroll down "The classic demonstration of osmosis and osmotic pressure is to immerse red blood cells in solutions of varying osmolarity and watch what happens"**

1. **What does a Red Blood Cell look like in an ISOTONIC SOLUTION?**

 **Draw it below and explain why it would look this way.**

1. **What does a Red Blood Cell look like in a HYPERTONIC SOLUTION?**

**Quiz 5**

**Draw it below and explain why it would look this way.**

1. **What does a Red Blood Cell look like in a HYPOTONIC SOLUTION?**

 **Draw it below and explain why it would look this way.**



**WEBSITE #3: Diffusion through Membrane**

[**http://www.indiana.edu/~phys215/lecture/lecnotes/diff.html**](http://www.indiana.edu/~phys215/lecture/lecnotes/diff.html)

1. Diffusion ALWAYS goes from \_\_\_\_\_\_\_\_\_\_\_\_\_\_concentration to

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_concentration and (does or does not) require energy (ATP).

2. At the beginning of the animation, where are there more particles? On which side of

the membrane? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Are the particles moving in only one direction, or are they moving in both

directions?

4. Watch the animation for 2 minutes or until it reaches NO NET FLOW. How many

particles are on each side of the membrane? \_\_\_\_\_\_\_

5. When there is NO NET FLOW the cell is said to reach -------------------

6. What is meant by the website author when he states, “diffusion goes from the higher

concentration side to the lower concentration side? DRAW A PICTURE TO

ILLUSTRATE YOUR POINT!

**Day 6**

**WEBSITE #5: Diffusion, Dialysis and Osmosis Tutorial**

[**http://nhscience.lonestar.edu/biol/osotutor.html**](http://nhscience.lonestar.edu/biol/osotutor.html)

1. EXPLAIN why food coloring particles are FIRST condensed into a single drop, but

after revisiting the cup of water several minutes later, the entire cup of water is colored.



**CLICK ON ANIMAL CELL MEMBRANE TUTORIAL**

**Animal Cell Membrane Tutorial - Page 1 of 3**

***The following image shows a*** *normal**functioning* ***red blood cell as it would***

***appear when in plasma. Select the correct answers to the following***

***questions.***

1. The plasma is a(an)\_\_\_\_\_\_\_\_\_\_\_\_\_solution to the solution in the red

blood cell.

2. The diffusion of water(osmosis) into the cell is \_\_\_\_\_\_\_\_\_the diffusion of

water(osmosis)out of the cell.

3. The turgor pressure of the RBC is \_\_\_\_\_\_\_\_\_zero.

4. The pressure on the inside of the cell is\_\_\_\_\_\_\_\_\_\_\_the pressure on the

outside.

**NOW, CLICK ON “NEXT” at the BOTTOM of the page.**

**Animal Cell Membrane Tutorial - Page 2 of 3**

***Below are images showing what happens to a normal red blood cell when placed in a 1.3% salt solution. Select the correct answers to the following questions.***

1. This red blood cell can now be described as being \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2. The % concentration of water in the cell was \_\_\_\_\_\_\_\_\_\_\_\_\_the %

concentration of water in the salt solution.

3. Thus the net direction of osmosis was\_\_\_\_\_\_\_\_\_\_\_\_\_\_the red blood cell.

4. The salt solution was\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_relative to the red blood cell.

**NOW, CLICK ON “NEXT” at the BOTTOM of the page.**

**Animal Cell Membrane Tutorial - Page 3 of 3**

***Below are images showing what happens to a normal red blood cell when***

***in distilled water. Select the correct answers to the following questions.***

1. This red blood cell can now be described as being\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2. The distilled water was\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_relative to the cell.

3. The cell was\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_relative to the distilled water.

4. The direction of net osmosis was\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_the cell.

**Day 7**

**PART III : ACTIVE TRANSPORT**



**WEBSITE #1:**

[**http://programs.northlandcollege.edu/biology/Biology1111/animations/transport1.html**](http://programs.northlandcollege.edu/biology/Biology1111/animations/transport1.html)



**CLICK on “ACTIVE TRANSPORT”**

1. Define ACTIVE TRANSPORT.

2. Why might a cell go through active transport?

3. What are THREE TYPES of ACTIVE TRANSPORT?

A.

B.

C.



**CLICK on “ION PUMPS”ON THE BOTTOM of ANIMATION BAR**

4. What is ATP? What does ATP turn into after it is used?

5. What is an ion pump? Explain using the words CONCENTRATION GRADIENT,

PROTEIN, and CHARGE.

**Quiz 6**

(On a separate paper) DRAW A PICTURE in addition to your explanation!



**CLICK on “Cotransport”ON THE BOTTOM of ANIMATION BAR**

6. What is COTRANSPORT? EXPLAIN in terms of steps using an example.

STEP ONE:

STEP TWO:

STEP THREE:

**Quiz 7**

7. (On a separate paper) draw and label each step in # 6

**Day 8**

**CLICK on “Endocytosis”ON THE BOTTOM of ANIMATION BAR**

8. What is ENDOCYTOSIS?

9. What are the THREE TYPES of ENDOCYTOSIS?

A.

B.

C.

10. What is PHAGOCYTOSIS?

11. What are PSEUDOPODS?

12. What is PINOCYTOSIS?



**WEBSITE #2**

[**http://www.maxanim.com/physiology/Endocytosis%20and%20Exocytosis/Endocytosis%20and%20Exocytosis.htm**](http://www.maxanim.com/physiology/Endocytosis%20and%20Exocytosis/Endocytosis%20and%20Exocytosis.htm)



**Read ENDOCYTOSIS and EXOCYTOSIS text**

1. WHY does a cell go through ENDOCYTOSIS? EXOCYTOSIS?

**Quiz 7**

2. (On a separate paper) draw, color, and label exocytosis and endocytosis.

3. What is the difference between PHAGOCYTOSIS and PINOCYTOSIS?

[**http://www.d214.org/assets/2/workflow\_staging/Documents/10060.PDF**](http://www.d214.org/assets/2/workflow_staging/Documents/10060.PDF)