**DIFFUSION/OSMOSIS VIRTUAL LAB**

**(to supplement NYS “Diffusion Through A Membrane”)**

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**Diffusion**

**Click on the link below and watch the animation. The inofrmation will be needed to answer some of the following questions:**

[**http://www.wisc-online.com/objects/index\_tj.asp?objID=AP1903**](http://www.wisc-online.com/objects/index_tj.asp?objID=AP1903)

1. Is diffusion active or passive transport of molecules across

the cell membrane?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. In the very beginning, how does the concentration of the blue particles on side A

compare to that of side B?

3. Diffusion moves molecules down the concentration gradient from areas of

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ concentration to areas of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ concentration.

4. Eventually the two sides will come to equilibrium. What is equilibrium? \_\_\_\_\_\_\_\_\_

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5. What happens to the movement of molecules when their temperature is raised?

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6. What happens to the movement of molecules when their temperature is lowered?

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**Watch the video:** [**http://highered.mcgraw-hill.com/sites/0072495855/student\_view0/chapter2/animation\_\_how\_diffusion\_works.html**](http://highered.mcgraw-hill.com/sites/0072495855/student_view0/chapter2/animation__how_diffusion_works.html)

**Osmosis**

**Click on the link below to see information on osmosis:** [**http://www.wisc-online.com/objects/index\_tj.asp?objID=AP11003**](http://www.wisc-online.com/objects/index_tj.asp?objID=AP11003)

8. What is osmosis? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. What does the dashed line in the beaker separating the two sides

represent? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. Why are they assuming the large molecules will stay on their own side of the

membrane?

11. Because molecules will move from one side to another to come to an equilibrium, or

balance of concentration, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_moves from side B to

side A, so the water level on side A goes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

12. In living things, cells must be in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ solution where water

leaves and enters the cell at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

13. What happens to a cell in a concentrated, hypertonic environment? (Click on the

“View Movie” icon to find out.) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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14. What happens to a cell in a concentrated, hypotonic environment? (Click on the

“View Movie” icon to find out.) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Watch the video:**

[**http://highered.mcgraw-hill.com/sites/0072495855/student\_view0/chapter2/animation\_\_how\_osmosis\_works.html**](http://highered.mcgraw-hill.com/sites/0072495855/student_view0/chapter2/animation__how_osmosis_works.html)

**NYS (Simulated) DIFFUSION/OSMOSIS LAB**

**Click on** [**http://bioweb.wku.edu/courses/Biol114/Osmosis/Osmosis0.asp**](http://bioweb.wku.edu/courses/Biol114/Osmosis/Osmosis0.asp)

**\*\*Read the introductory information. Click on the red circles whenever you see them in the lab, and keep clicking on each one until you have completed the information at that red circle**

1. Define *diffusion*: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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2. Define *dynamic equilibrium*:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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3. Indentify (2) molecules that easily diffuse across a membrane: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Why is active transport of molecules considered “active” ? What is required?

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5. Click on the red circle. What is the difference between the way small and large

molecules diffuse through the cell membrane?

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6. Cell membranes are *selectively permeable*. What does this mean?

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7. Define *diffusion*: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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8. Why is special about dialysis tubing being that it is good to be used in this

experiment about osmosis?

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**Click on the red circle to proceed through the experiment and answer the questions below:**

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9. Starch and most proteins are *macromolecules*. This means they are \_\_\_\_\_\_\_\_\_\_\_\_.

10. Use the key and illustrate the position of molecules at the beginning and end of the experiment. Below are pictures of the dialysis tubing and the beakers.

Key:

**S** = starch

**I** = iodine

**G** = glucose



**Initial State**

**Final State**

11. Which molecule(s) diffused across the “membrane? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. Which molecule(s) did NOT diffuse across the membrane? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_