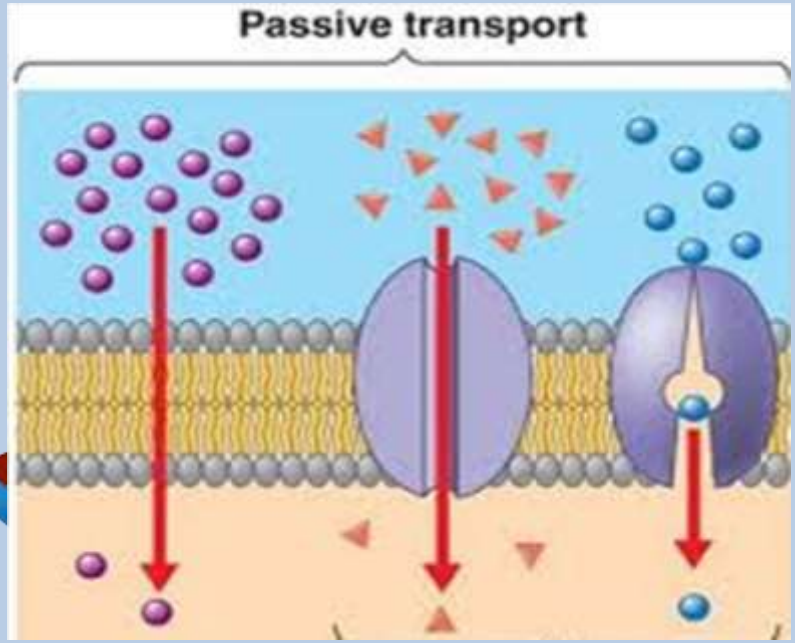
1. What is the structure of the cell membrane called?

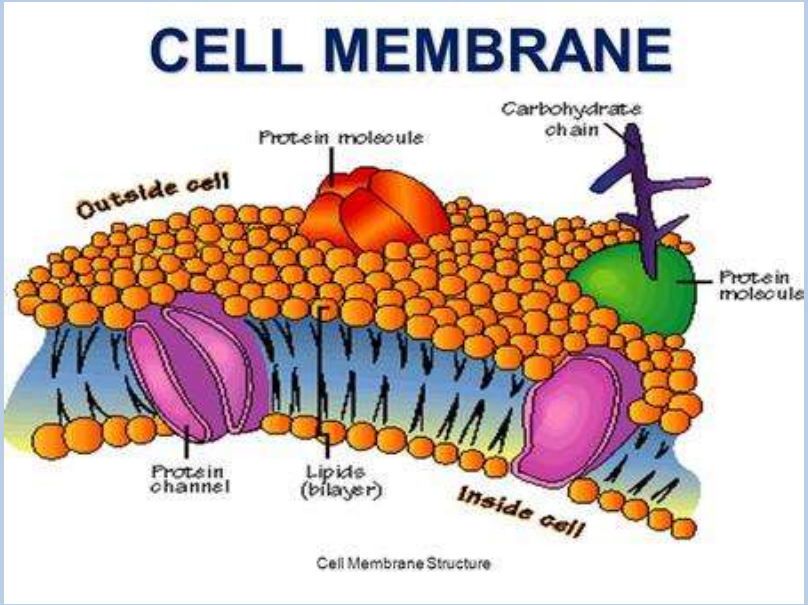
2. What are the three kinds of active transport?

3. Label the picture from left to right:



Cell Membrane

- For the first part of today we will be doing an activity to better understand the structure of the cell membrane

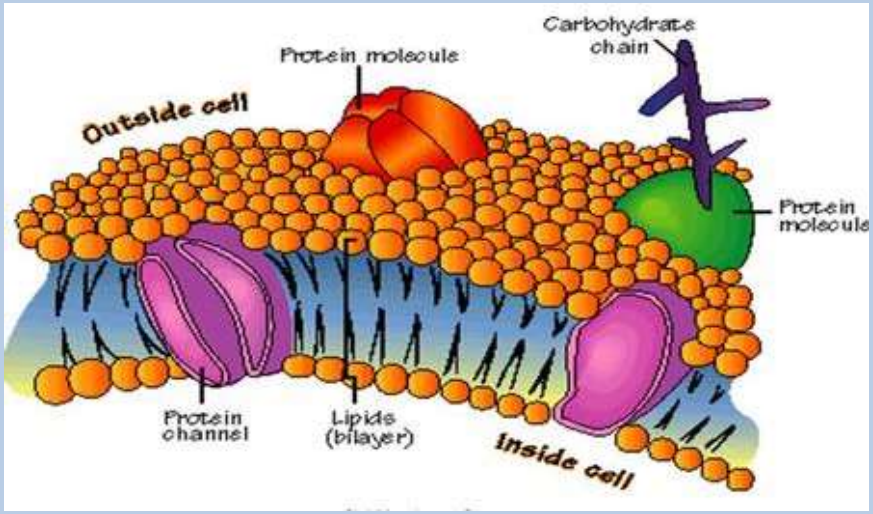


Cell Membrane

- **WITH GOGGLES**
- **In a group;**
  - **follow the instructions**
  - **answer the questions on the lab sheet**

Cell Membrane

1. Do the pre-lab as a group
2. Get checked off
3. Goggle up
4. Bubble activity
   - In groups



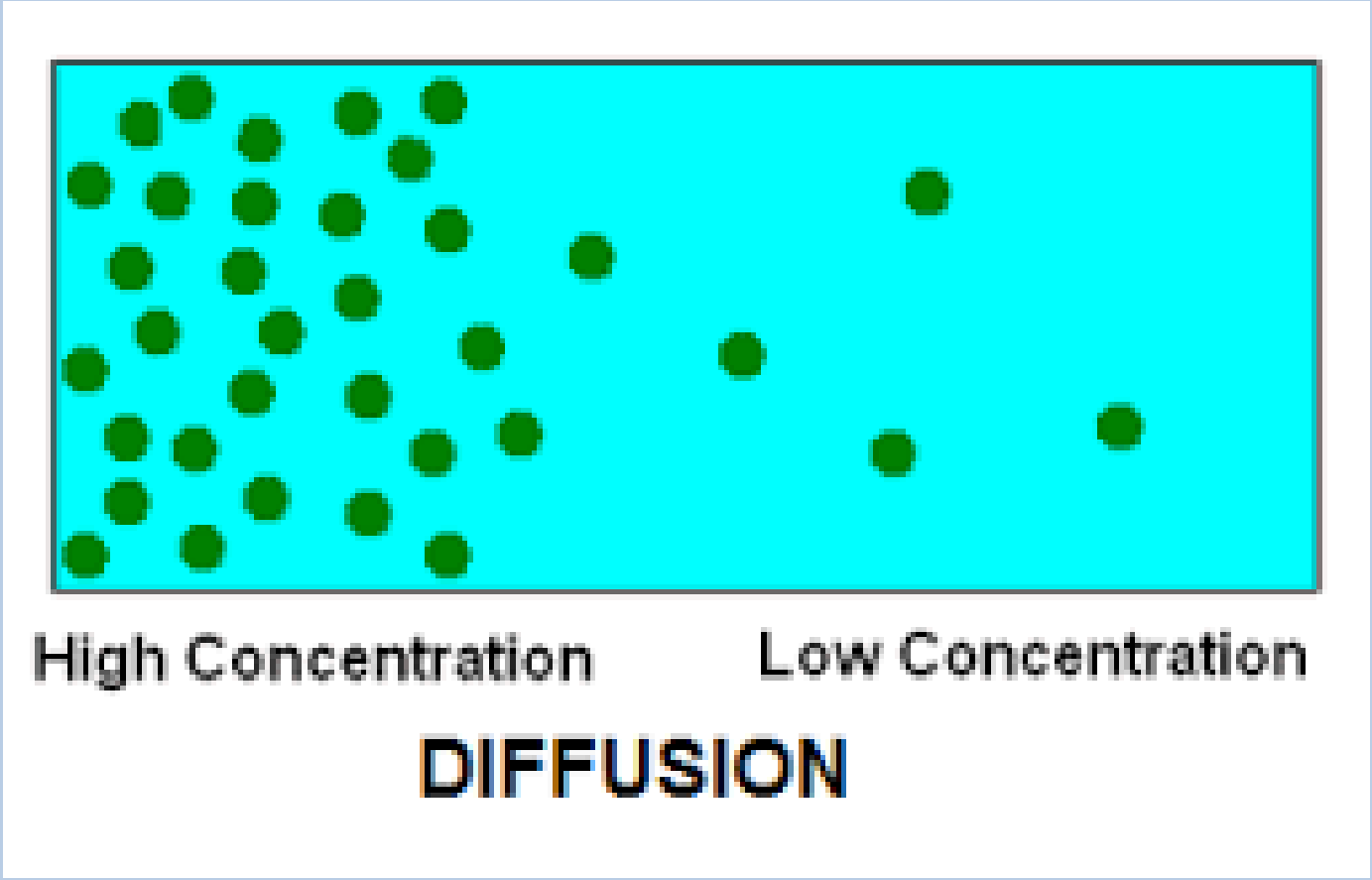

INTERMISSION

Membranes and Molecules

- In your groups review the 3 types of passive transport

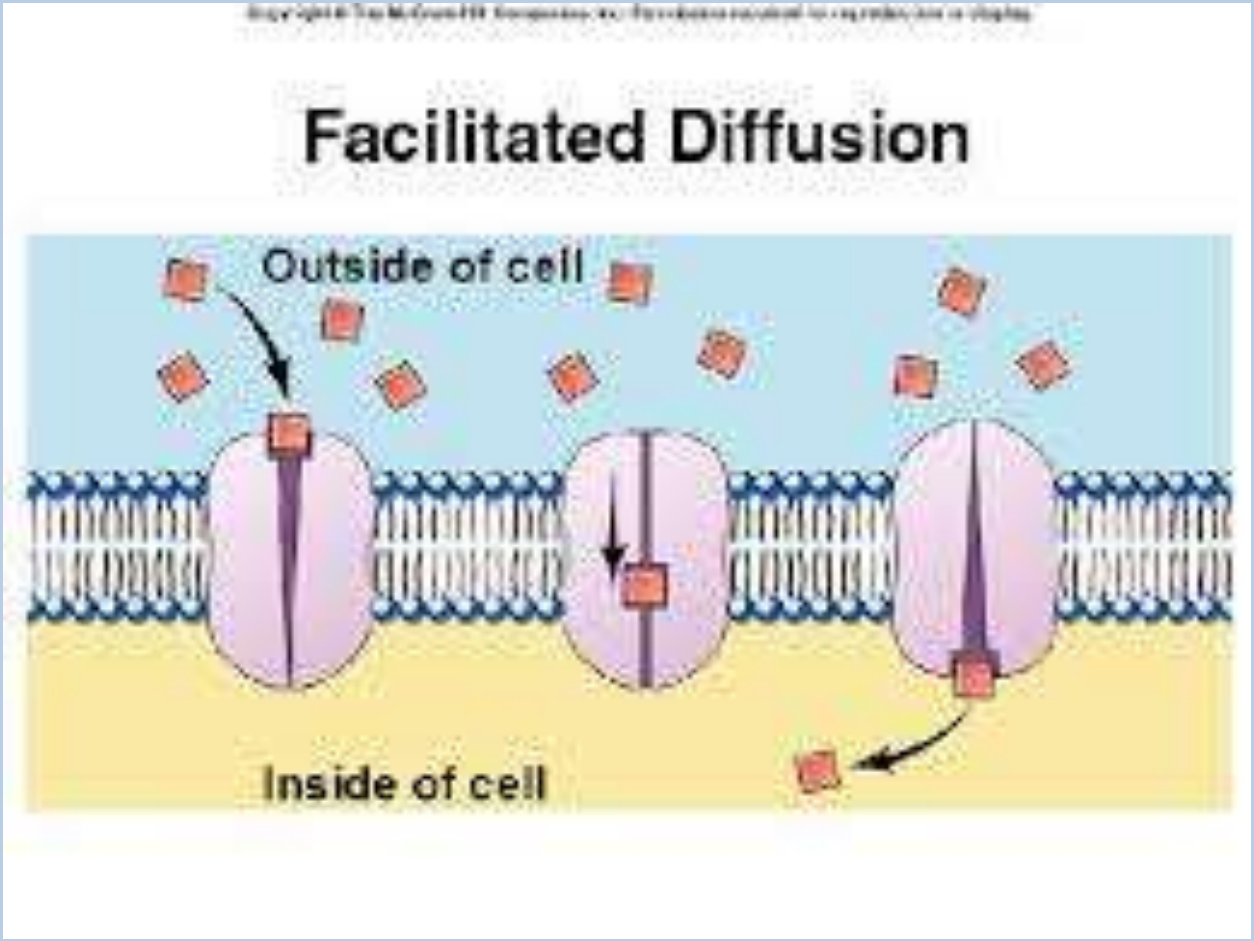
Membranes and Molecules

- **Diffusion**



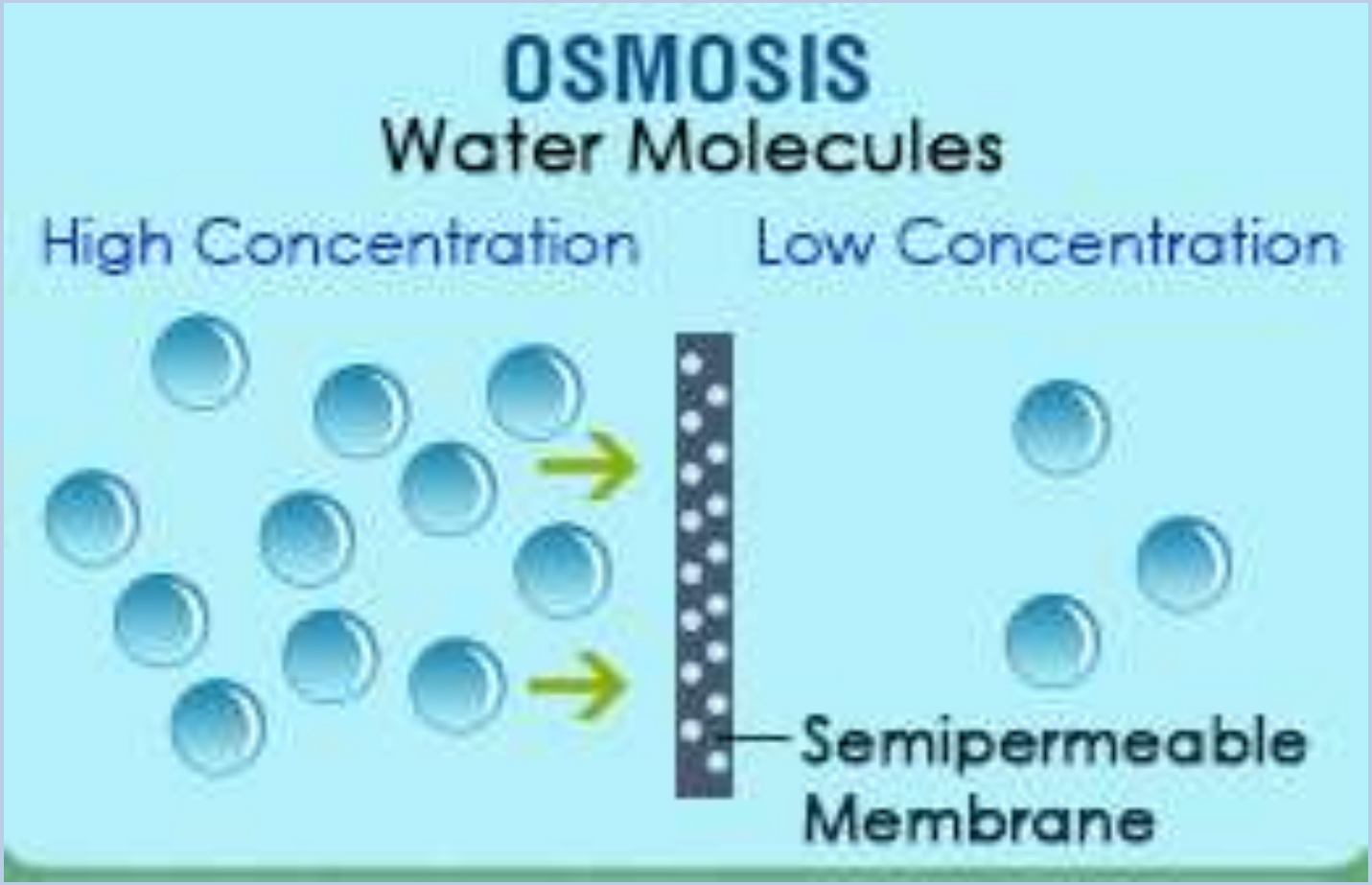
Membranes and Molecules

- **Facilitated Diffusion**



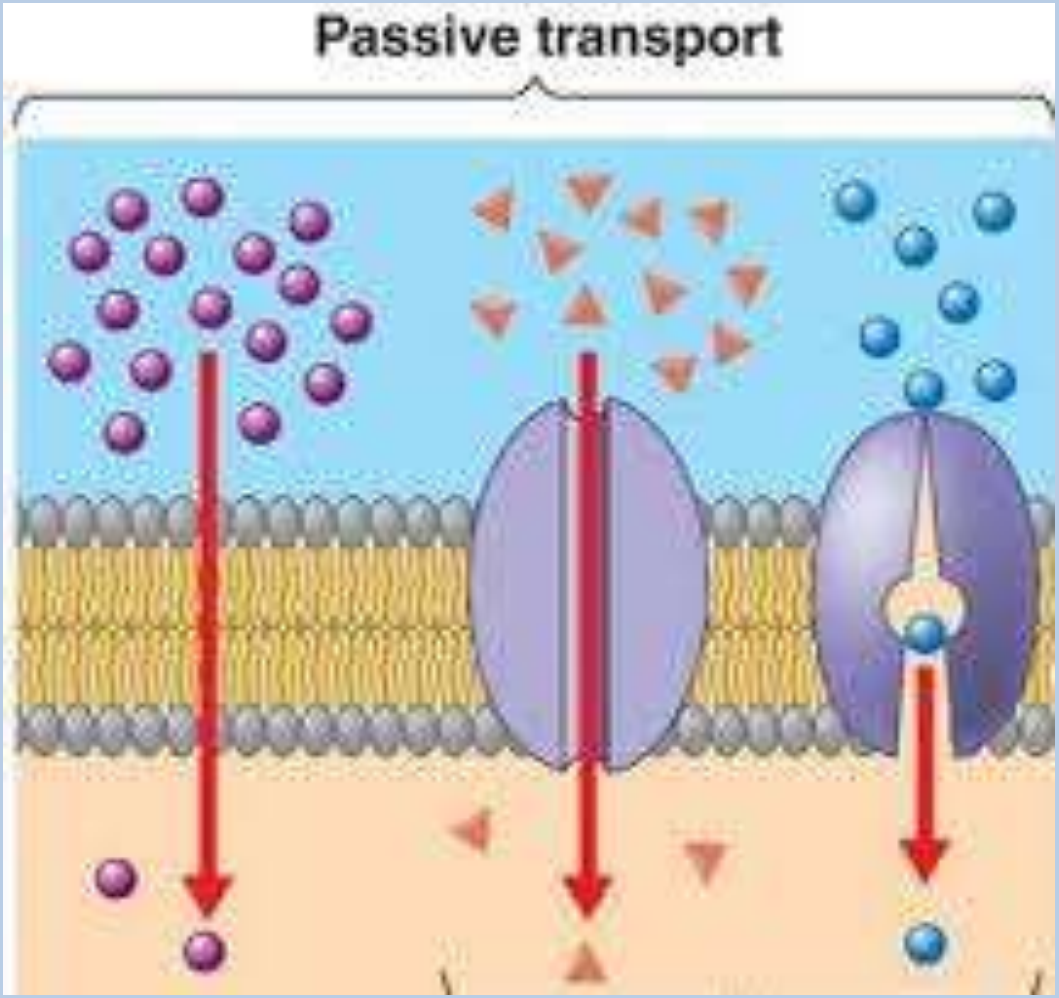
Membranes and Molecules

- Osmosis



Membranes and Molecules

- Passive Transport

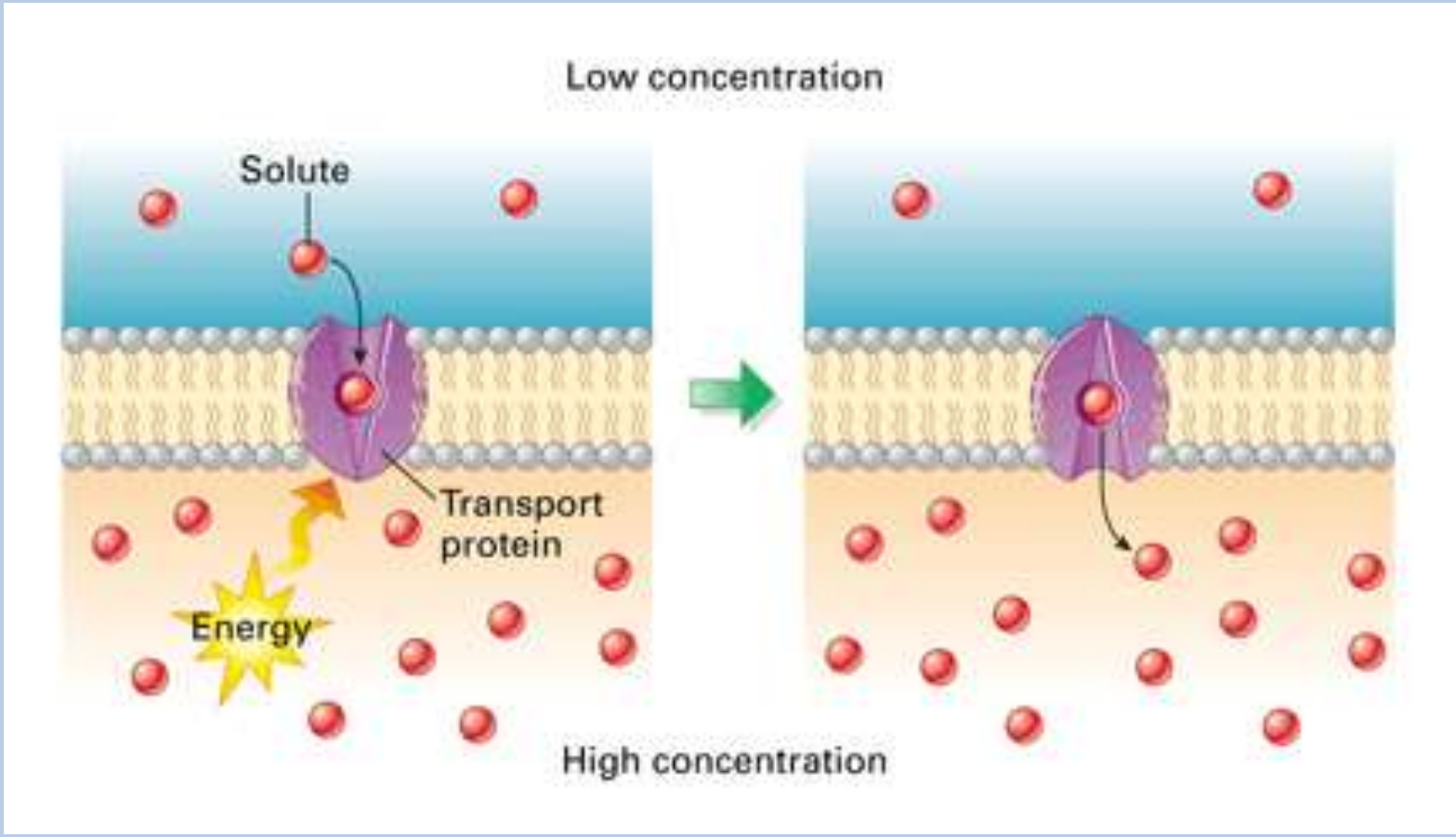


Membranes and Molecules

- In your groups review active transport

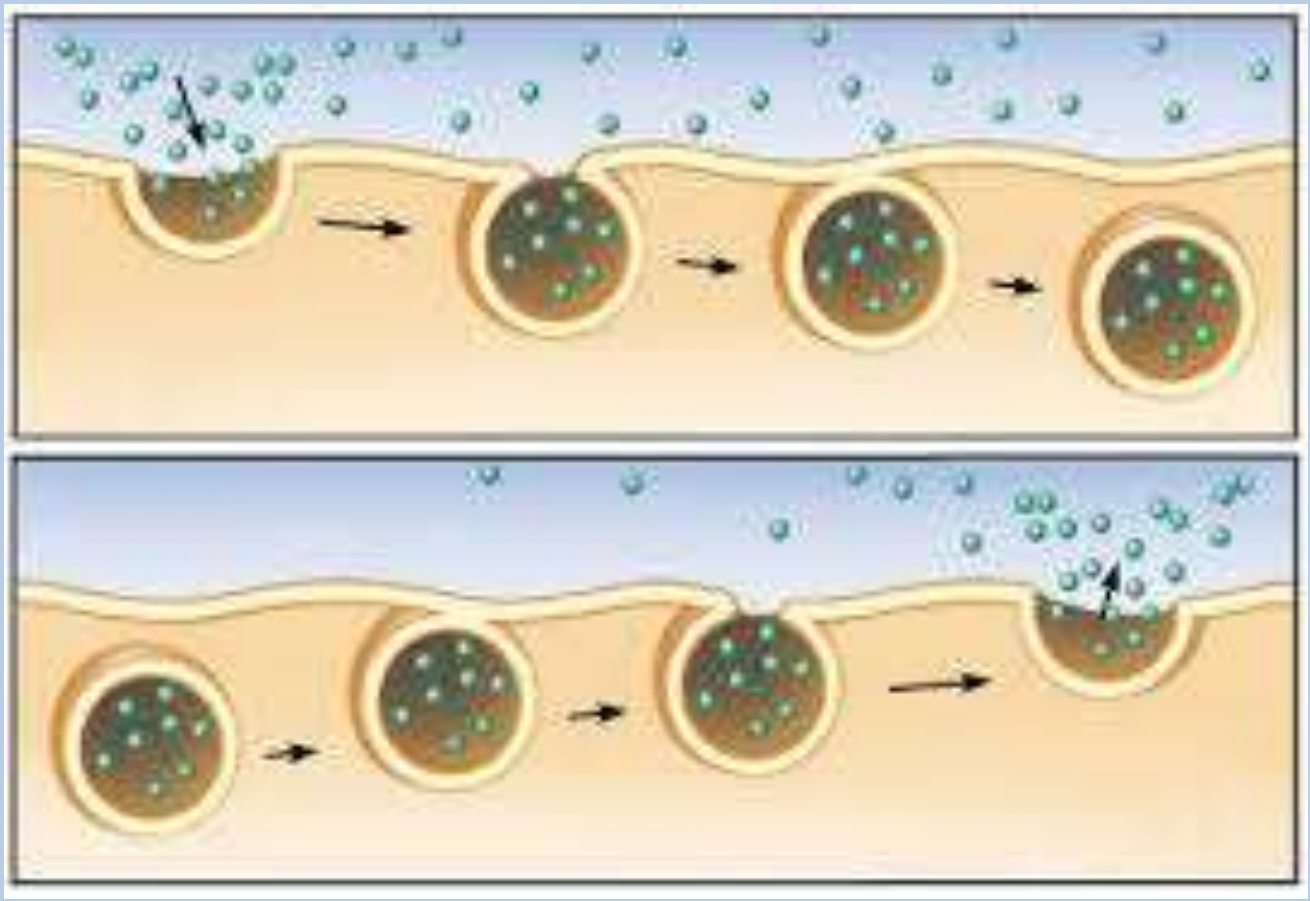
Membranes and Molecules

- **Active Transport**



Membranes and Molecules

- **Endocytosis and Exocytosis: Which is which?**



Detecting Diffusion Lab

- We are going to be ambitious and try to finish a second lab today.
- YOU MUST BE FOCUSED.

Diffusion Lab

- Today we will complete lab data collection procedures
  - Follow the directions CAREFULLY
  - Write your answers in your notebook on page 37
  - CLEAN UP AFTER YOURSELVES

Diffusion Lab

- Today you will be using chemical indicators to test for the presence of various macromolecules in the hopes of identifying which molecules are able to diffuse across a membrane

Diffusion Lab

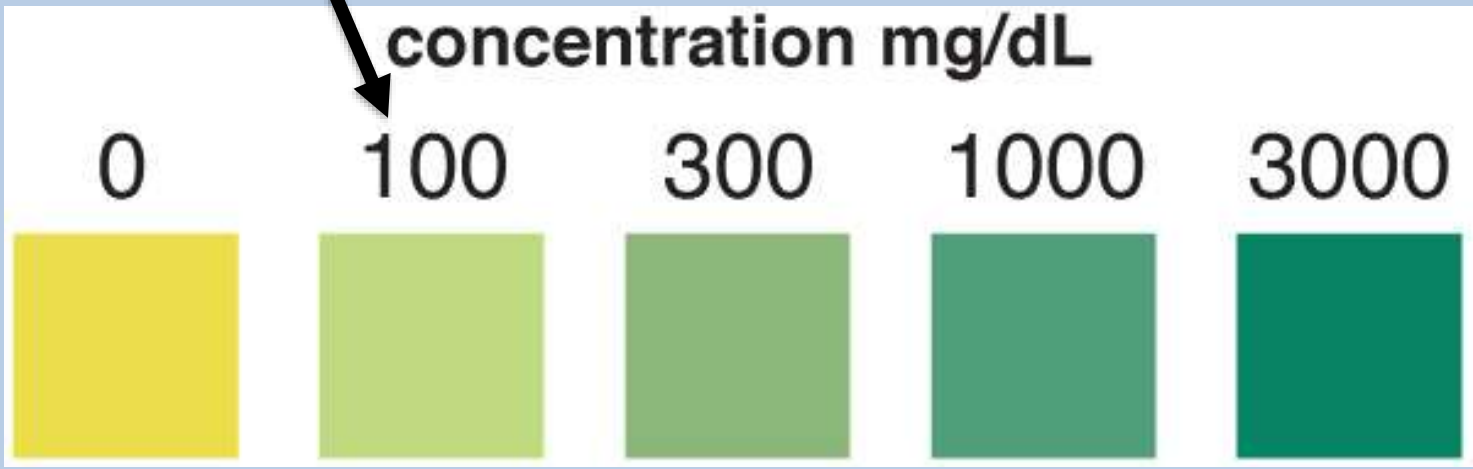
- A chemical indicator is a chemical that shows if a particular molecule is present or not

Diffusion Lab

- When we run chemical indicator tests we always use a positive and negative reference
  - The following are references for the tests you will run for this lab

Chemical Tests: Glucose

(Even if it just turns very slightly green it is positive)



Negative **Positive**

Chemical Tests: Starch

Positive Lugol's Test **Negative Lugol's Test**

Diffusion Lab

- We will also be using dialysis tubing (artificial semi-permeable tubing)
- *https://www.youtube.com/watch?v=ie-NDdVfFuE*

Diffusion Lab

- **We will be tying one end of the tube, and putting a rubber band around the other end TIGHTLY**

Diffusion Lab

- When the experiment is set up it will look like this:

Diffusion Lab

- **PLEASE, PLEASE, PLEASE *CLEAN UP AFTER YO'SELF***
- ***BE CAREFUL!***

Diffusion Lab

1. Complete Pre-lab
2. *Get checked off to get dialysis tubing*
3. Collect Data

Diffusion Lab

- **Pre-Lab:**
  1. **What cell part is the dialysis tube modeling?**
  2. **What does a positive starch test look like?**
  3. **What does a positive glucose test look like?**
  4. **Review the chemical structure of starch. Do you predict that starch will diffuse through the tubing? Why or why not?**
  5. **Review the chemical structure of glucose. Do you predict that glucose will diffuse through the tubing? Why or why not?**

Diffusion Lab

- On page 32:
  - Answer Pre-Lab questions (on class set)
  - Data:

	Inside Tubing				Outside Tubing			
	Color	Is starch present?	Is iodine present?	Is glucose present?	Color	Is starch present?	Is iodine present?	Is glucose Present?
Initial								
Final								

Diffusion Lab

- **Analysis:**

1. In this investigation, the dialysis tubing acts as a model of the cell membrane. Give two ways the dialysis tubing and cell membrane are similar to each other.

2. Review the predictions you made in your Pre-lab questions about the diffusion of starch and glucose. Did your observations support your predictions? Explain why or why not using data from the lab.

3. How do the molecular structures of starch and glucose molecules help explain your observations?

4. Did the mass of the dialysis bag change during the experiment? If so, how? What might have accounted for any change in mass that you observed?

5. Active cells are constantly using energy. So they require a steady input of energy to maintain homeostasis. How does evidence from the model you used help explain the homeostasis of energy in cells?

6. When a student performed this experiment, he observed the solution outside the tubing turn black. What might have happened?