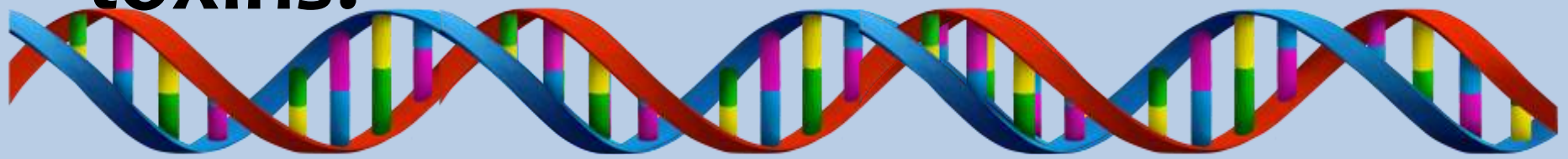


- 1. Why is it beneficial for cell membranes to be flexible?**
- 2. Was the dialysis tubing selectively permeable? *How do you know?***
- 3. What was able to pass through the membrane?**
- 4. If it is used to filter a patient's blood, what is true about the size of the toxins?**



Detecting Diffusion Lab

	Inside Tubing				Outside Tubing			
	Color	starch	iodine	glucose	Color	starch	iodine	glucose
Initial								
Final								

Detecting Diffusion Lab

	Inside Tubing				Outside Tubing			
	Color	starch	iodine	glucose	Color	starch	iodine	glucose
Initial	WHITE	Yes	No	Yes	YELLOW	No	Yes	No
Final	BLACK/ PURPLE	Yes	Yes	Yes	YELLOW	No	Yes	Yes

Detecting Diffusion Lab

	Inside Tubing				Outside Tubing			
	Color	starch	iodine	glucose	Color	starch	iodine	glucose
Initial	WHITE	Yes	No	Yes	YELLOW	No	Yes	No
Final	BLACK/ PURPLE	Yes	Yes	Yes	YELLOW	No	Yes	Yes

Bubble Lab

- <https://vimeo.com/52263821>

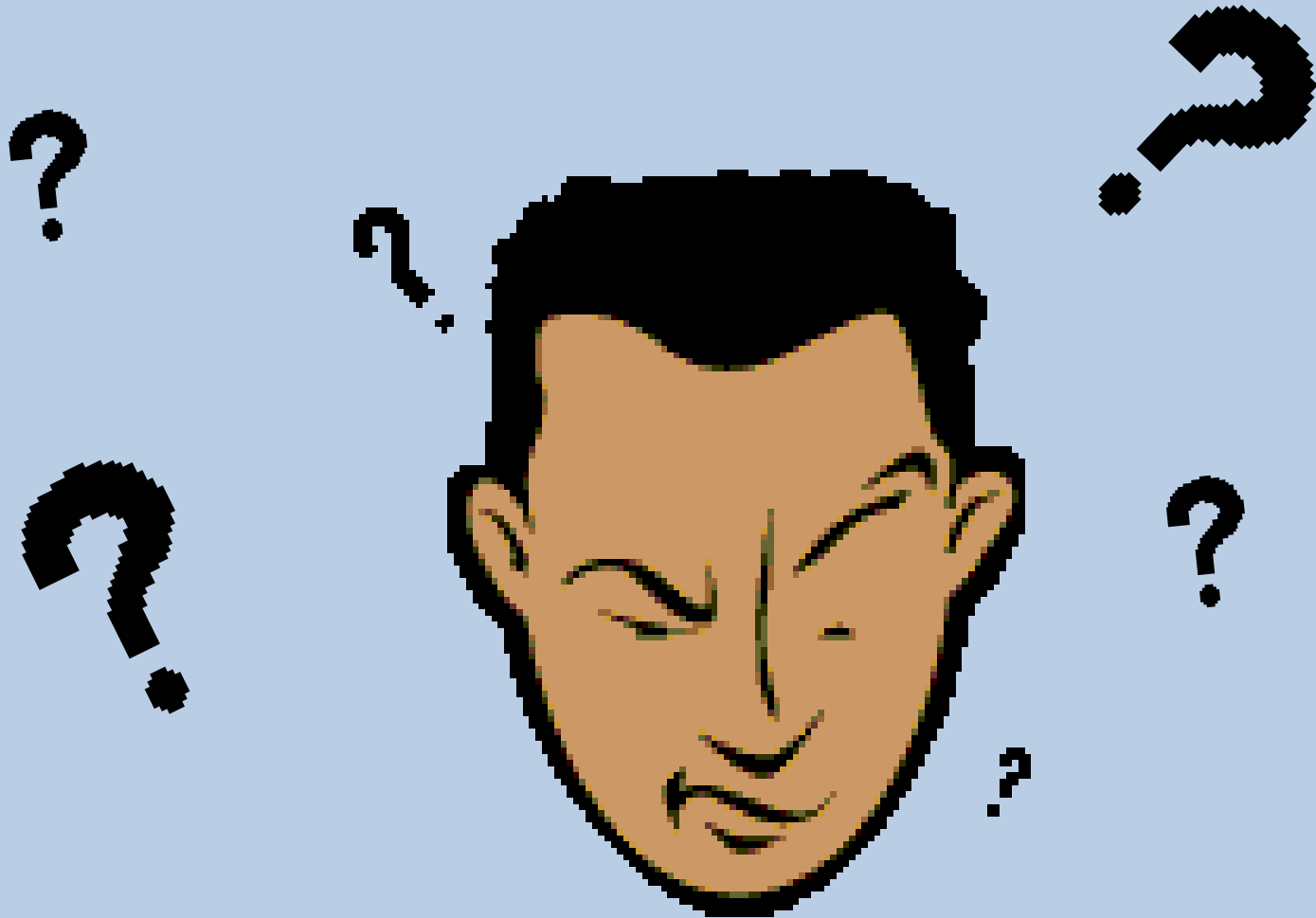
Membranes and Molecules

IMPORTANT

- Transport describes HOW molecules move
- Tonicity describes WHERE molecules will move

Concentration

- What is concentration?



Concentration

- **Concentration is the amount of molecules in a given area**

Concentration

- **Concentration is the amount of molecules in a given area**
- **Solutes = molecules dissolved in water**
- **Solution = water with dissolved molecules**

Concentration

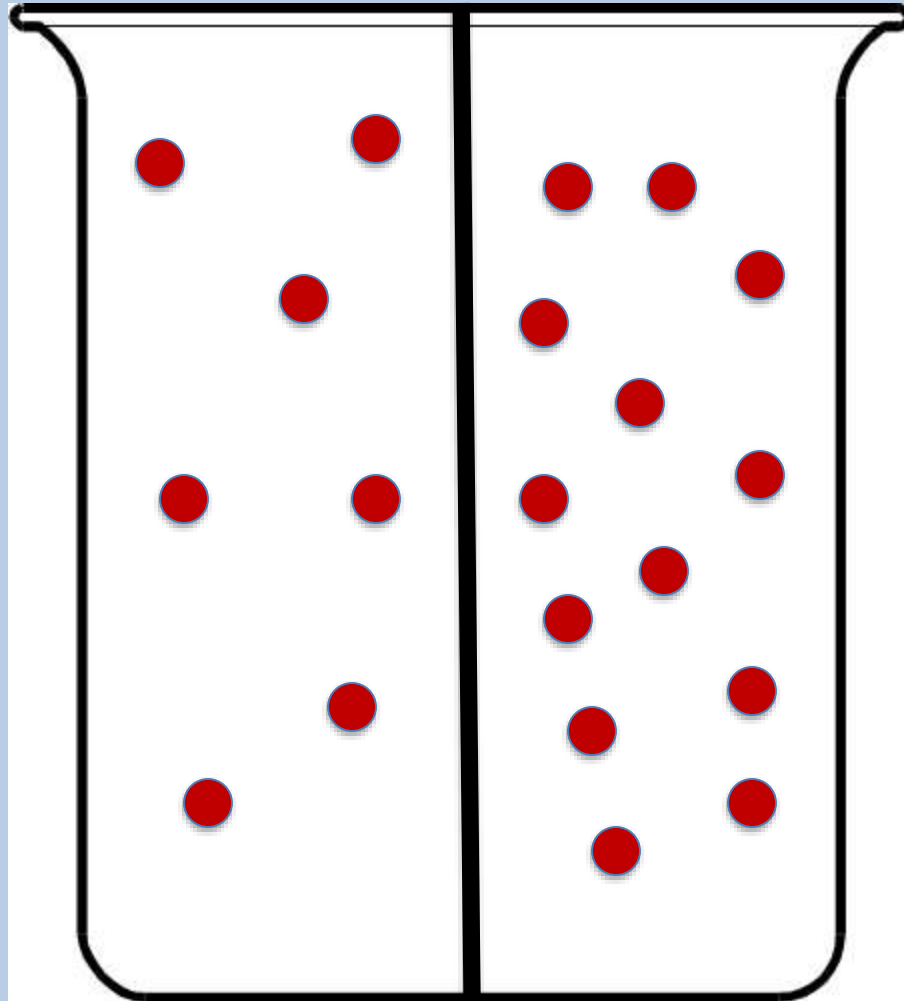
- Another way to indicate concentration is with brackets:
- $[\text{NaCl}]$ = concentration of salt

Concentration

- If there are **MORE** molecules there is a **HIGHER** concentration
- If there are **LESS** molecules there is a **LOWER** concentration

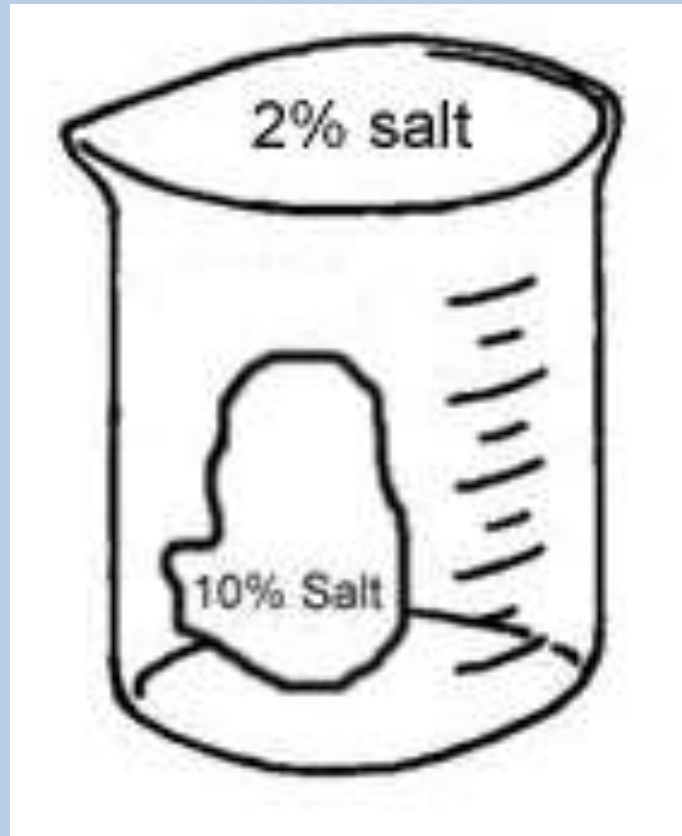
Concentration - Tonicity

- Example



Concentration

- Example



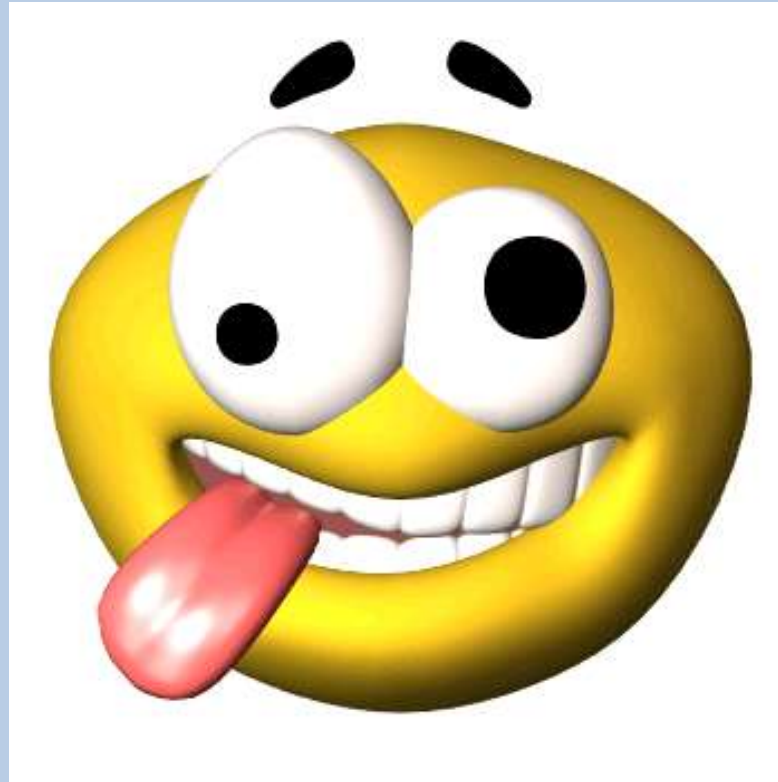
Concentration

- Example



Concentration

- **What does it mean when you are hyper?**



Concentration - Tonicity

- **HYPERtonic** means that there is a **HIGHER** solute concentration
(**more stuff**, **less water**)

Concentration - Tonicity

- What does Hypo- mean? (Think HYPOTHERMIA)

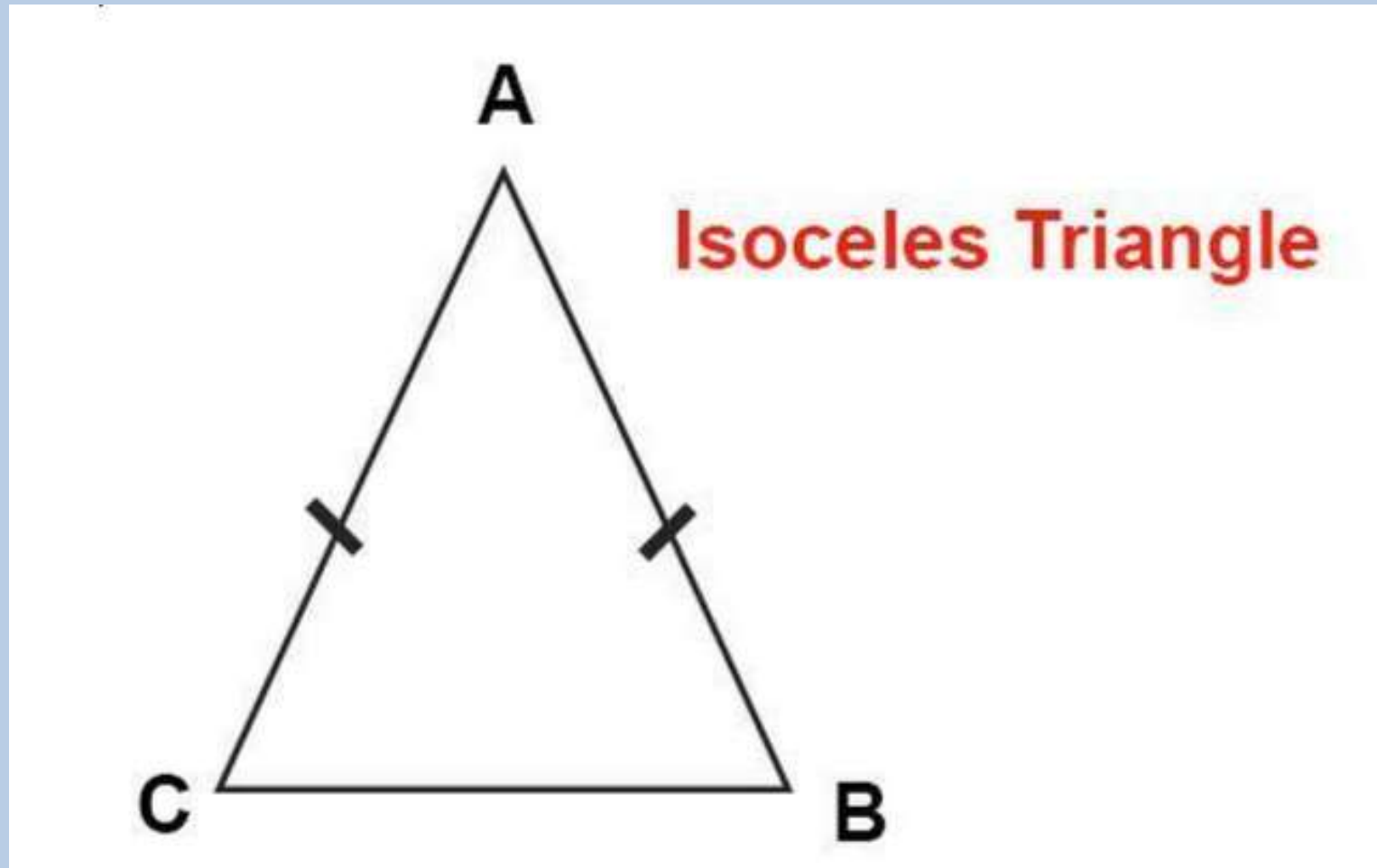


Concentration - Tonicity

- **HYPOtonic** means that there is a **LOWER** solute concentration
(**less stuff**, **more water**)

Concentration - Tonicity

- What does ISO- mean?

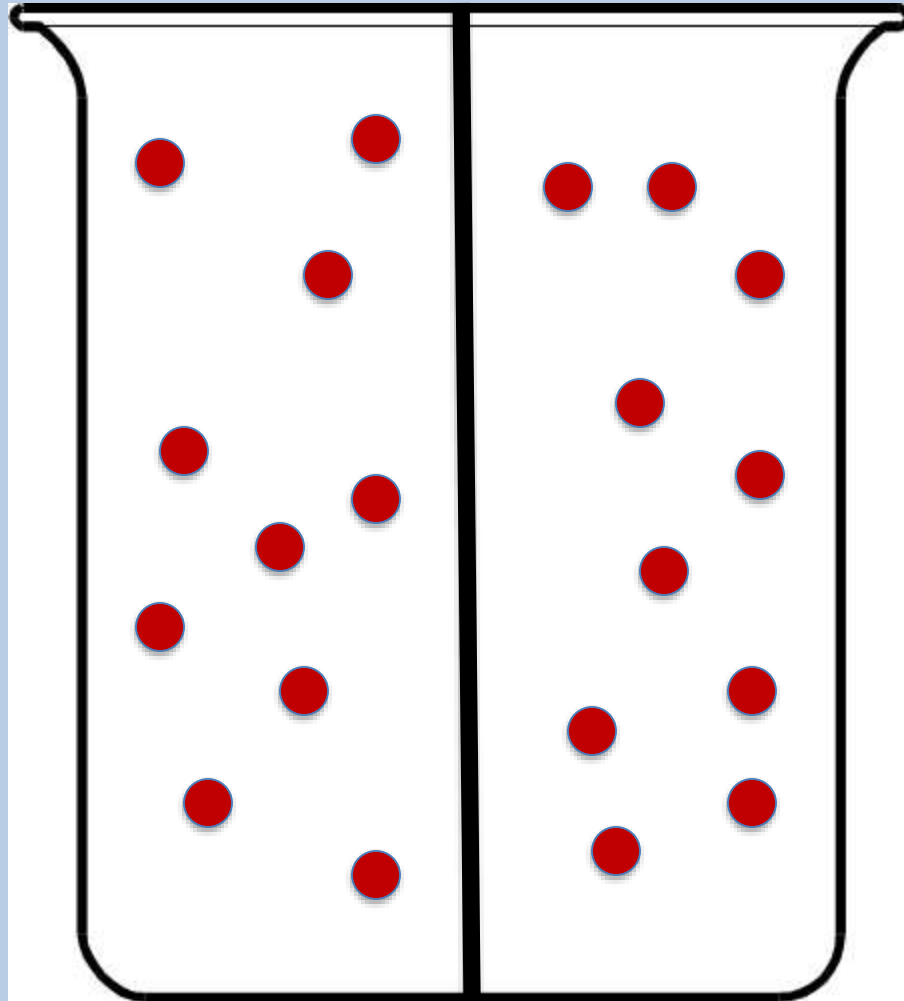


Concentration - Tonicity

- **ISOtonic** means that there are **EQUAL** solute concentrations

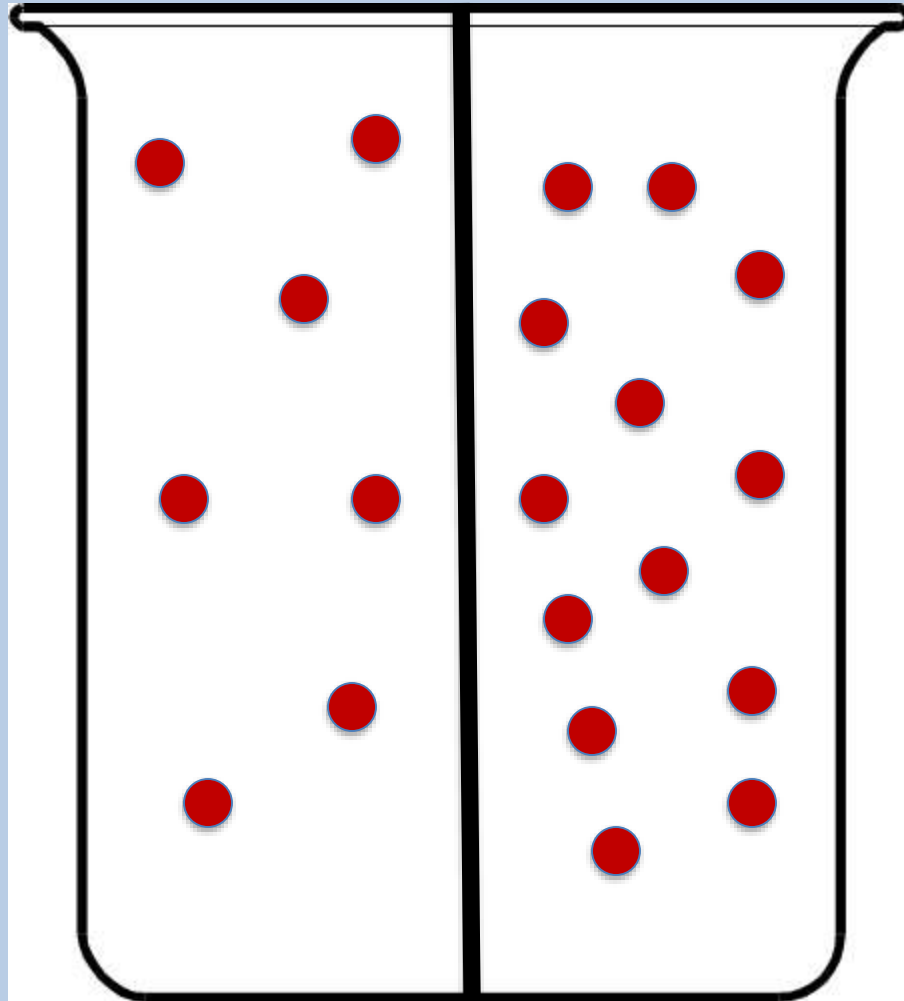
Concentration - Tonicity

- Example



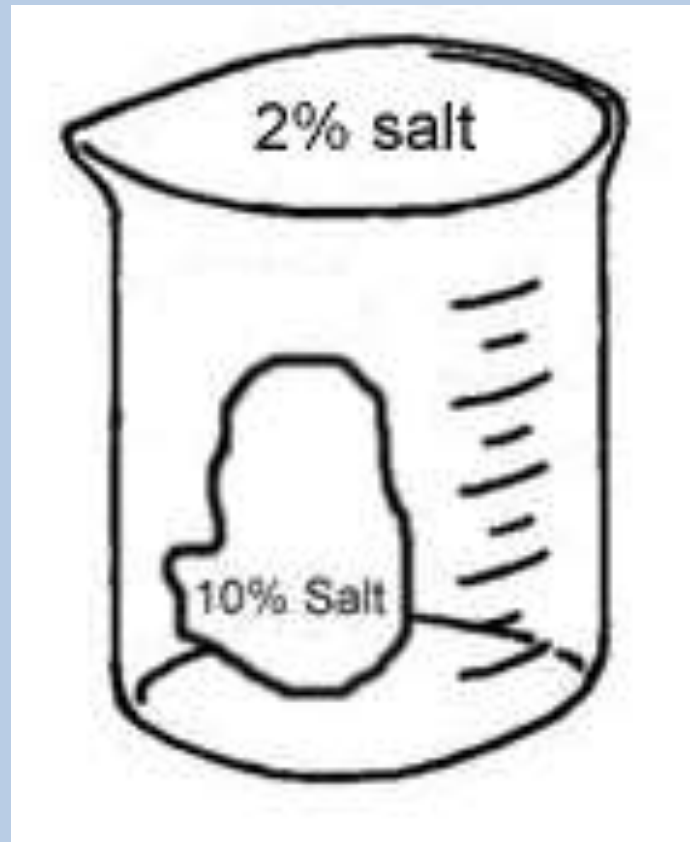
Concentration - Tonicity

- Example



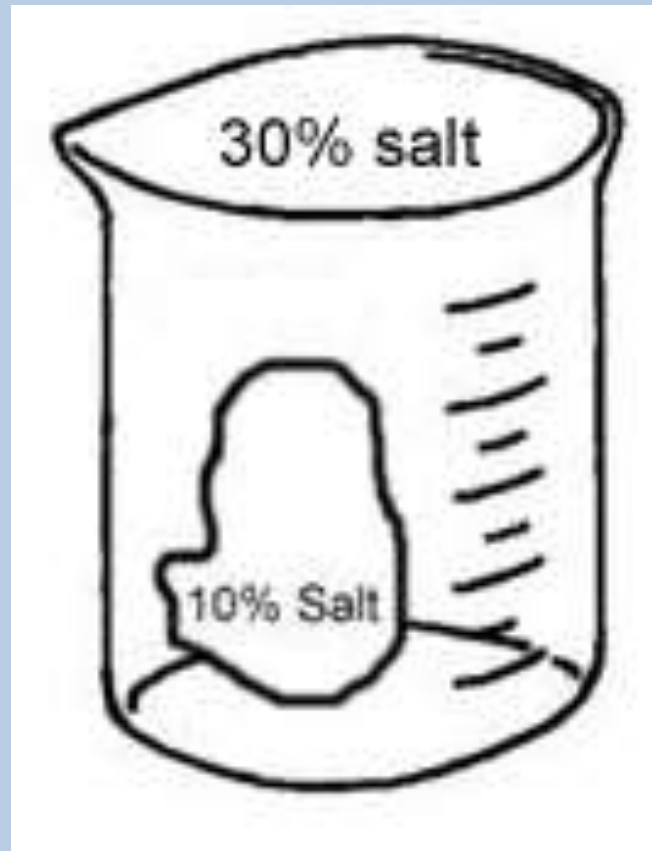
Concentration -Tonicity

- Example



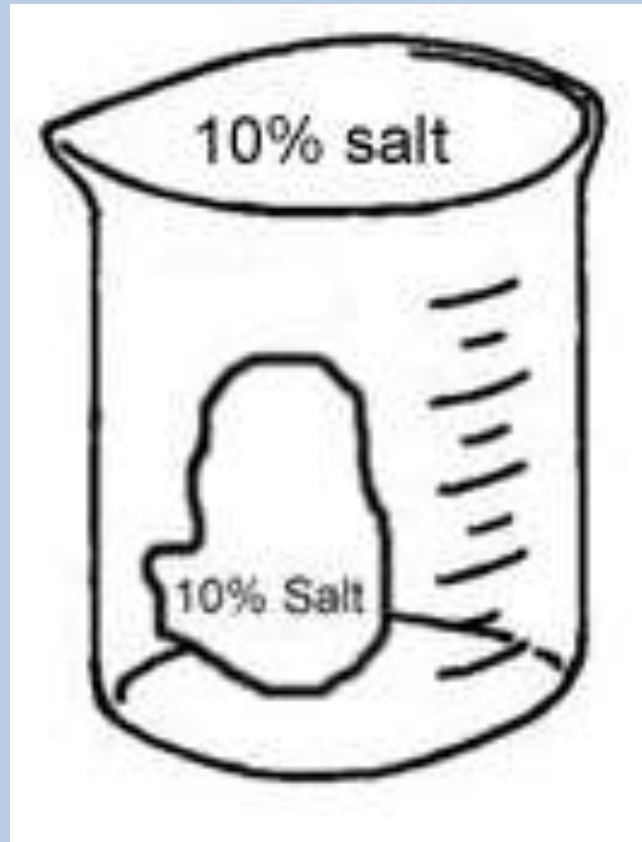
Concentration - Tonicity

- Example



Concentration - Tonicity

- Example

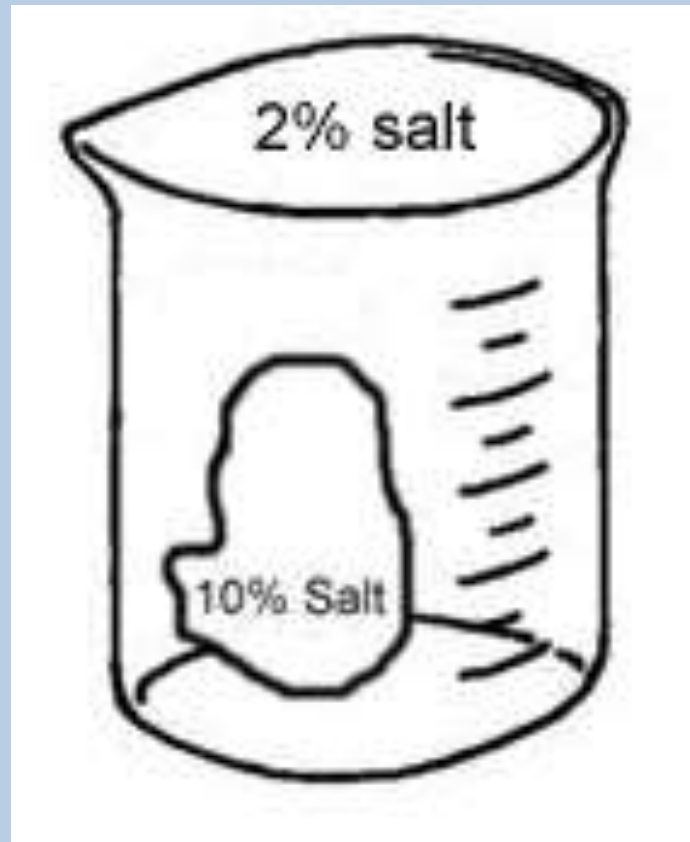


Concentration

- When concentrations are different between 2 solutions separated by a membrane we call the difference between them a **CONCENTRATION GRADIENT**

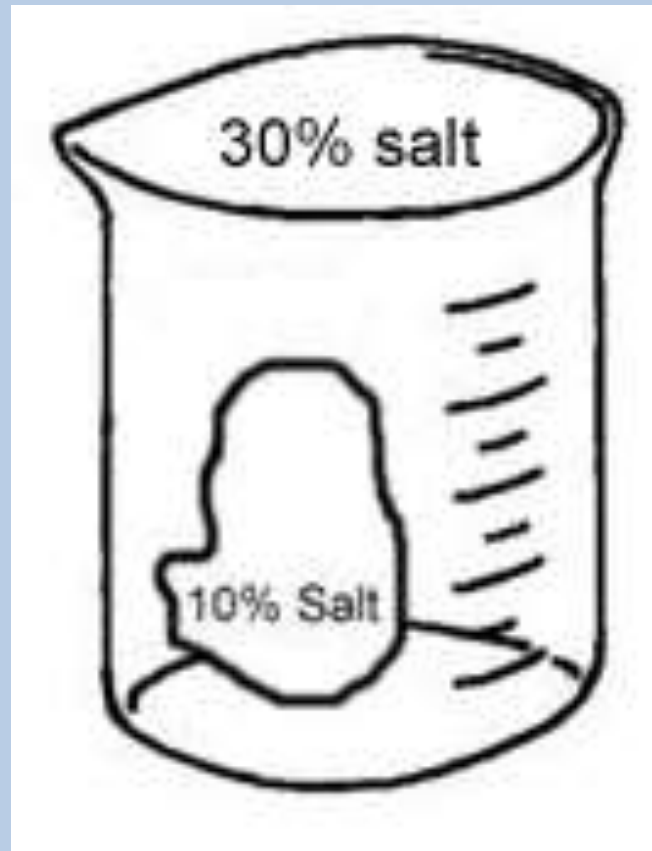
Concentration -Tonicity

- Example



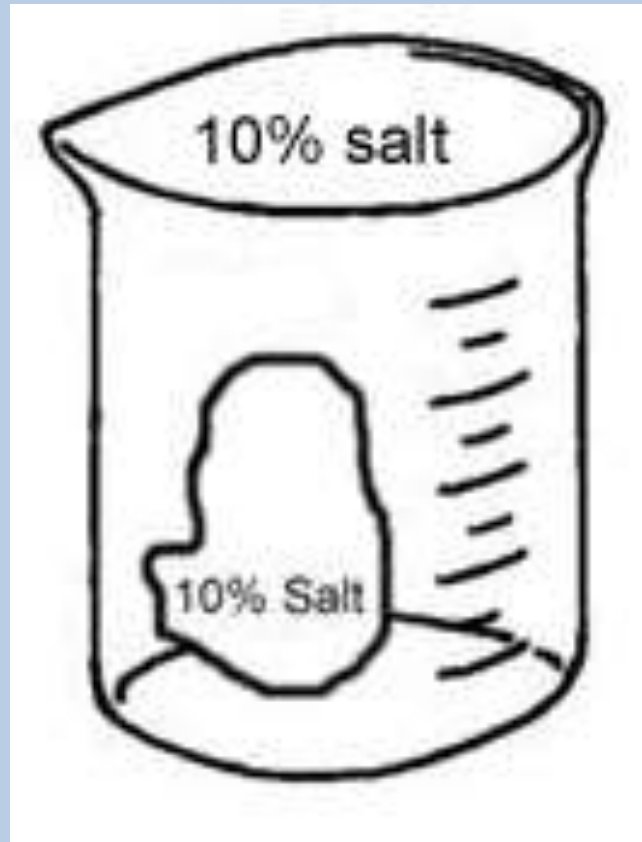
Concentration - Tonicity

- Example

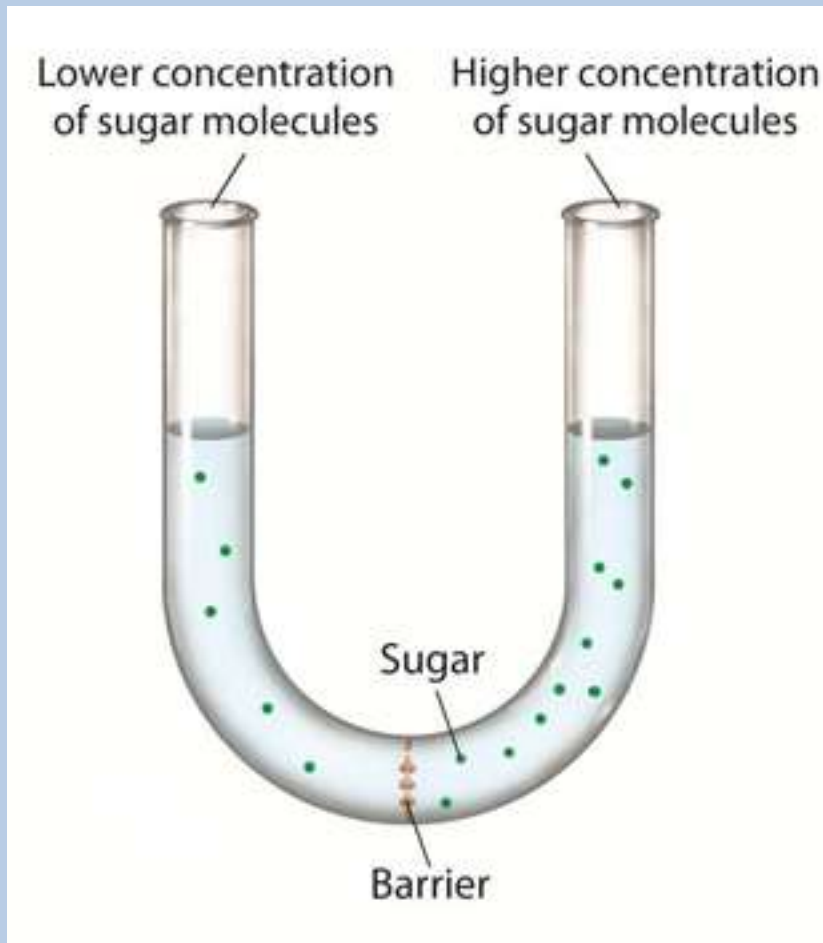


Concentration - Tonicity

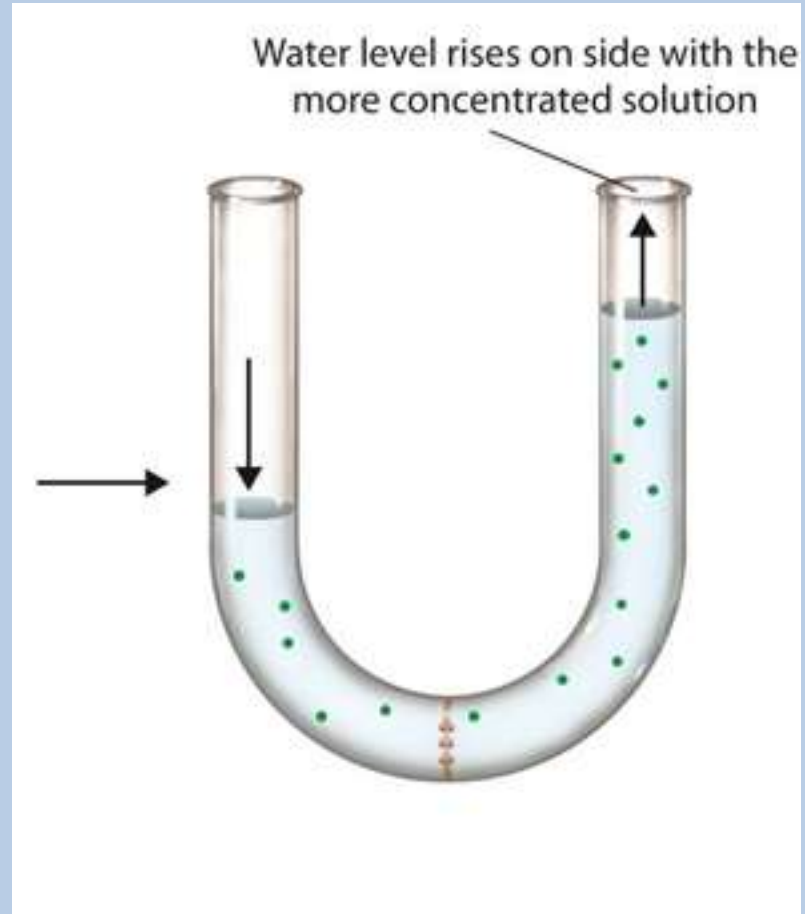
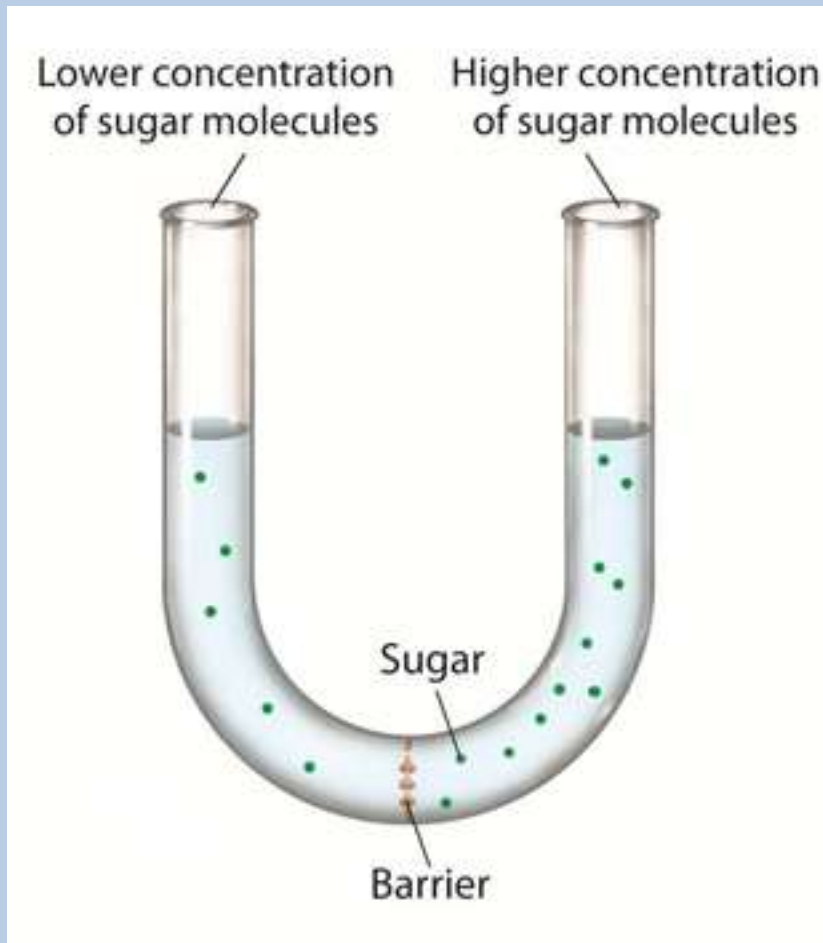
- Example



Osmosis

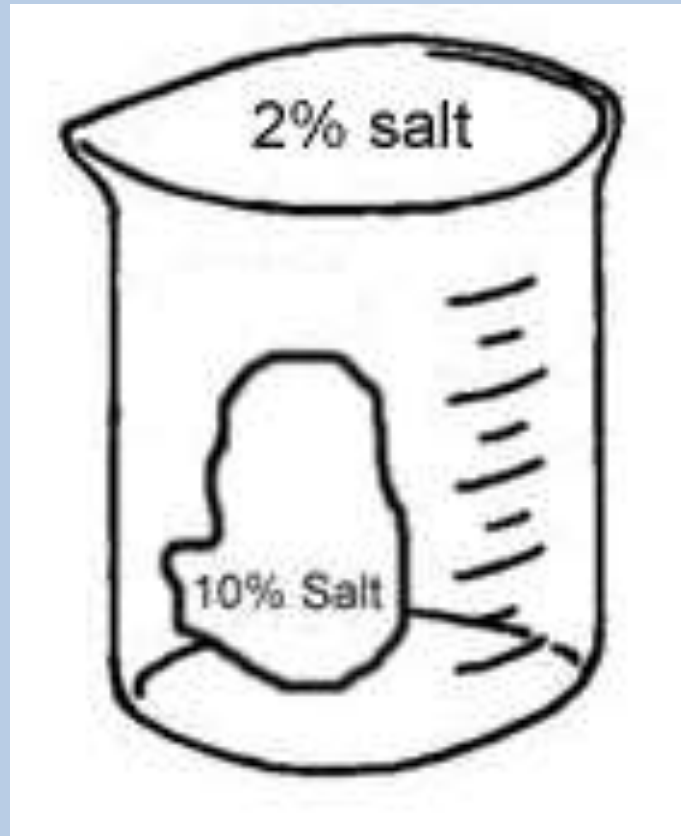


Osmosis



Concentration

- If the concentration gradient is large enough the cell could burst



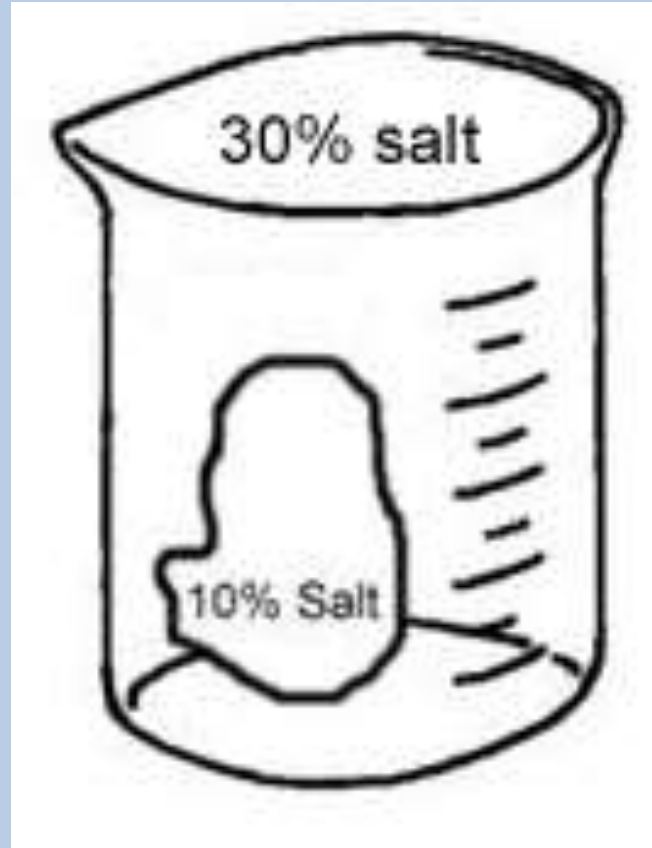
Concentration

- **CYTOLYSIS:** water enters a cell due to osmosis and the cell bursts



Concentration

- Which way will water move? Into or out of the membrane?



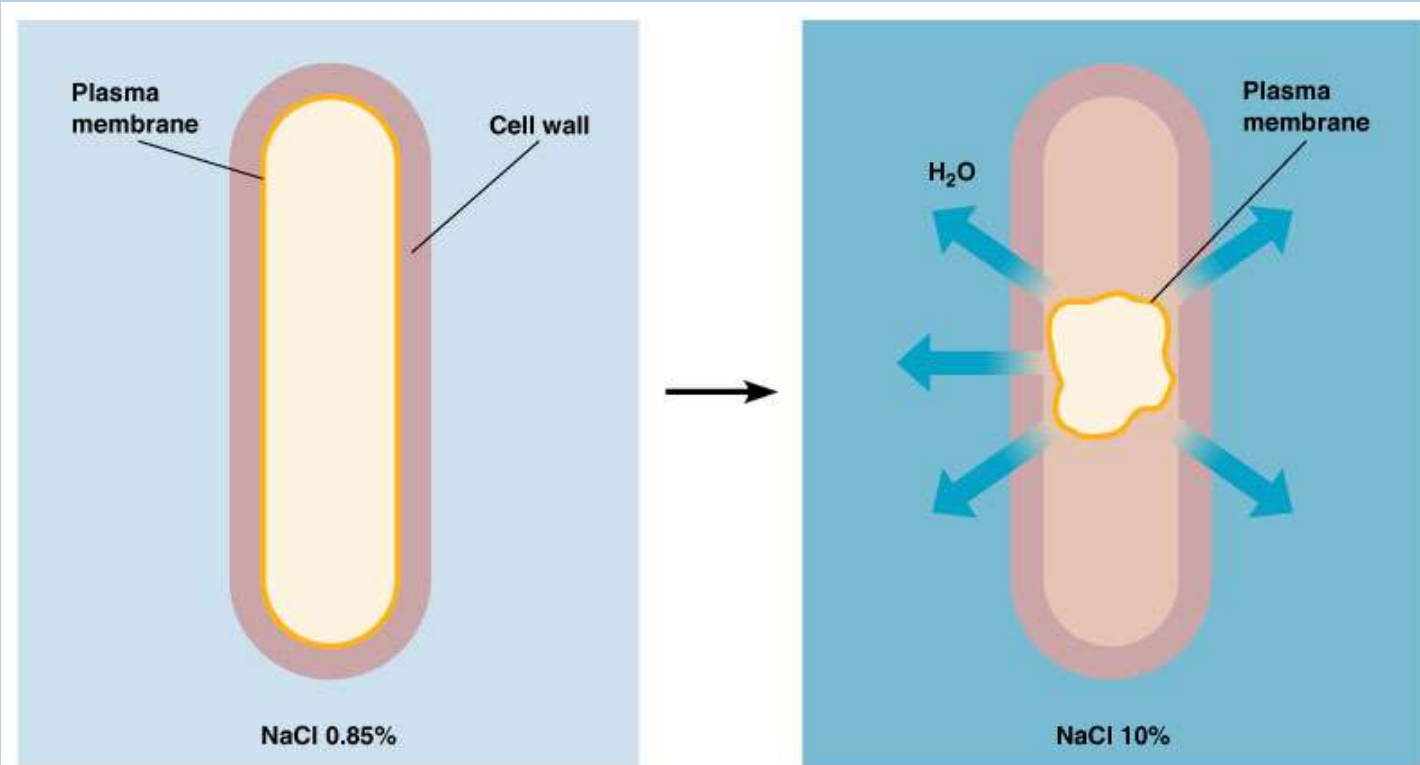
Concentration

- If the concentration gradient is large enough the cell could shrink



Concentration

- **PLASMOLYSIS: cell shrinks**



(a) Normal cell in isotonic solution. Under these conditions, the osmotic pressure in the cell is equivalent to a solution concentration of 0.85% sodium chloride (NaCl).

(b) Plasmolyzed cell in hypertonic solution. If the concentration of solutes such as NaCl is higher in the surrounding than in the cell (hypertonic), water tends to leave the cell. Growth of the cell is inhibited.

Egg-Mosis

- Day 2 procedures
- BE CAREFUL; don't break your egg
- FOR REAL, HISTORICALLY THIS IS THE DAY WITH THE HIGHEST EGG-FATALITY RATE
- Hypotheses
- Variables
- Data Table

Egg-mosis

1. **CAREFULLY** rub off the egg shell (as much as possible)
2. Day 2 procedures
3. Record data
4. Pre-lab
5. Hypotheses
 - i. Will water move out of an egg or into an egg when placed in corn syrup?
 - ii. Will water move out of an egg or into an egg when placed in tap water?
6. Variables
7. **Detecting Diffusion Lab Analysis Questions**
8. **Osmosis Practice Problems**
9. **Diffusion, Osmosis and Water Balance Problems**