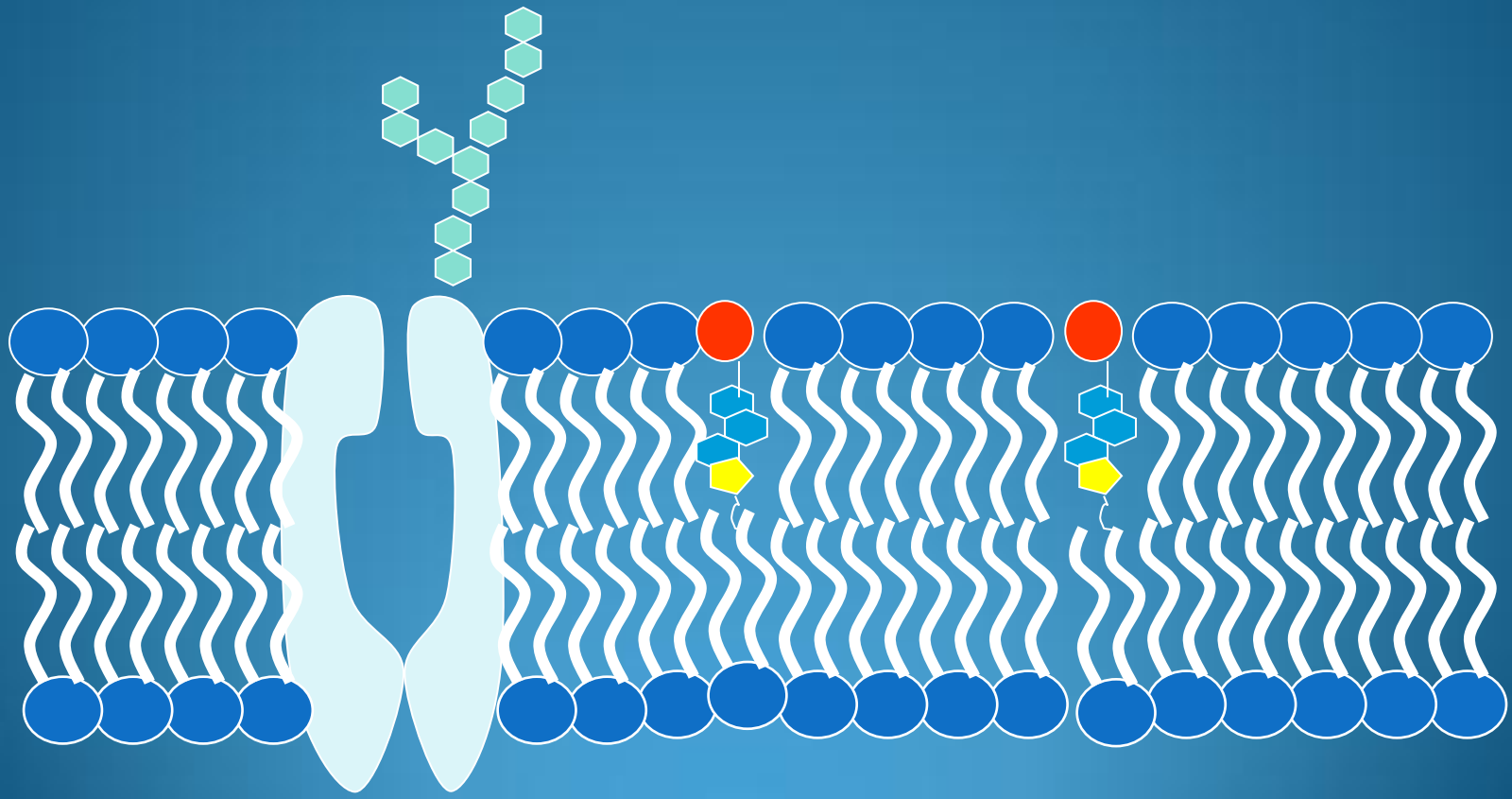
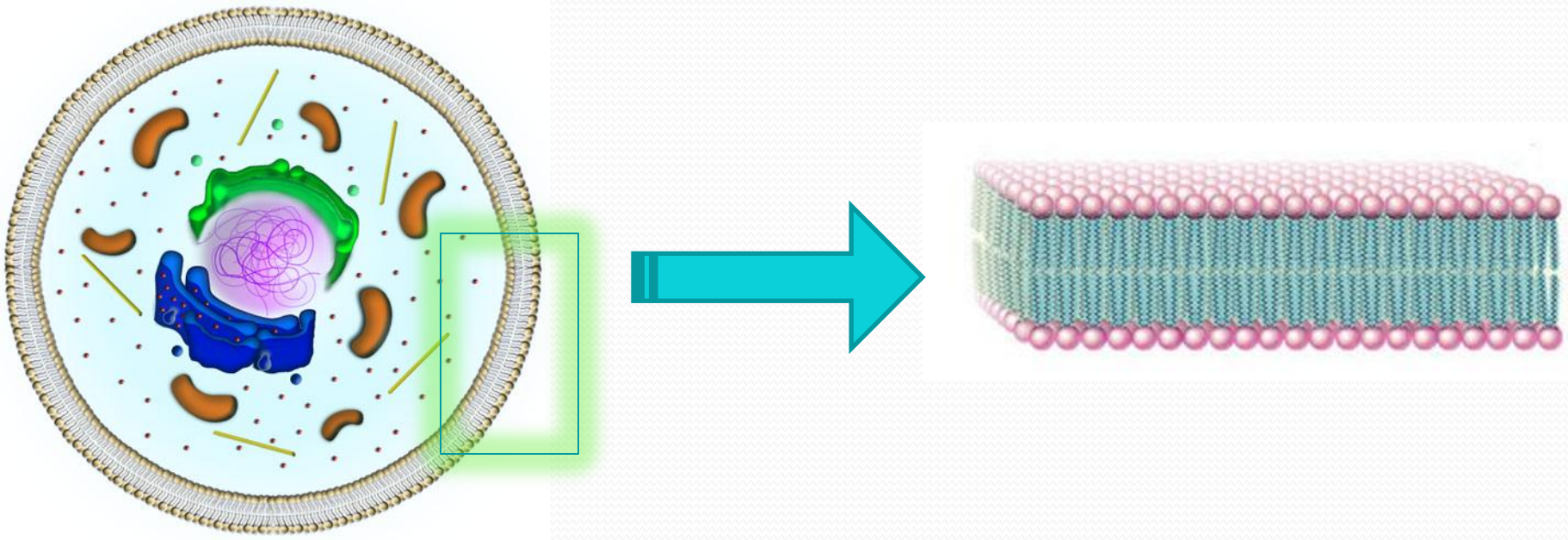
The Cell Membrane



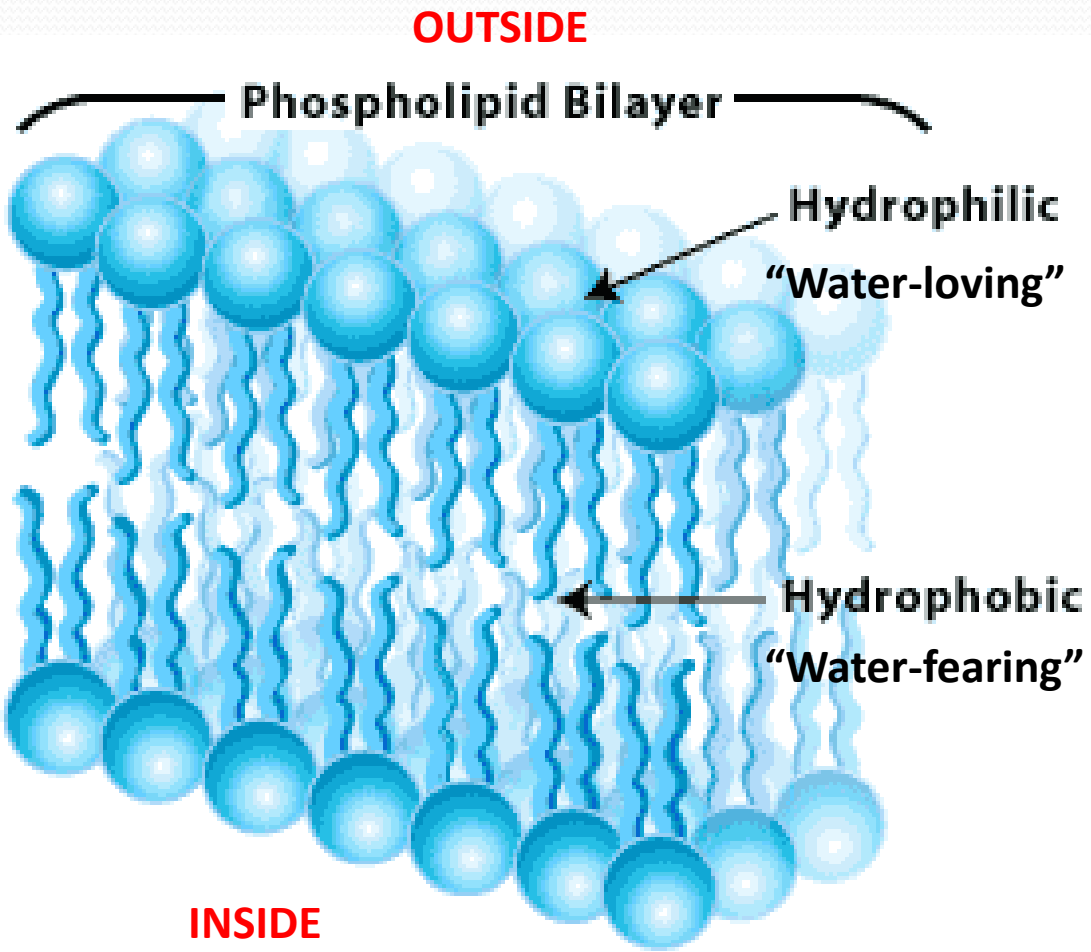
Cell Membrane Functions

✓ **Protects** and **supports** the cell

✓ **Regulates** the **transport** of materials in & out of the cell



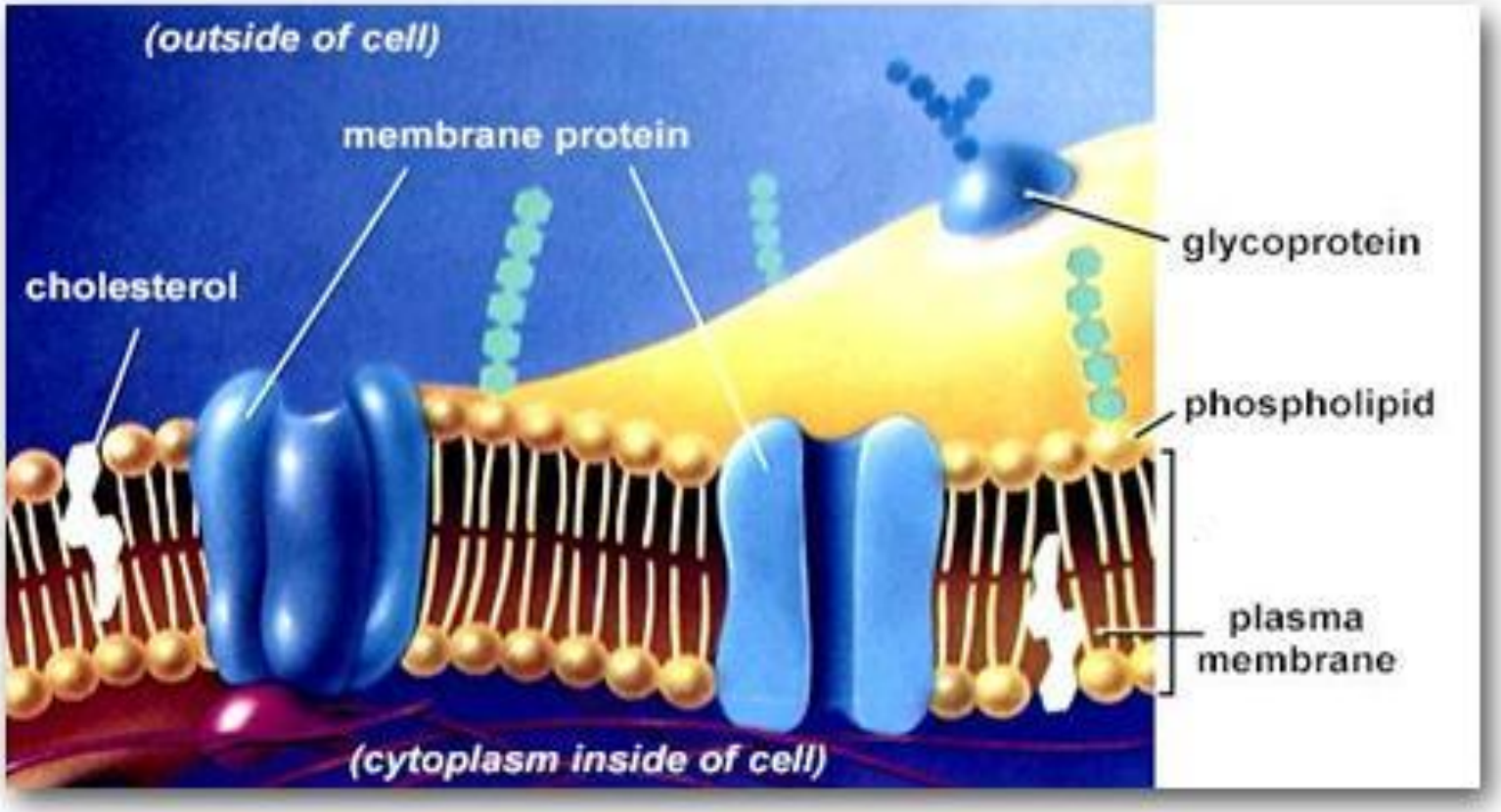
Cell Membrane Structure



- **Lipid Bilayer:** a **double layer** sheet of **phospholipids** that makes up the cell membrane.

The Fluid Mosaic Model

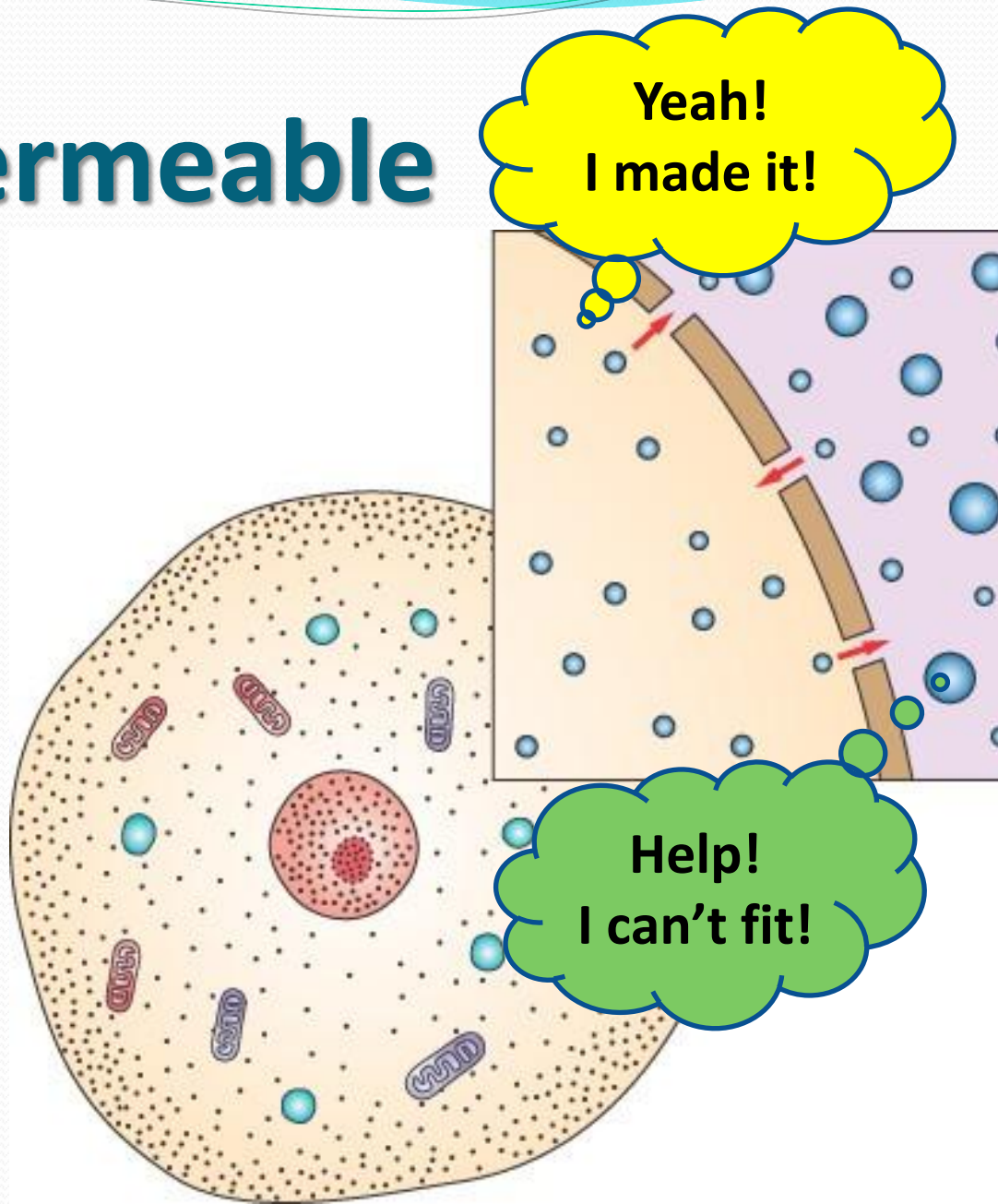
- The cell membrane is made of many **different parts** that **freely move**.



Selectively Permeable

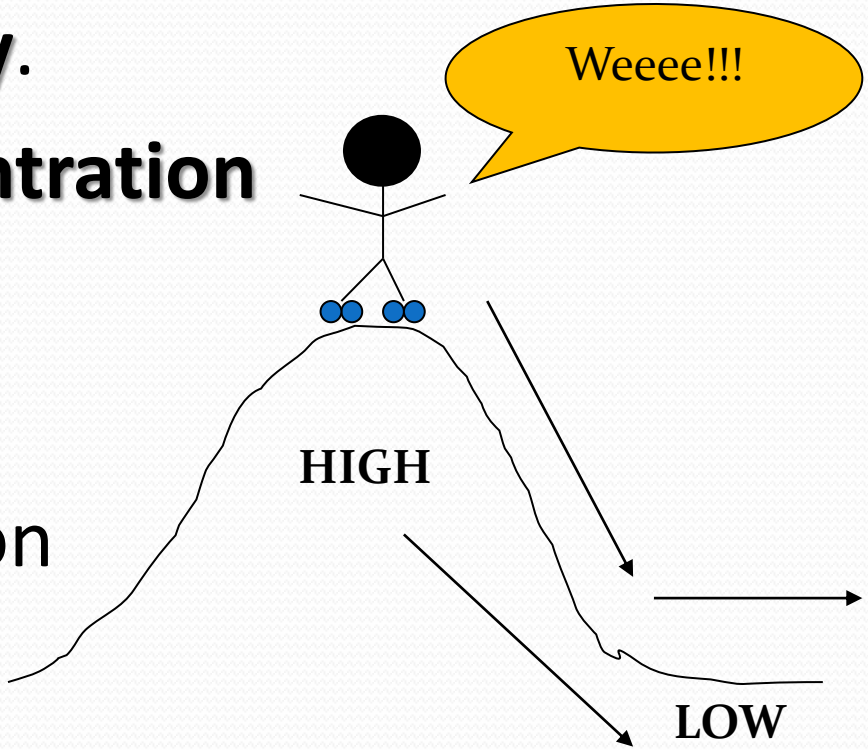
- **Some** substances can **pass** through the cell membrane
- But **others can't**.

- **Permea-** means "porous" or "pass through"



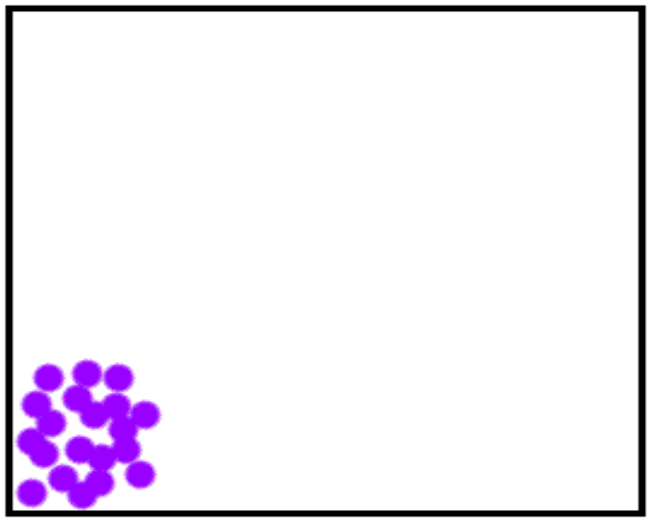
Passive Transport

- Movement of substances into/out of cell **without** using **energy**.
- **HIGH → LOW concentration**
- **3 types:**
  1. Simple Diffusion
  2. Faciliated Diffusion
  3. Osmosis



Simple Diffusion

- Molecules move from **HIGH to LOW concentration** (*concentration gradient*)
- Until balanced or equal- "**at equilibrium**"



Diffusion

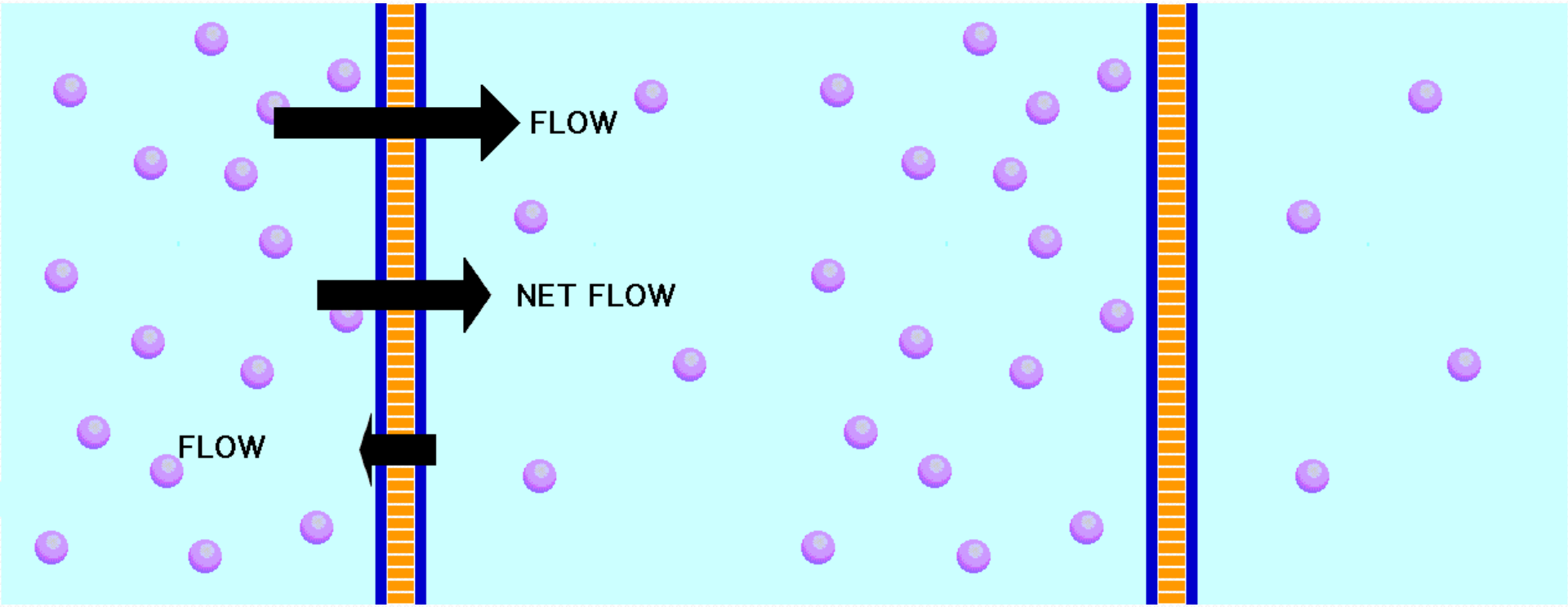
HIGH → LOW

(concentration gradient)

At Equilibrium

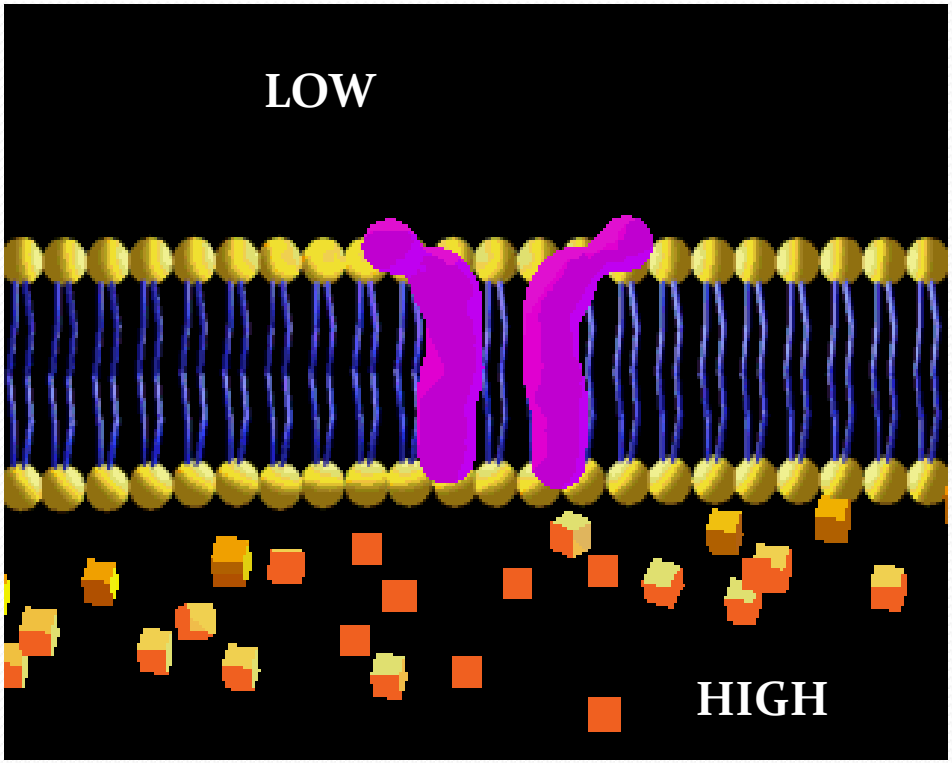
Molecules still move around

But…No NET flow



Facilitated Diffusion

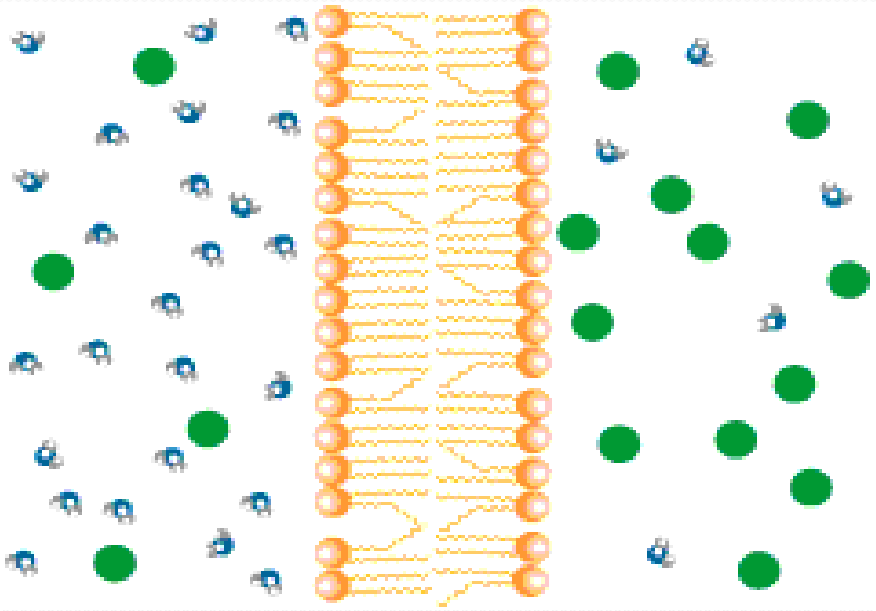
Some molecules can't diffuse through the membrane and **require special protein channels** to move through.

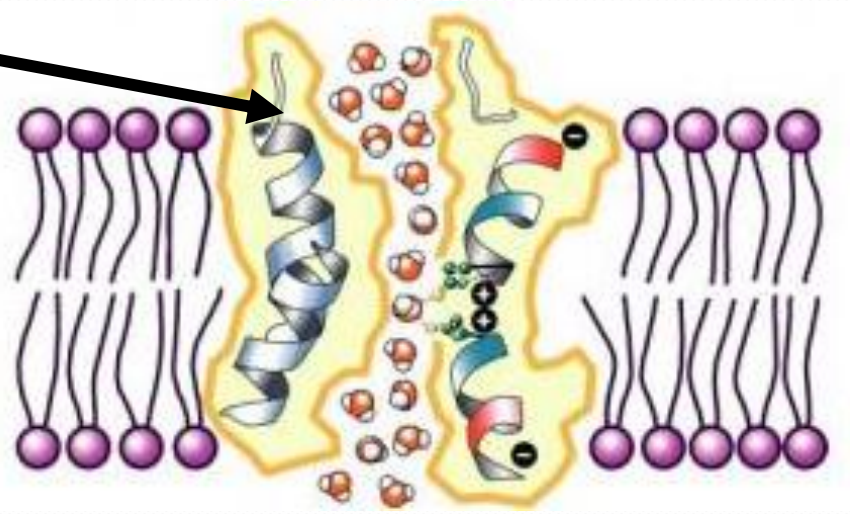


Ex. Ions, glucose

Osmosis

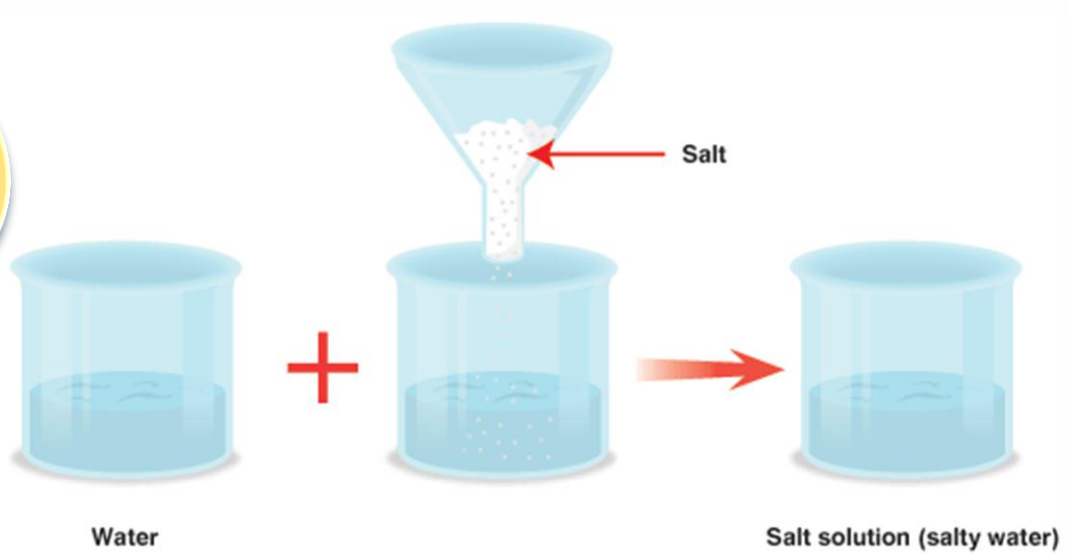
- Diffusion of **water** through special channels called **aquaporins.**
- Moves from **HIGH to LOW** concentration.





Solvent + Solute = Solution

Dissolve the solute in the solvent!

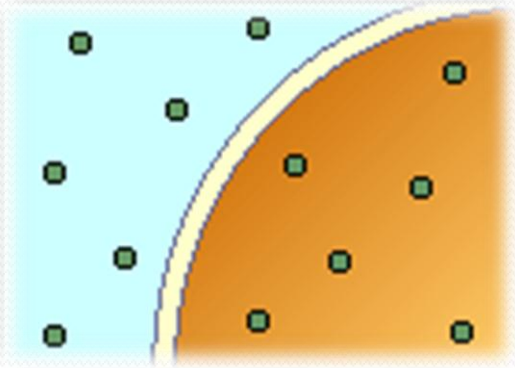
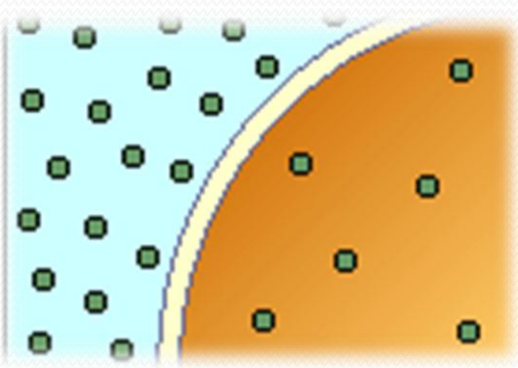
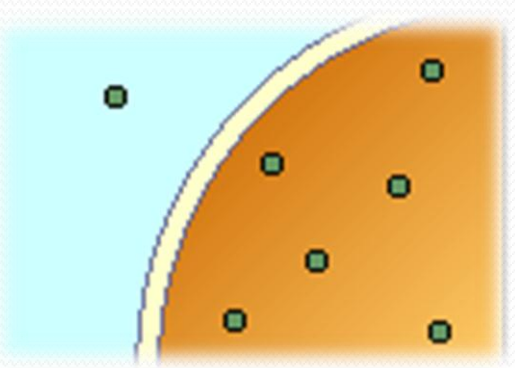


Solvent: does the dissolving, like water

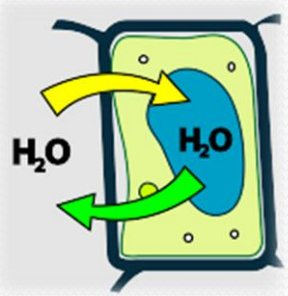
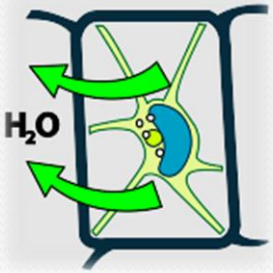
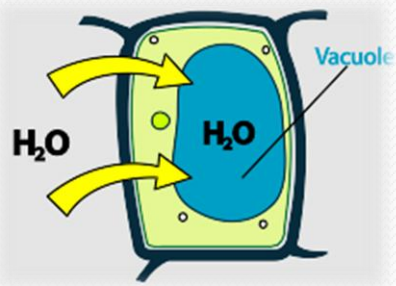
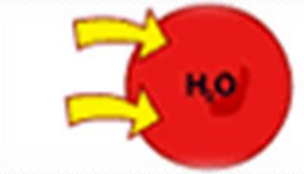
Solute: substance that **gets dissolved** in the solvent

How Osmosis Works

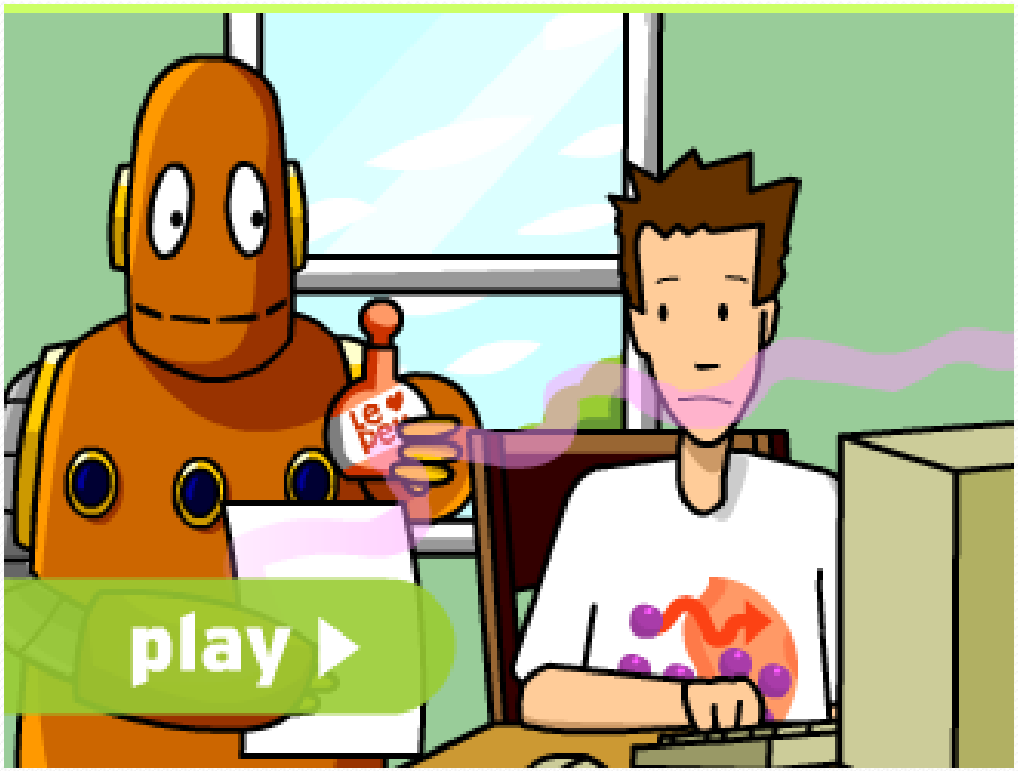
Look at amount of SOLUTE! NOT water!

Isotonic "same or equal"	Hypertonic "above or higher"	Hypotonic "below or lower"
		
EQUAL amounts of solute in/out of cell.	**HIGHER** solute outside.	**LOWER** solute outside.

How Osmosis Works

Isotonic "same or equal"	**Hypertonic** "above or higher"	**Hypotonic** "below or lower"
		
Water **in/out**. Cell stays the **same**.	Water **out.** Cell **shrinks**.	Water **in**. Cell **swells**.
		

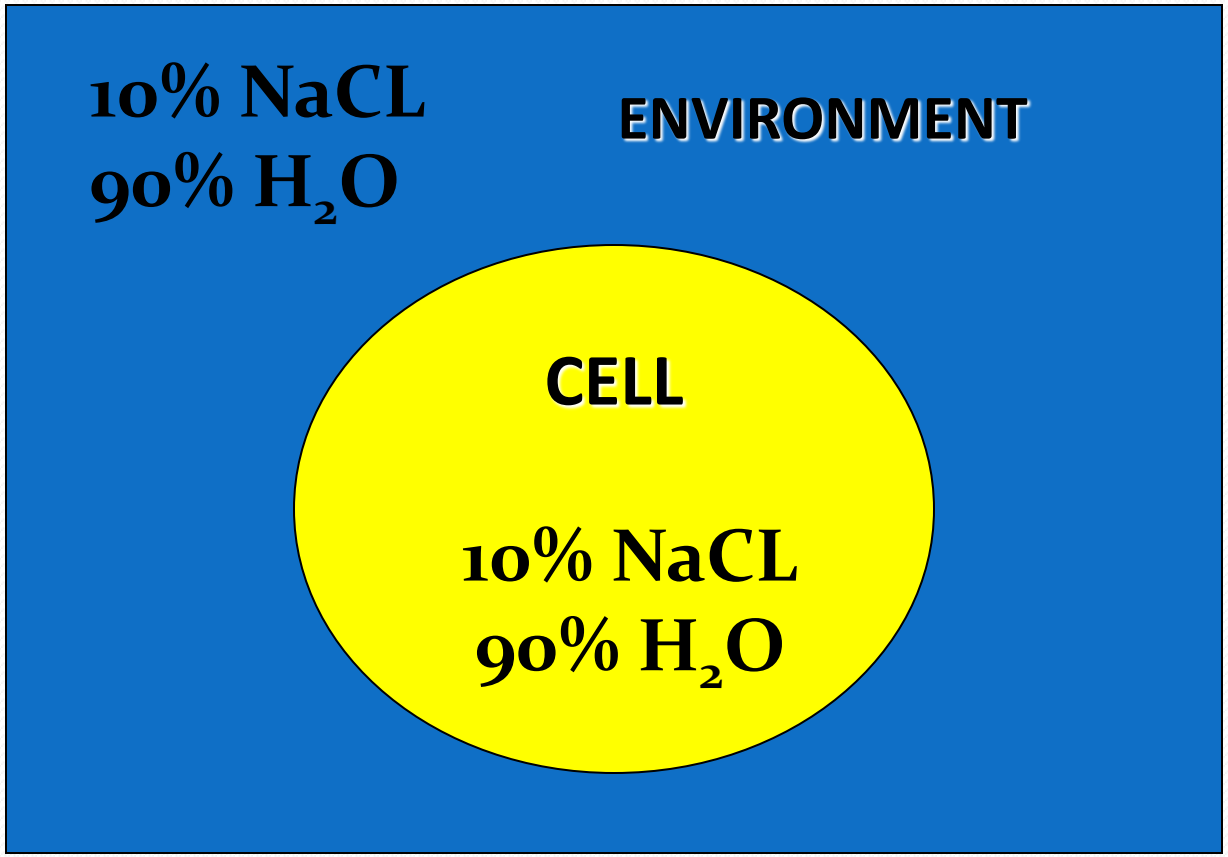
BrainPOP: Passive Transport



- http://www.brainpop.com/science/cellularlifeandgenetics/passivetransport/preview.weml

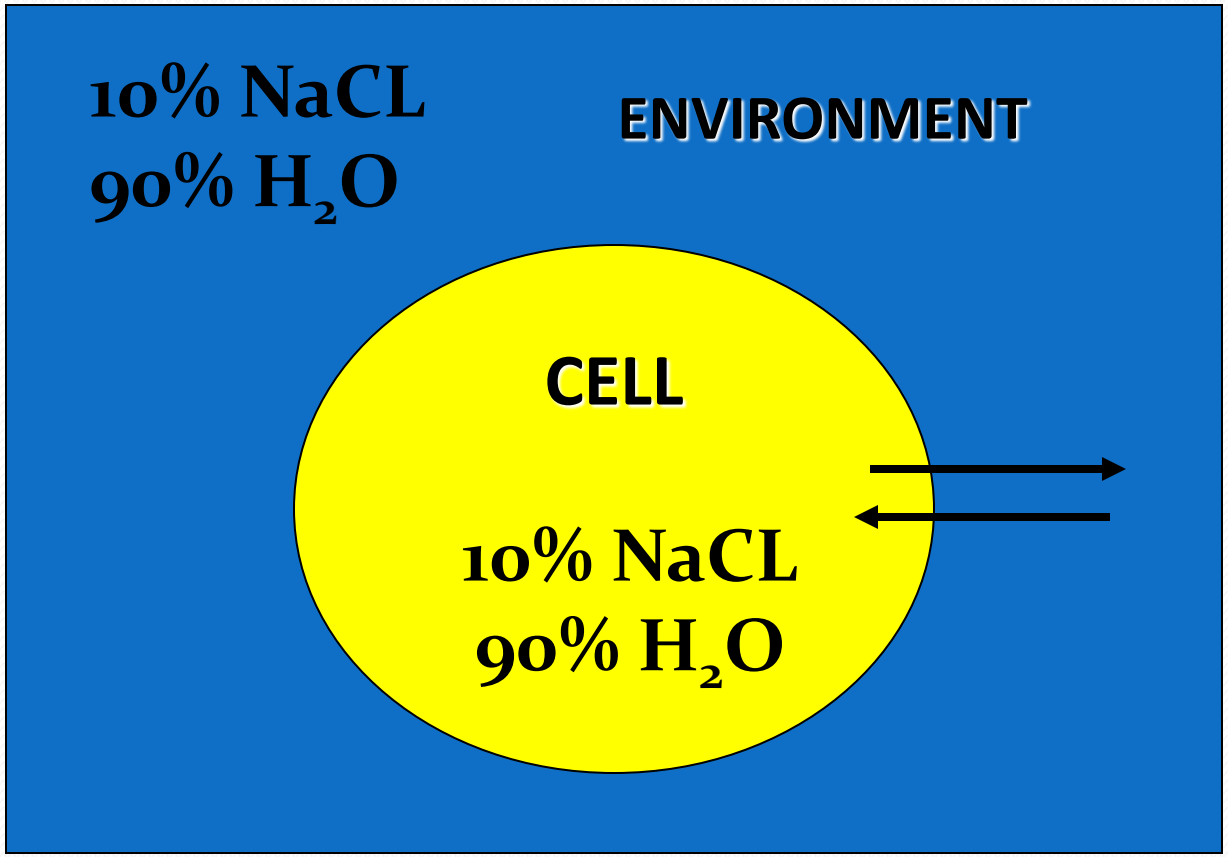
Iso, Hypo or Hyper?

ISOTONIC



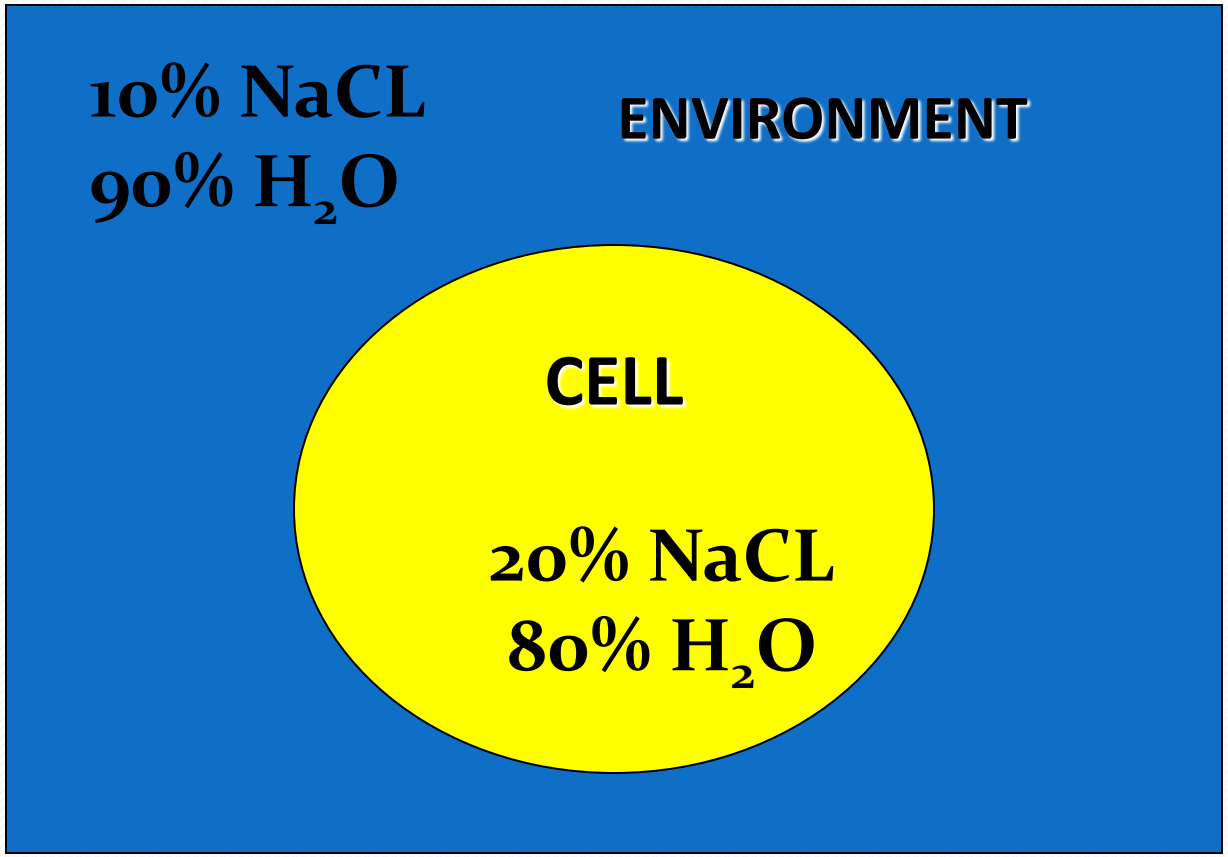
Water goes?

IN/OUT



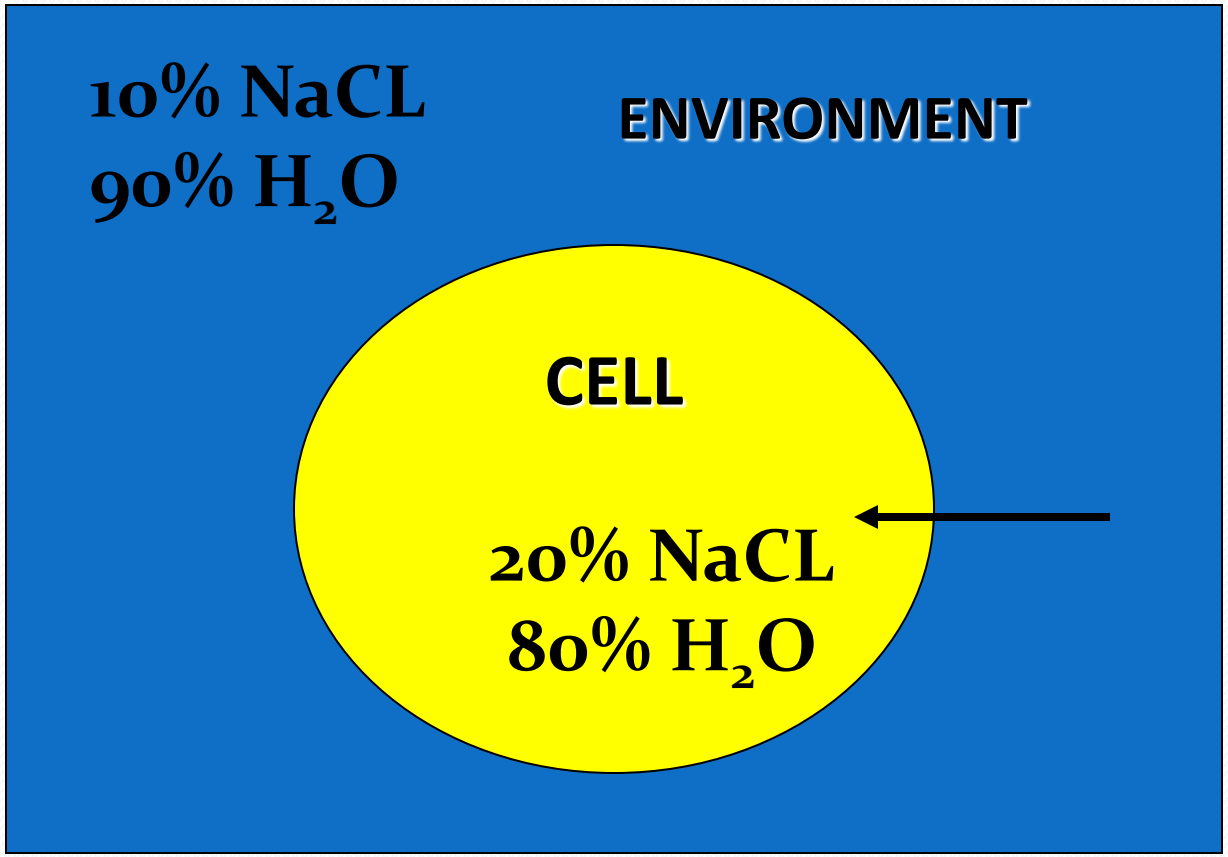
Iso, Hypo or Hyper?

HYPOTONIC



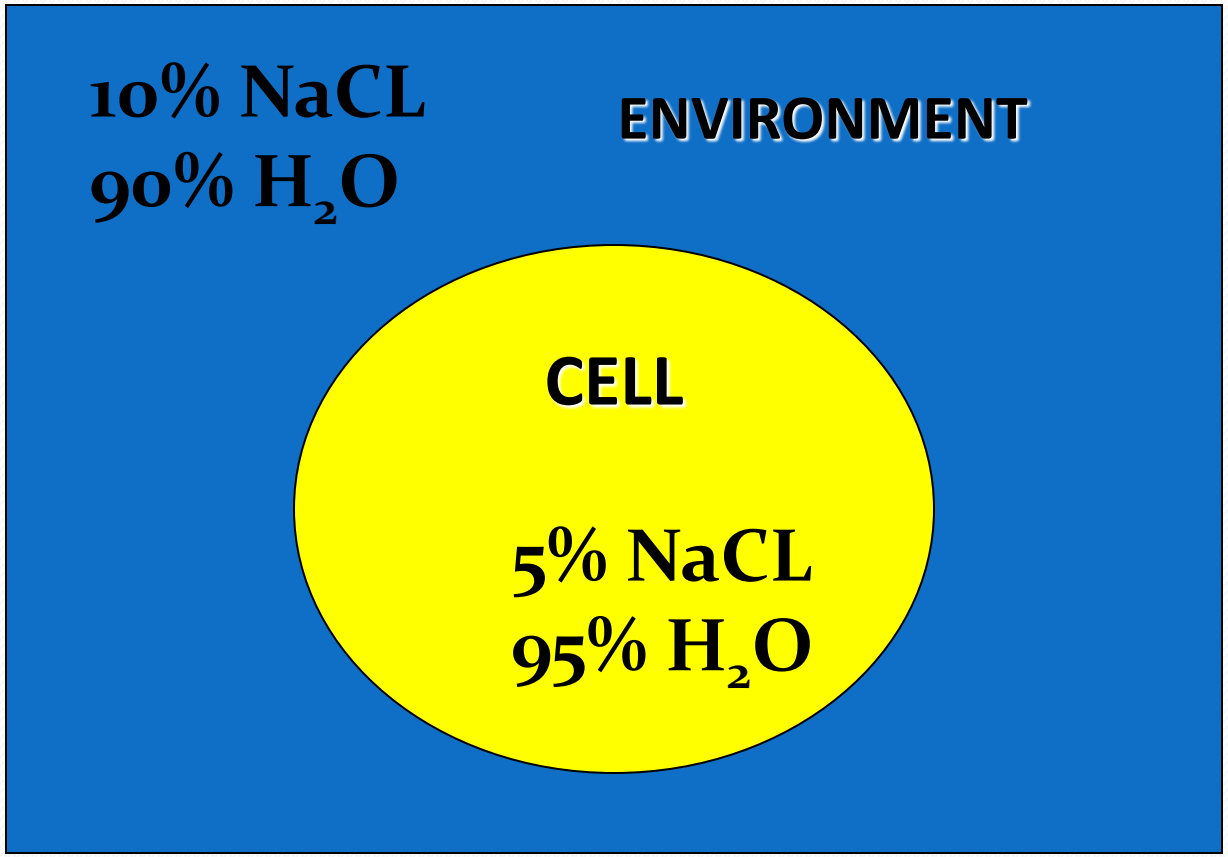
Water goes?

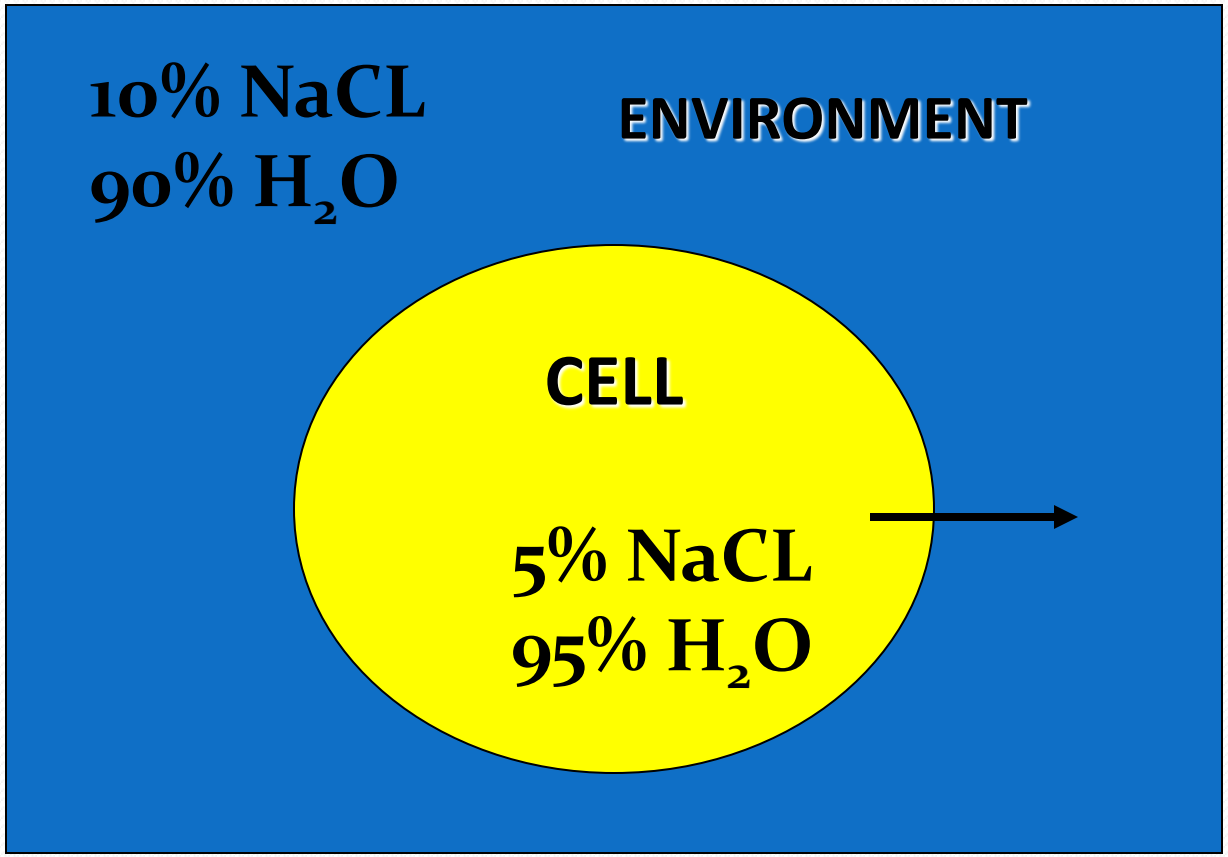
IN



Iso, Hypo or Hyper?

HYPERTONIC



Water goes?

OUT