**Unit 5 Notes: Cell Transport**

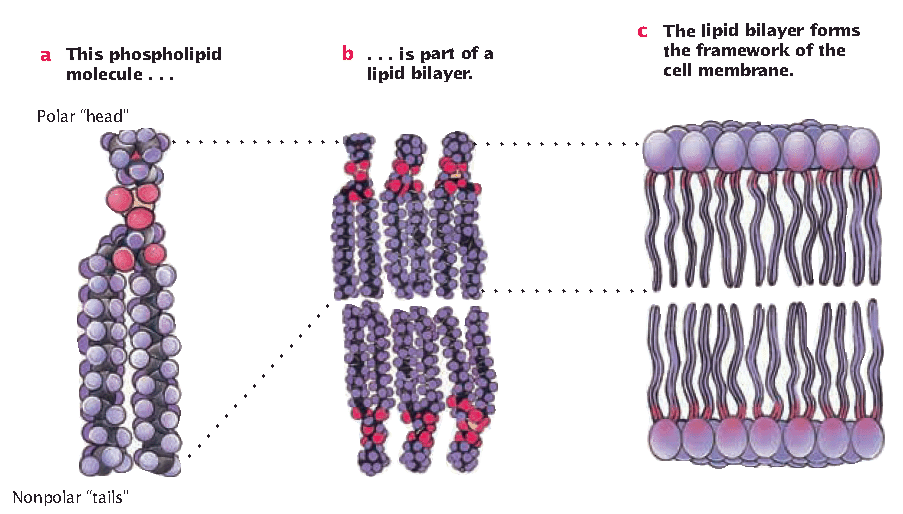
**The Cell Membrane (Ch. 3 Sect.3)**

**CUES**

**The Cell Membrane**

* The fluidity of cell membranes is caused by \_\_\_\_\_\_\_\_ which form the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The lipids form a barrier that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the cell from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the cell.
* This selective \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of the cell membrane determines which substances \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_the cell.

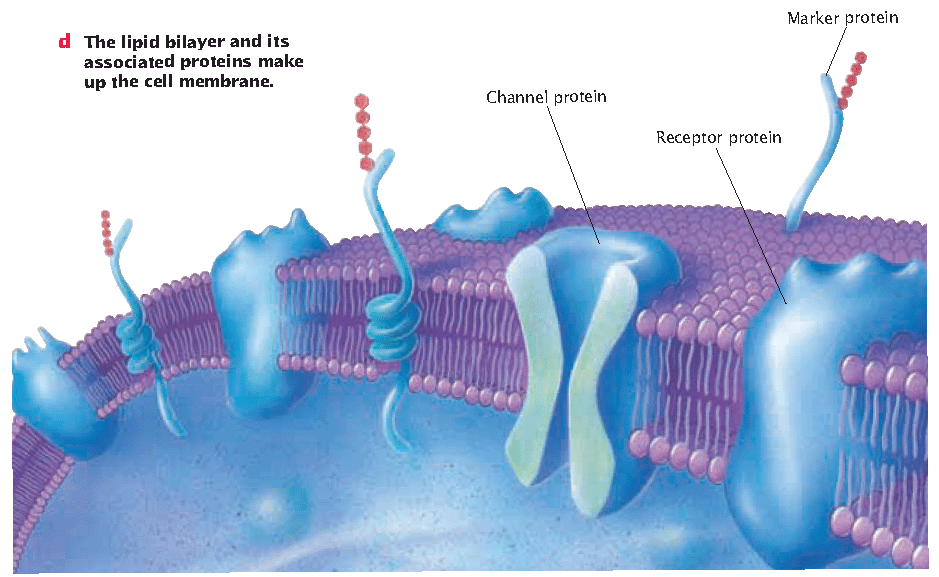
**The Cell Membrane as a Barrier**

* The selective permeability of the cell is mainly caused by the way \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* In a cell membrane, the phospholipids are arranged in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_called a lipid bilayer.
* The interior portion forms a non-polar zone that doesn’t allow large, polar, or ionic materials to pass through.
* A phospholipid’s “head” is polar (Loves Water)
* A phospholipid’s “tails” are non-polar (Hate Water)

Summary

**Types of Membrane Proteins**

**CUES**

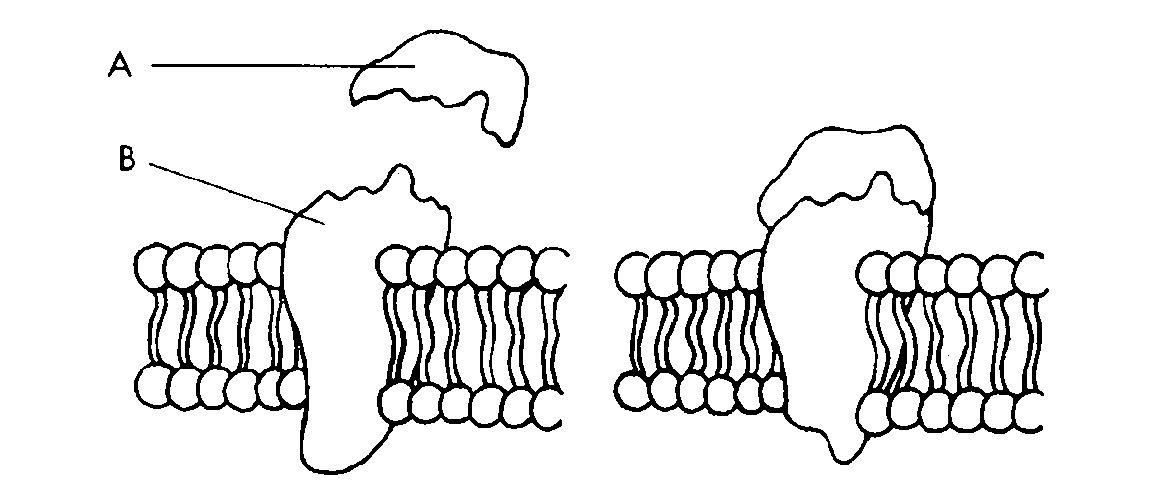
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1. Cell surface marker- Carbohydrate chains help \_\_\_\_\_\_\_\_\_\_\_ cell type. (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

2. Channel proteins- Allows \_\_\_\_\_\_\_\_\_\_ that can’t get directly through the bilayer \_\_\_\_\_\_\_\_ of the cell.

3. Receptor Proteins

* Proteins (B) (\_\_\_\_\_\_\_\_\_\_\_\_\_)in cell membrane that bind to signal molecules (A) (\_\_\_\_\_\_\_\_\_\_\_\_\_\_).



* This signal/message says one of three things:

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_channel proteins

(Open up)

2. Start a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ throughout the cell.

(Forward Text)

3. Act as an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a reaction

in the cell (Hurry up)

Summary

**Types of** **Passive Transport (Ch.4 sect. 1)**

**CUES**

**Passive Transport**

* + Transport of materials that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_ of a cell

* + \_\_\_\_\_\_\_\_\_\_\_\_concentration gradient = high to low
    - EX: Diffusion-\_\_\_\_\_\_\_\_\_\_\_\_\_

Osmosis-\_\_\_\_\_\_\_\_\_\_\_\_\_

**Turgidity**

* The \_\_\_\_\_\_\_\_\_\_\_water puts on the inside of cells. Allows cells to be hydrated and to have a concentration gradient.

**Concentration Gradient**

* The of a substance

over a distance.

* Based on \_\_\_\_\_\_\_\_\_\_\_\_\_ and collisions, molecules

move from regions of \_\_\_\_ concentration to regions

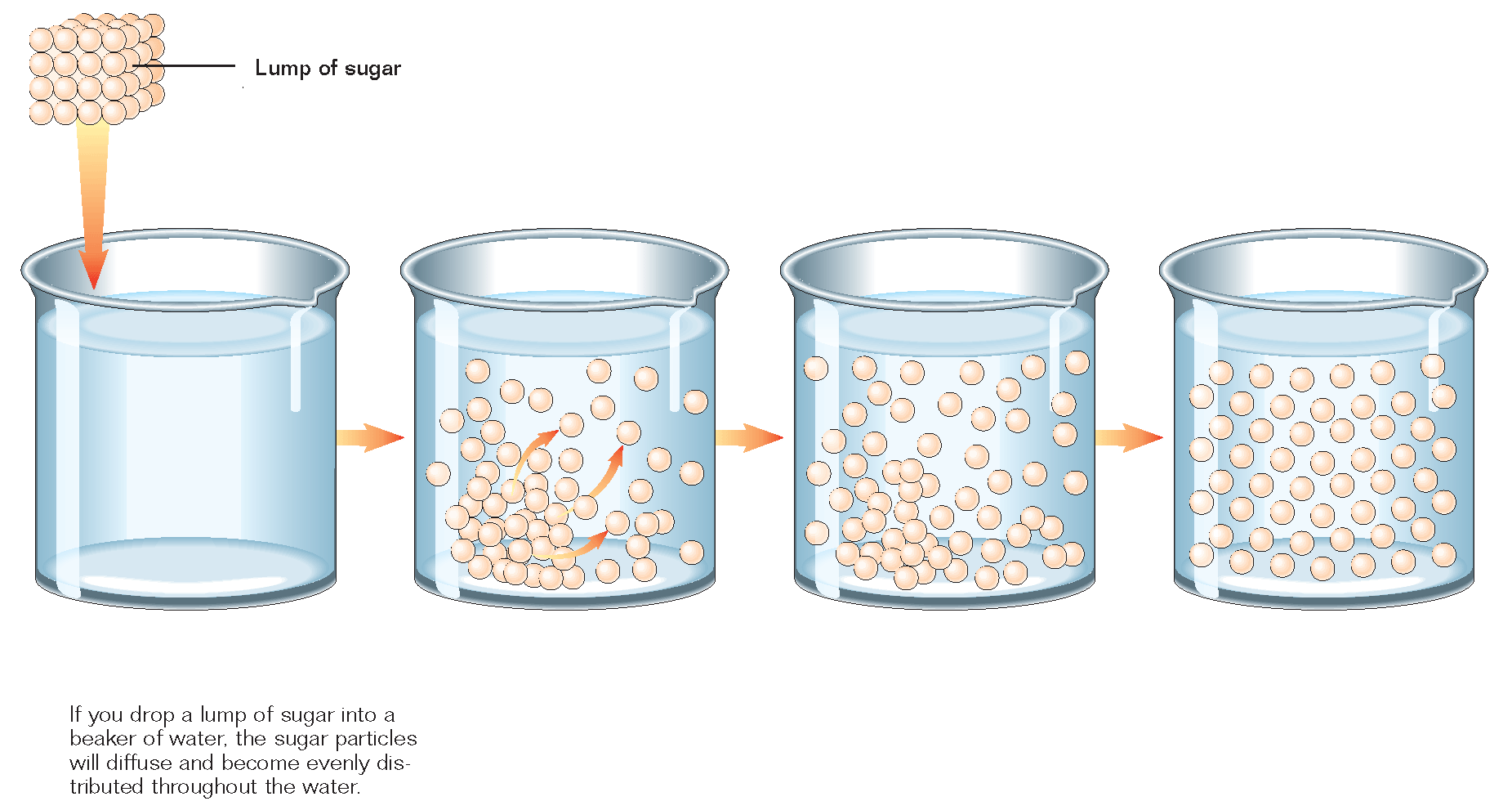
of \_\_\_\_\_\_ concentration.

**Equilibrium**

* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a substance is \_\_\_\_\_\_\_\_.

**Homeostasis**

* The process of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ equilibrium. Hydration, turgidity, and temperature all depend on homeostasis.

The picture below shows diffusion resulting in equilibrium.

**Types of Passive Transport**

**CUES**

**Diffusion (passive)**

* Movement of a \_\_\_\_\_\_\_\_\_\_ from an area of higher

concentration to lower concentration until

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is reached.

* Substances move \_\_\_\_\_ the concentration gradient.

* ­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Can occur \_\_\_\_\_\_\_\_\_\_\_\_\_the cell membrane.

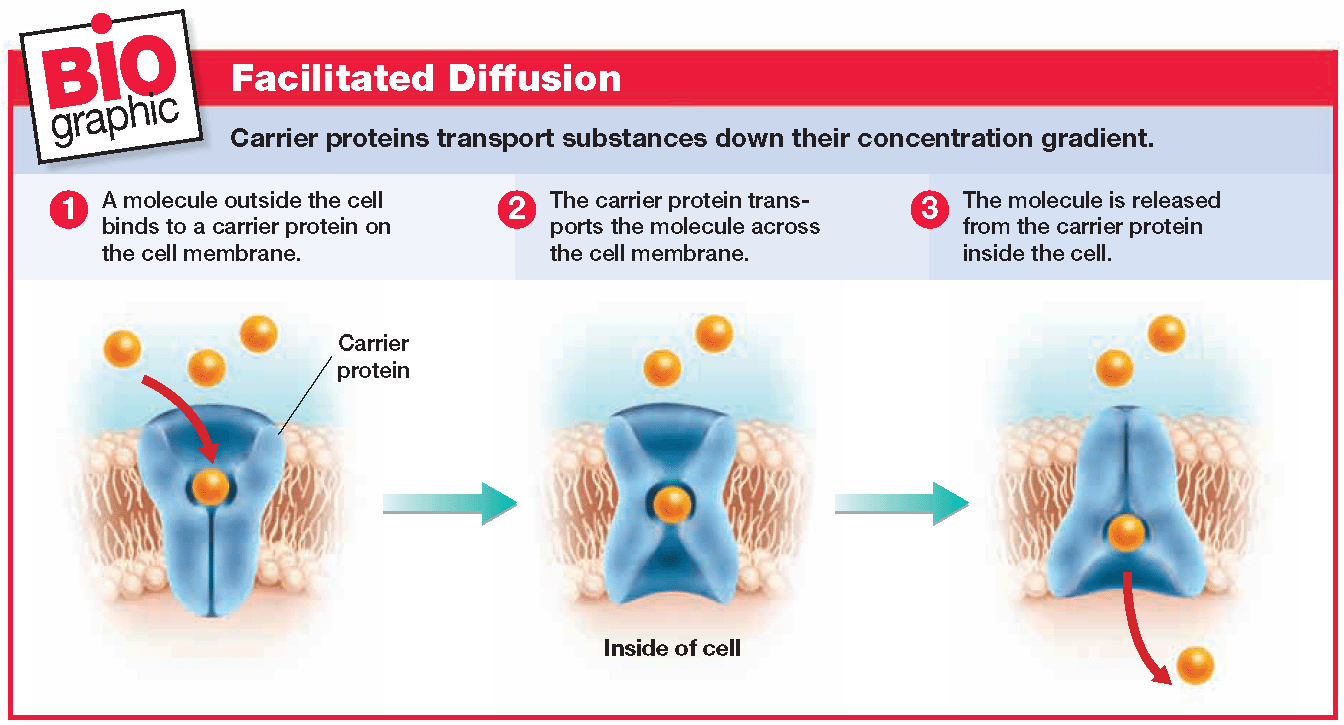
**Simple Diffusion (passive)**

* + Movement of materials directly across the lipid

Bilayer.

* For \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ molecules

**Facilitated Diffusion (passive)**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ transport \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Membrane—no energy, \_\_\_\_\_\_\_\_\_\_\_ gradient.
* Molecules that can’t cross membrane\_\_\_\_\_\_\_\_\_\_.

**Types of Passive Transport**

**CUES**

**Osmosis (passive)**

Diffusion of \_\_\_\_\_\_\_\_across a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* \_\_\_\_\_\_\_\_\_\_ molecules \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ if

they are \_\_\_\_\_\_\_\_\_ to dissolved substances, \_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* Moves from areas of \_\_\_\_\_\_\_\_\_ (free water concentration).
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Free Water**

Free water is water that\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

If water is not “free” than it doesn’t get transported across the membrane as easily.

**Word Dissection/Definitions**

Iso- \_\_\_\_\_\_\_\_\_\_\_

Hyper- \_\_\_\_\_\_\_\_\_\_\_

Hypo- \_\_\_\_\_\_\_\_\_\_\_

Tonic- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(like salt)

**Isotonic Solution**

* + Water moves \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the cell

at the ***\_\_\_\_\_\_\_\_\_***rate

* + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Summary

**Types of Solutions**

**Hypertonic Solution**

**CUES**

* More solutes are in the solution (outside of cell).
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of cell into the surrounding solution (cell \_\_\_\_\_\_\_\_\_)
* Fluid outside has more dissolved particles, ­\_\_\_\_\_

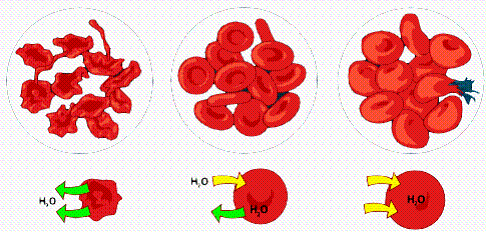
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Hypotonic Solution**

* Less solutes are in the solution (outside of cell).
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the surrounding solution (cell \_\_\_\_\_\_\_\_\_\_ or burst).
* Fluid outside has less dissolved particles, \_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Cells in different types of solutions:**



Hypertonic Isotonic Hypotonic

(Cells Shrink) (Cells stay same) (Cells Swell/Burst)

Summary

**Types of Active Transport (Ch.4 sect.2)**

**CUES**

**Active Transport**

* Transport of materials that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_ of the cell.

* These materials are too \_\_\_\_\_\_\_\_\_\_\_\_to fit through a channel.
* Energy comes from\_\_\_\_\_\_\_\_\_\_.

(Adenosine Tri-phosphate)

A—P—P—P 🡪 A—P—P ≠ P

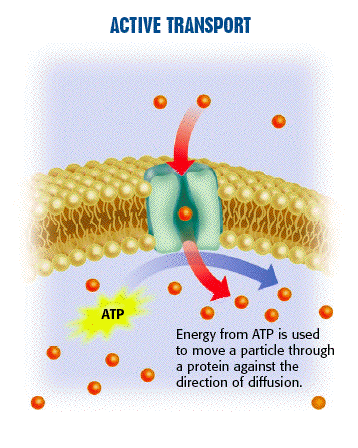
(Energy released when bond broken ≠)

* They move \_\_\_\_\_\_\_\_\_\_ concentration gradient.

low to high

* ­­­­­­­­­Uses carrier\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + EX: Sodium Potassium Pump (next page)

Movement in Vesicles (pg 8-9)



Summary

**Types of Active Transport**

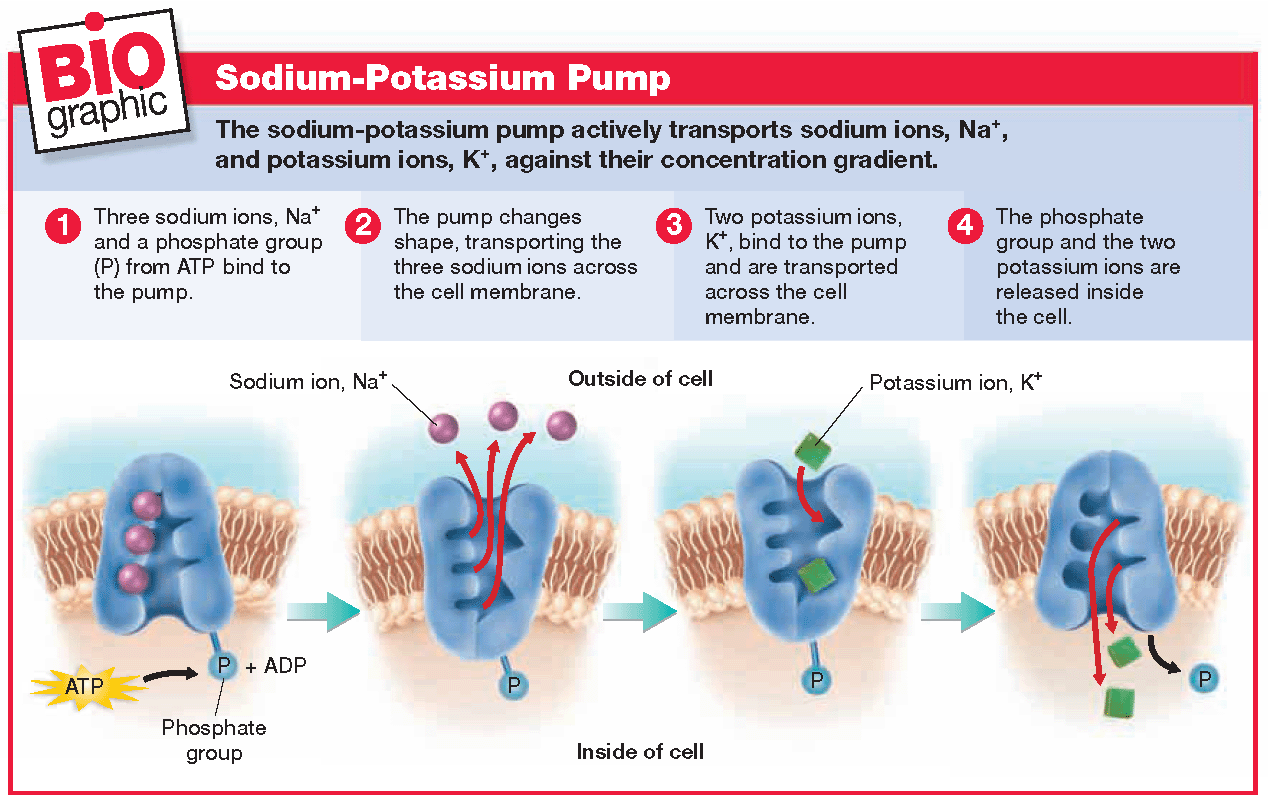
**CUES**

**The Sodium Potassium Pump (active)**

* Sodium (Na+) and Potassium (K+) in our cells need to be regulated (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) to help with muscle contractions.
* The cell has to pump sodium and potassium at a 3:2 ratio. When 3 leave 2 can enter.
* When 3 Sodium get pumped \_\_\_\_\_\_\_\_\_\_\_

then 2 Potassium get pumped \_\_\_\_\_\_\_\_\_\_.

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ powers the pump which is why it is a form of active transport.



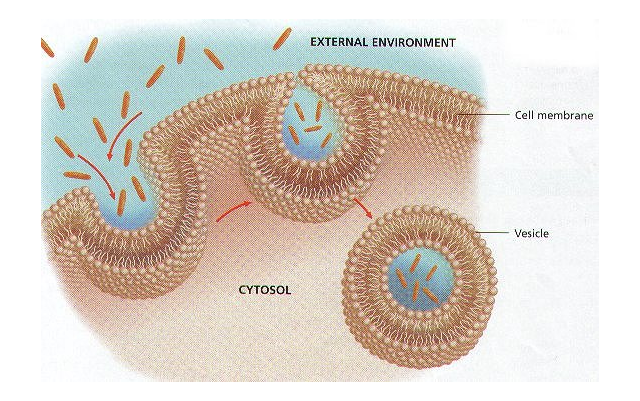
Summary

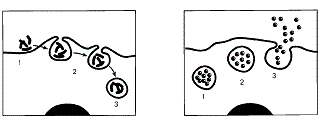
**Types of Active Transport**

**CUES**

**Movement in Vesicles (active)**

* Some molecules are ­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to be transported by carrier proteins.
* Cells move large molecules in \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* To do this the membrane surrounding the vesicle \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with the cell membrane and lets particles enter or leave the cell.





Endocytosis (\_\_\_\_\_\_\_\_\_\_) Exocytosis (\_\_\_\_\_\_\_\_\_\_\_)

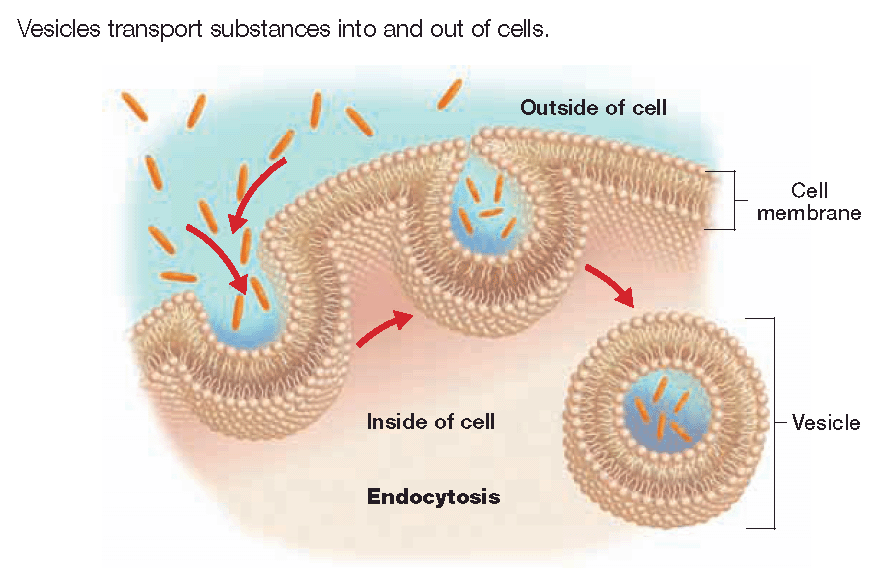
Summary

**Active Transport**

**CUES**

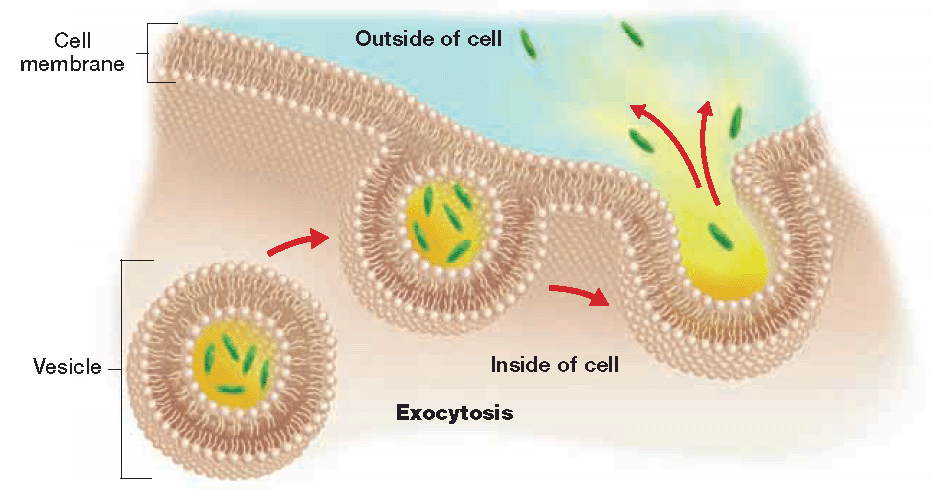
**Endocytosis (active)**

* Movement of a substance \_\_\_\_ a cell by a vesicle
* Forms a \_\_\_\_\_\_\_\_\_ that \_\_\_\_\_\_\_\_\_\_\_\_ inside cell.



**Exocytosis (active)**

* Movement of a substance \_\_\_\_\_\_of a cell by vesicle
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with membrane and contents are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



Summary