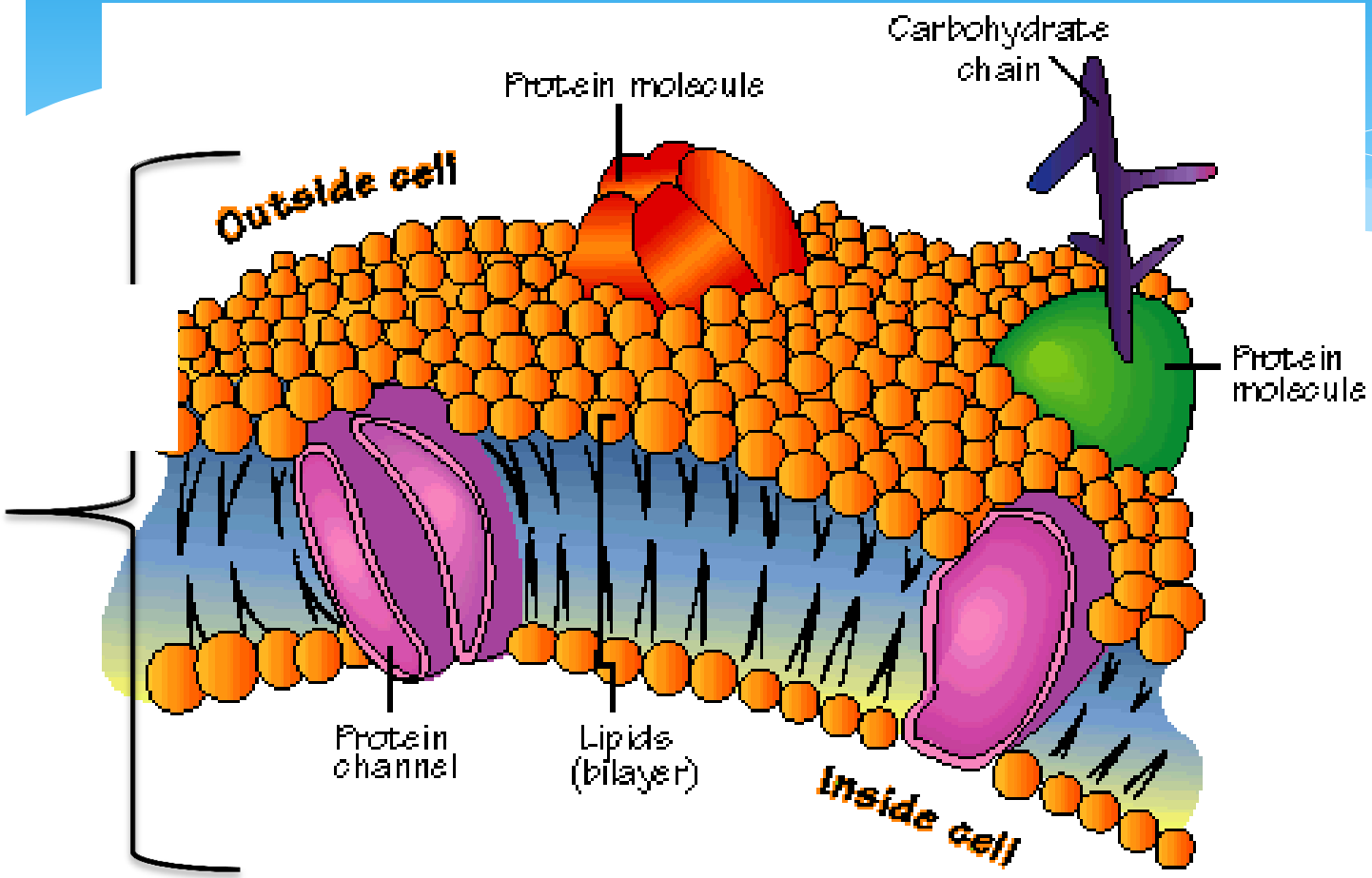
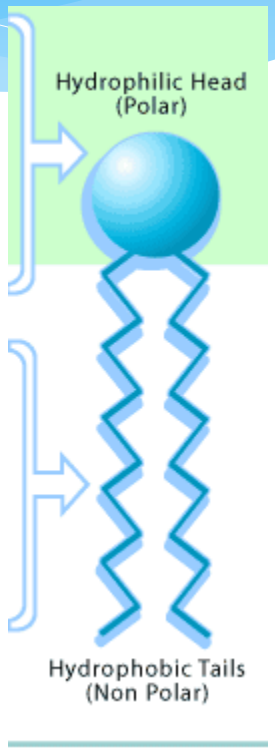
Plasma Membrane and Cell Transport

7.3

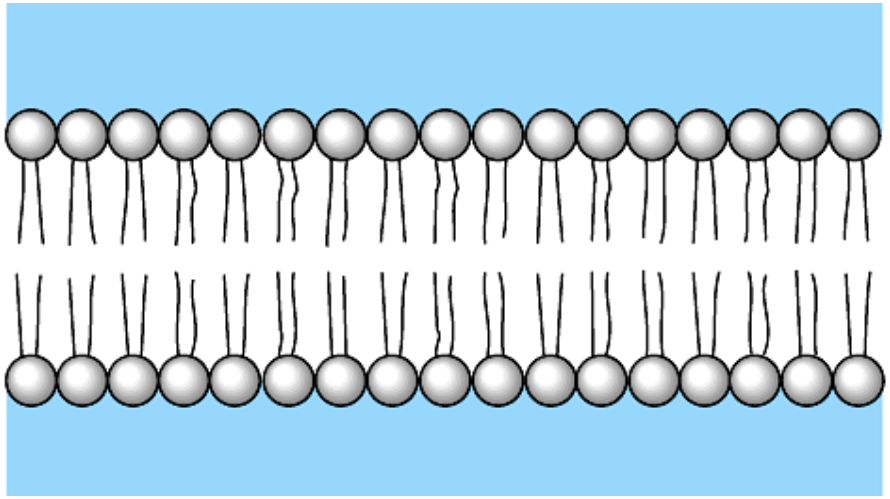
Cell Membrane Labeling

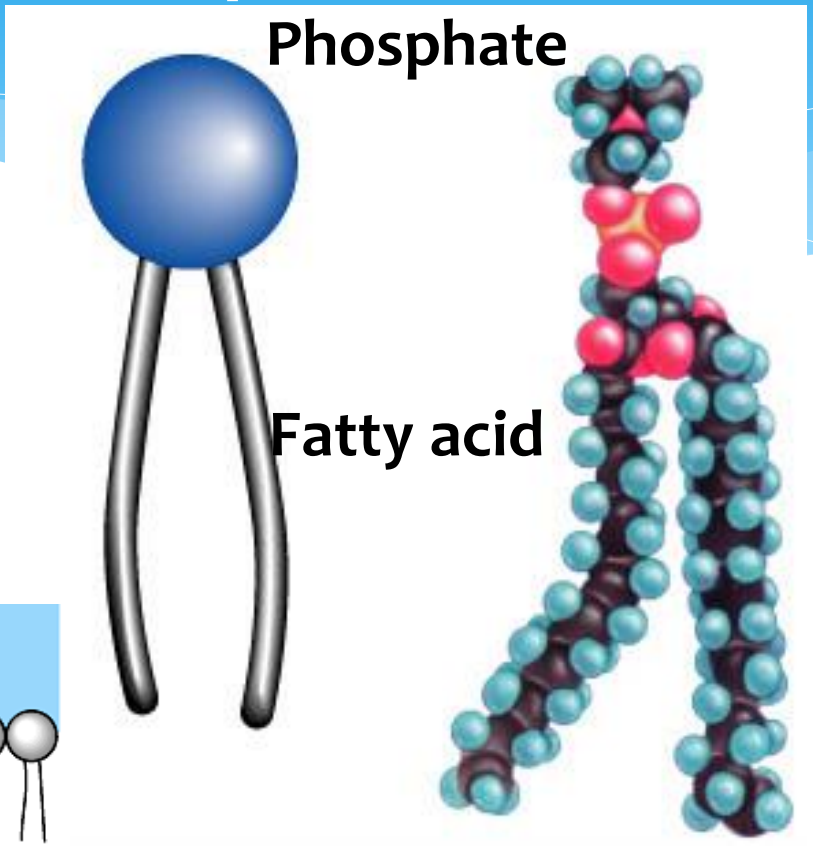




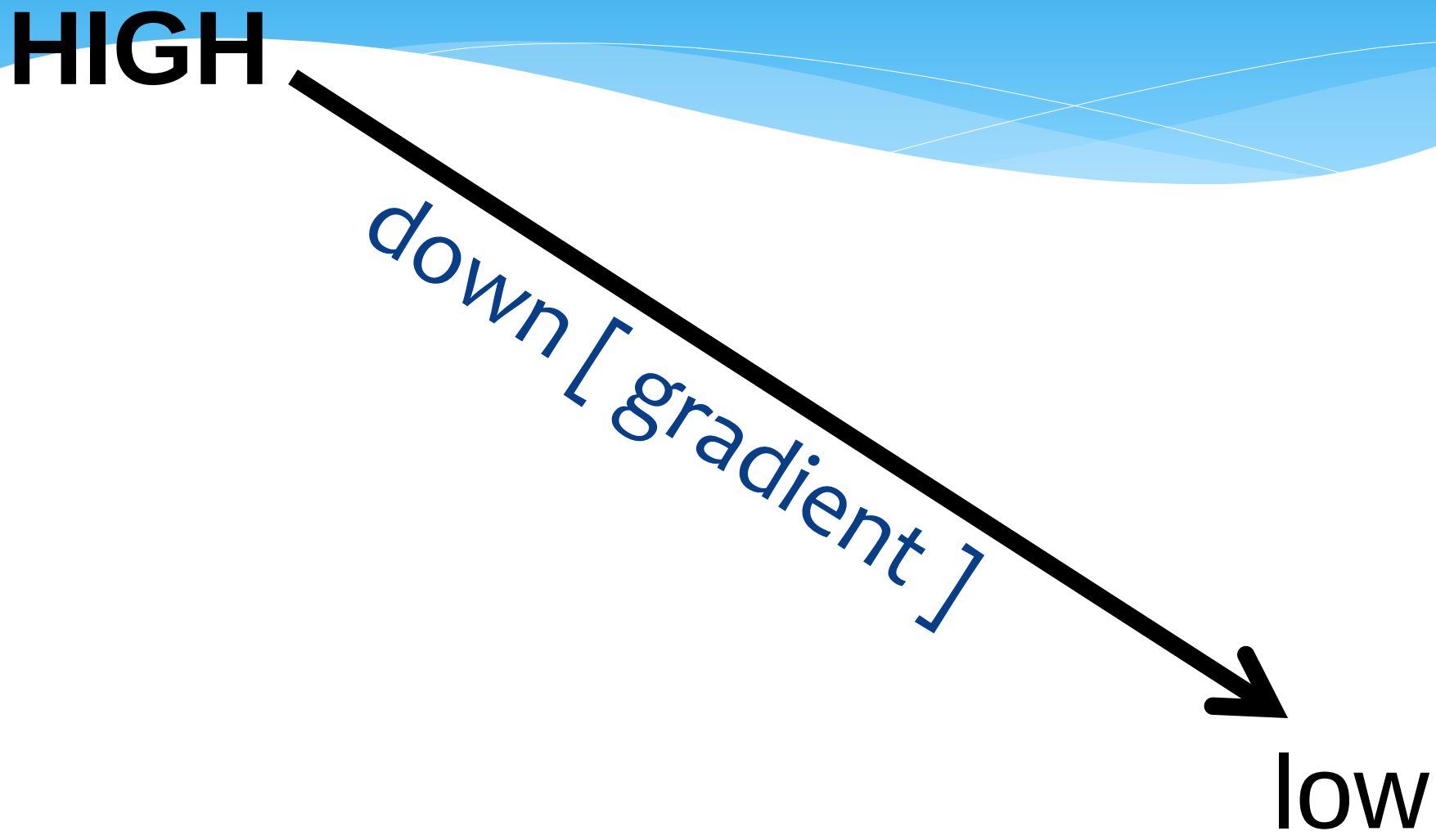
Phospholipids

* Fatty acid tails
  * hydrophobic
* Phosphate group head
  * hydrophilic
* Arranged as a bilayer





Passive Transport = Requires no **E**



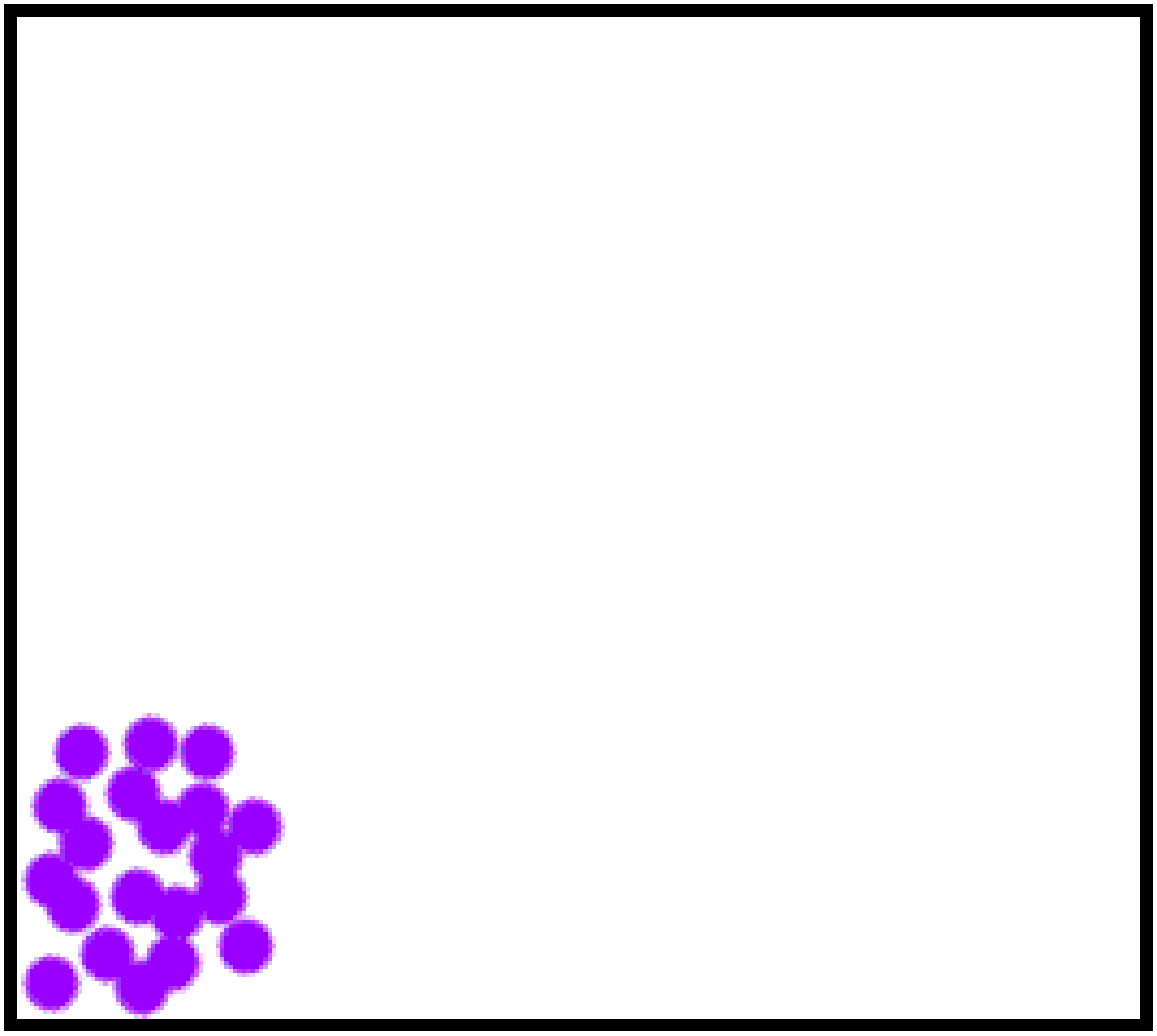
Passive Transport

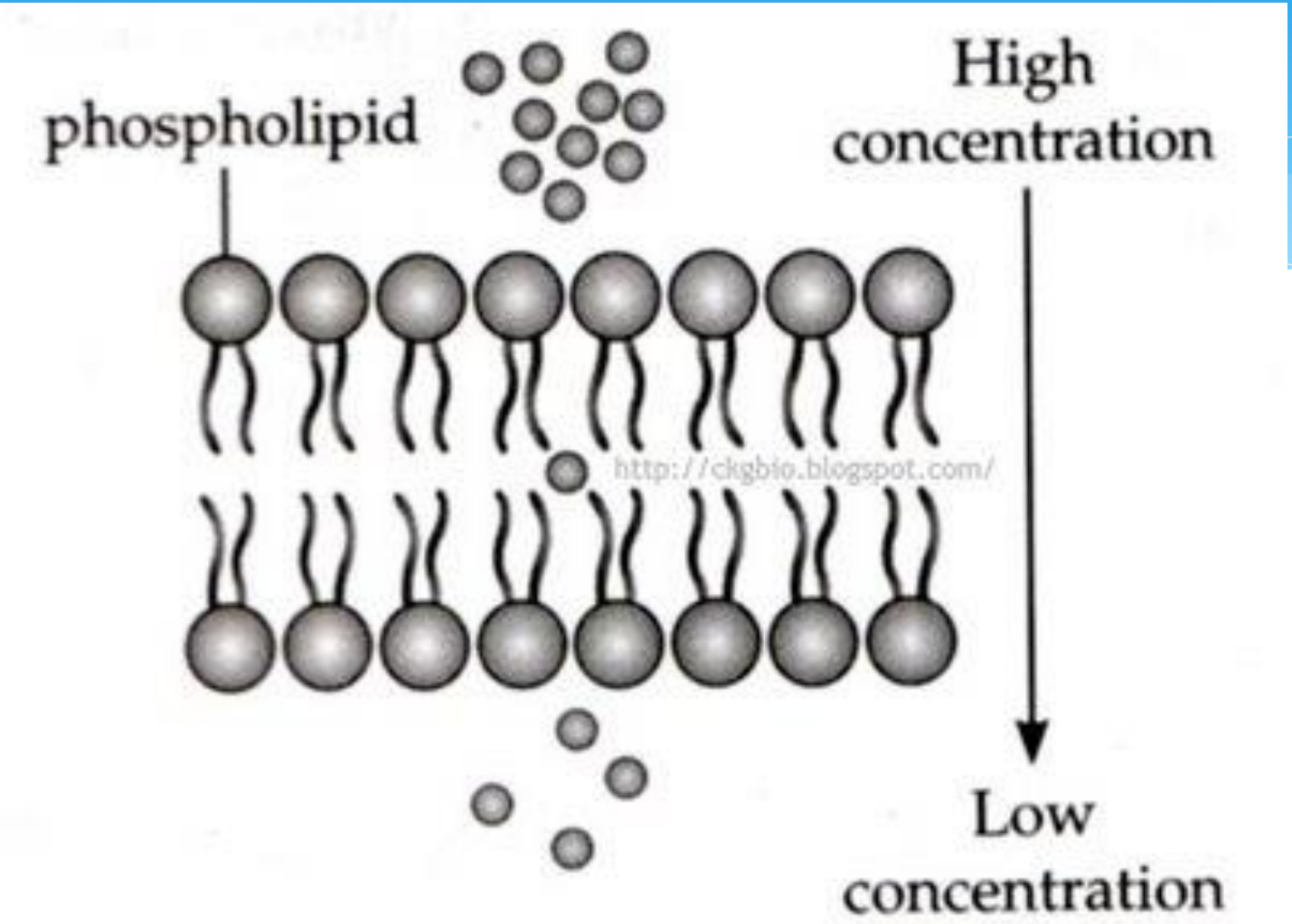
* Does not use energy
  * *uneven distribution of a substance across a border*
* 3 types

Diffusion

* Molecules in *constant motion*
* Molecules move from [high] to [low]
* Requires **no energy** (passive)
* **EX:** O_2 moving from lungs to bloodstream

Remember, Molecules are *Always* Moving!

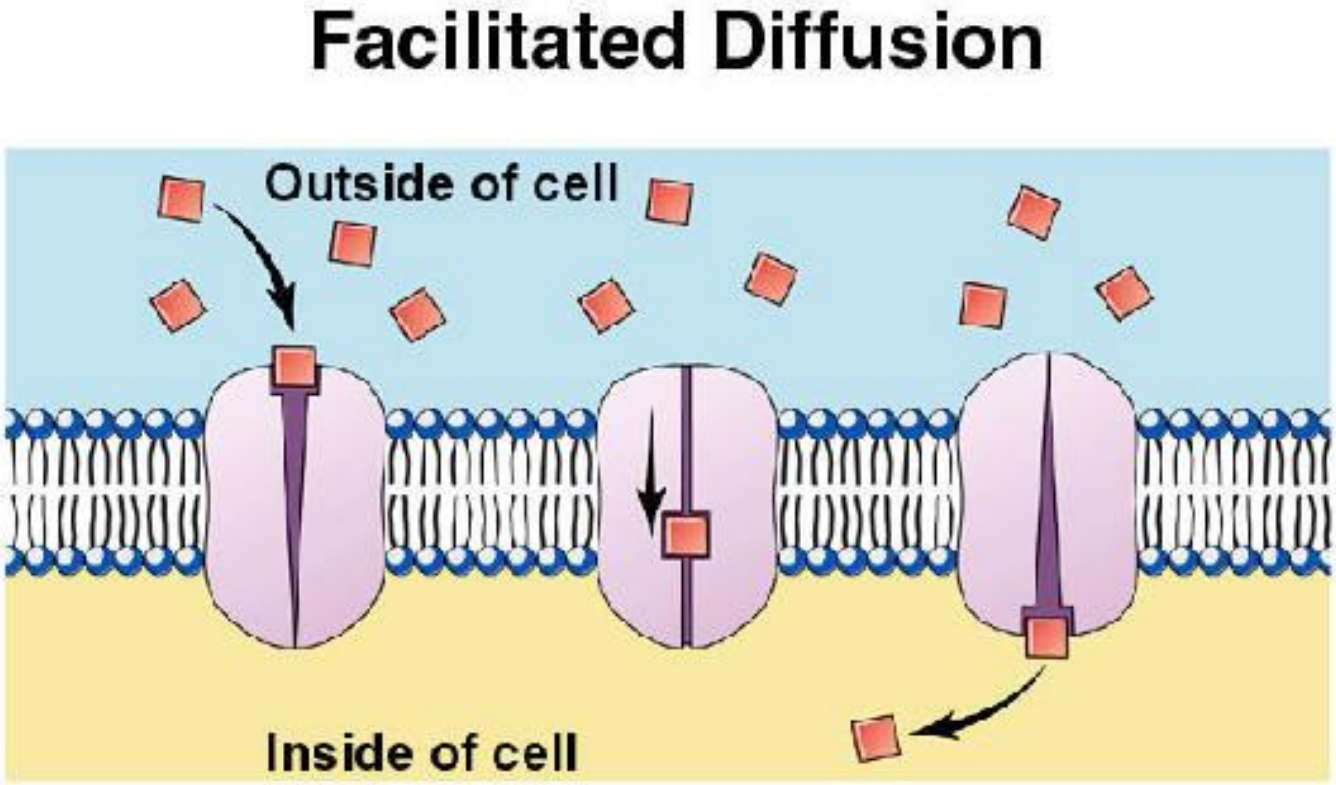



phospholipid
High concentration
Low concentration
http://ckgbio.blogspot.com/

Passive Transport: Facilitated Diffusion

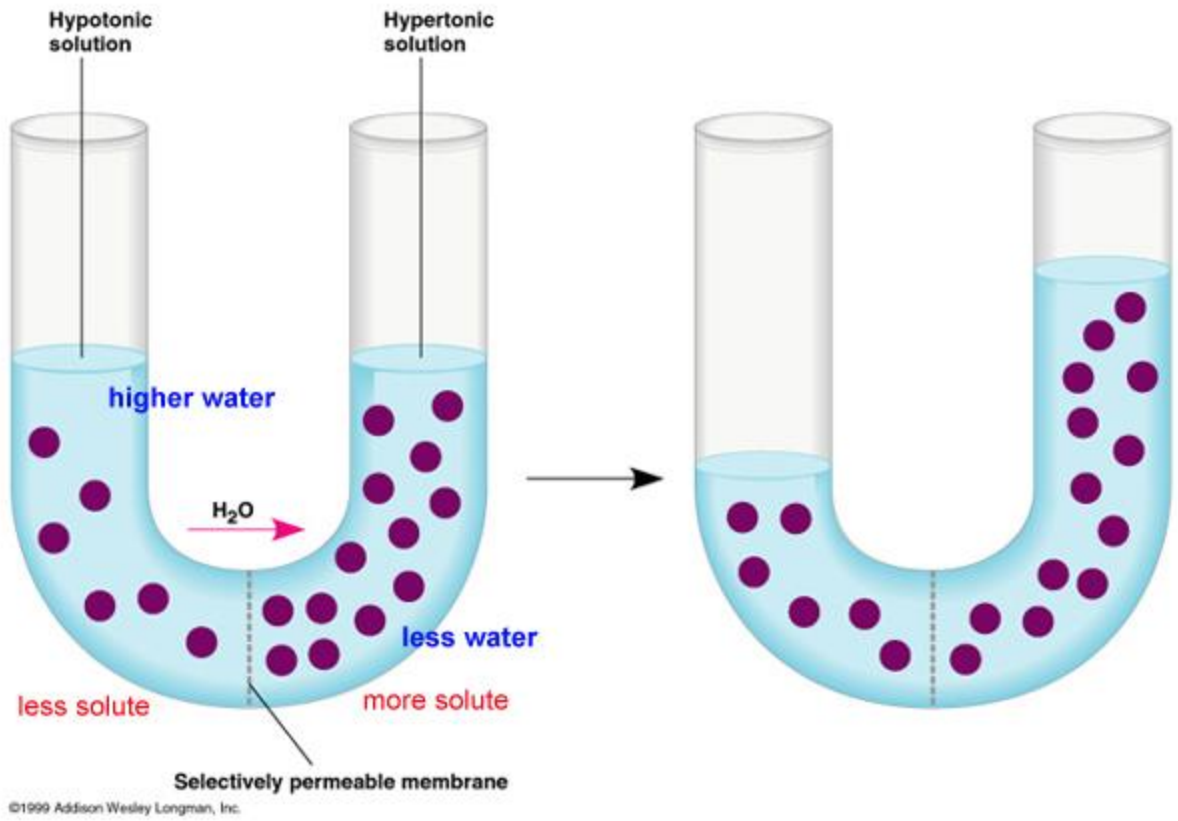
* no energy required
* larger particles that can’t fit easily
  Sugar ions
* Protein channel

Passive Transport: Facilitated Diffusion

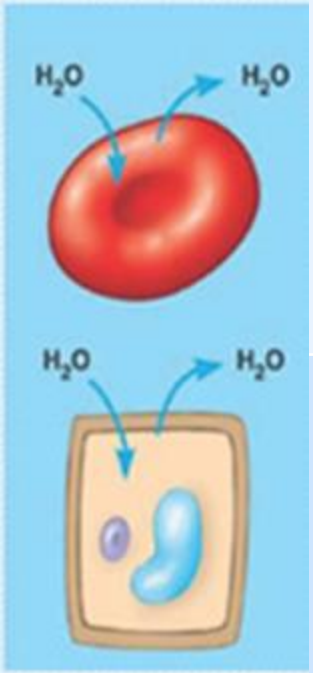
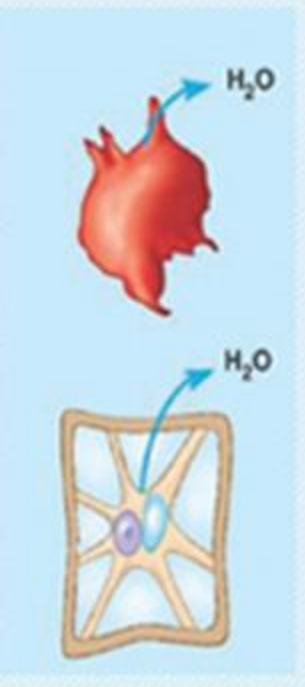
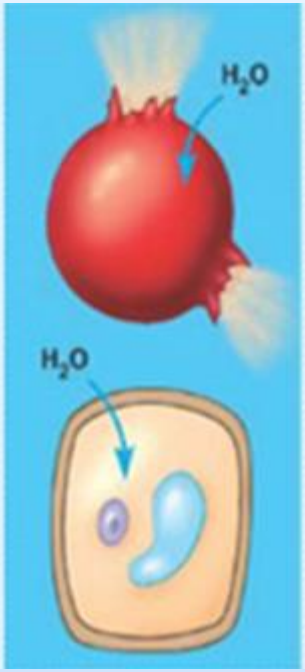


Passive Transport: Osmosis

* No energy required
* Diffusion of water
* Water moves, not the particles

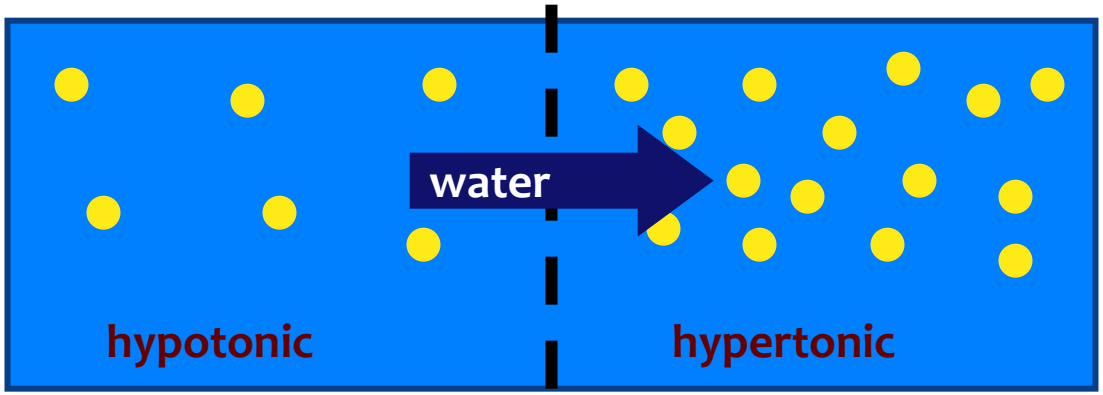


Passive Transport: Osmosis

Solution	Isotonic	Hypertonic	Hypotonic
Definition	Same strength	Above strength	Below strength
Animal cell			
Plant cell			

Concentration of water

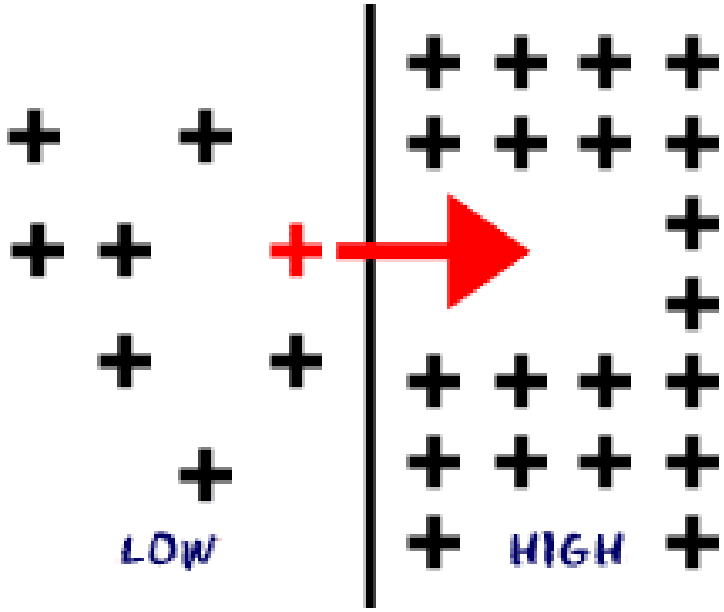
* Hypertonic - more solute, less water
* Hypotonic - less solute, more water
* Isotonic - equal solute, equal water



net movement of water

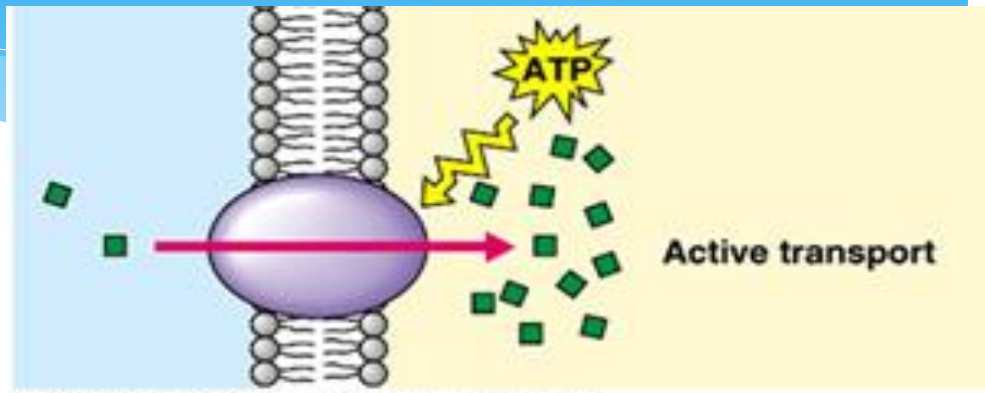
Active Transport

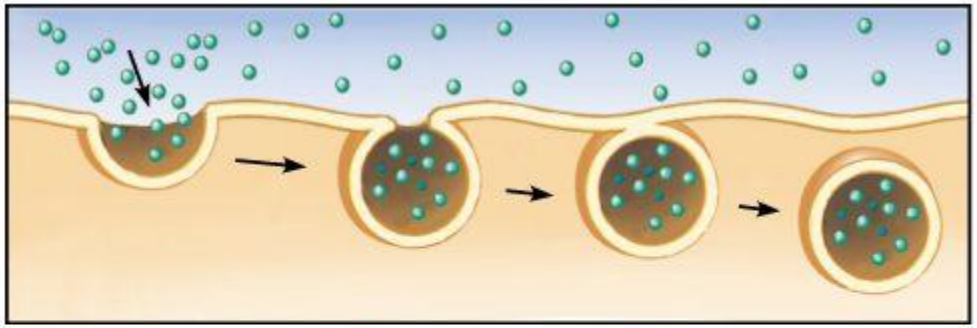
* Requires energy
* low to high concentrations
* Protein Pump
  * Against Concentration Gradient

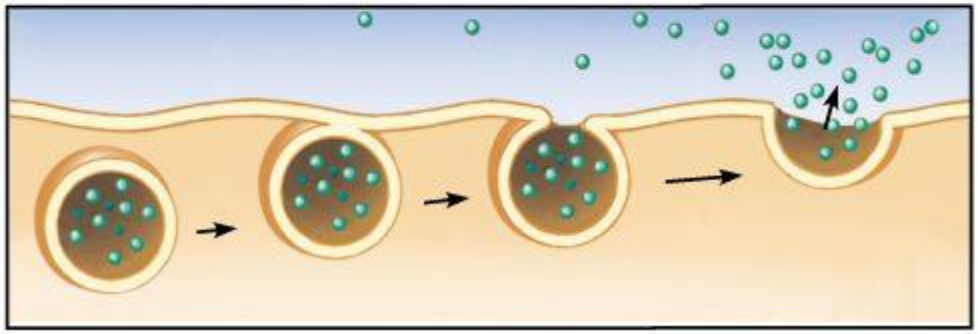


Types of Active Transport

* Protein Pump
* Endocytosis
* Exocytosis







REVIEW

- Passive Transport
  - Simple diffusion
    - diffusion of nonpolar, hydrophobic molecules
    - lipids
    - high → low concentration gradient
  - Facilitated transport
    - diffusion of polar, hydrophilic molecules
    - through a protein channel
    - high → low concentration gradient
- Active transport
  - diffusion *against* concentration gradient
    - low → high
  - uses a protein pump
  - requires ATP

7.4 Homeostasis of Cells

* Homeostasis – maintain, grow, and respond to environment
* Cell Specialization
  * Cells play different roles

7.4 Homeostasis
Levels of Organization

* Cell – Red Blood Cell
* Tissue - Muscle
* Organ - Heart
* Organ system - Respiratory
* Organism - Human

7.4 Homeostasis
Levels of Organization

* Cellular communication
  * Chemical signals from cell to cell
  * Carbohydrate chains