



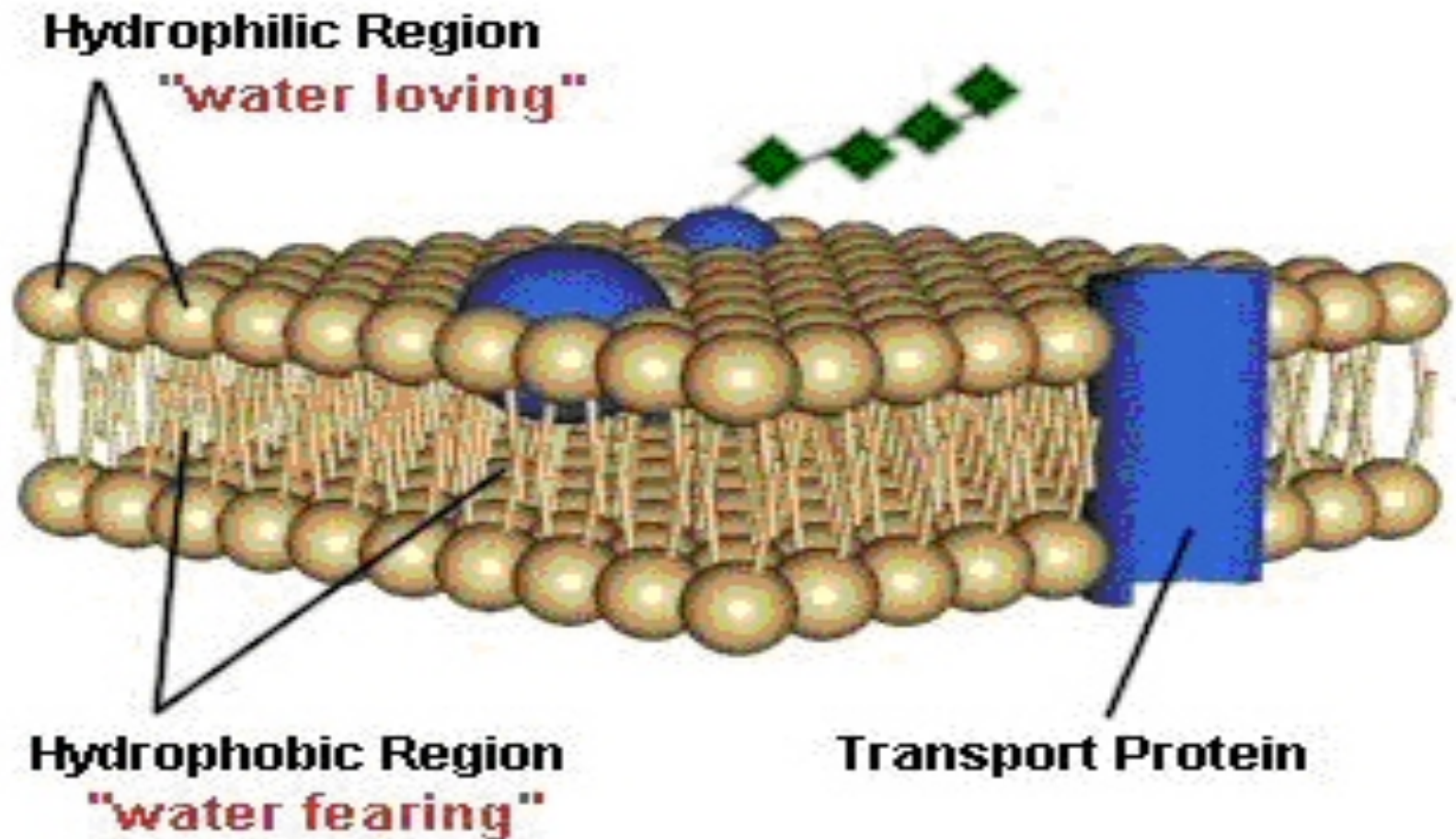
Cellular Transport

Exchange of materials/ Role of the
Cell Membrane

Cell Membrane

- Consists of a phospholipid bi-layer
- Known as a semi-permeable membrane (allows some things through, but not others)
- Phospho – made of phosphates
- Phosphate heads- hydrophilic- “water loving”
- Lipid – fats (non-polar – doesn’t dissolve in water)
- Lipid Tails – hydrophobic – “water fearing”
- Bi-Layer – 2 layers

Cell Membrane



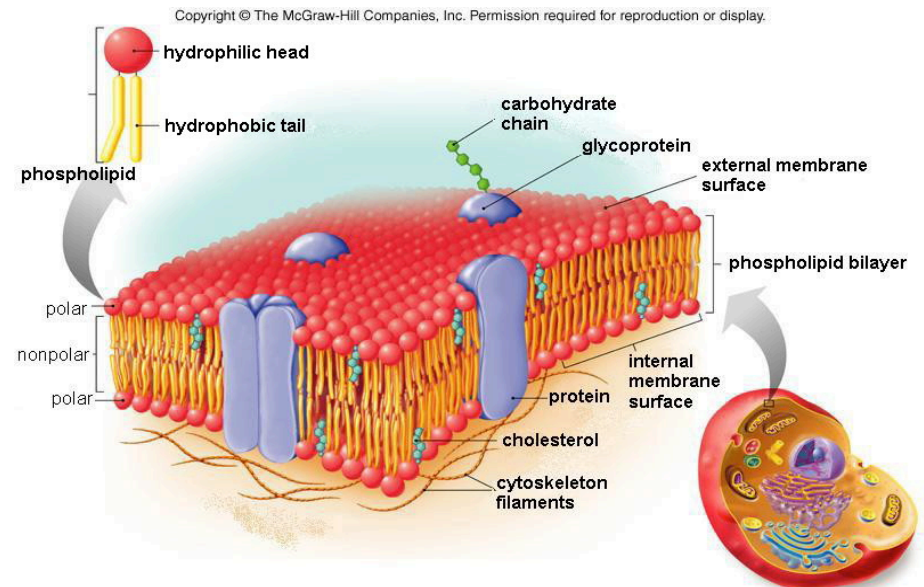
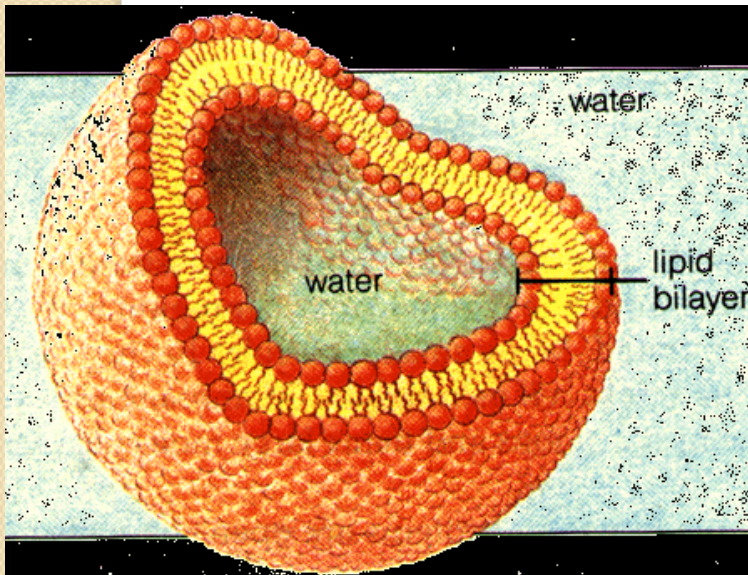
Cell Membrane

- Functions –

Protects and supports the cell

Acts as a boundary

Controls what goes in and out of the cell



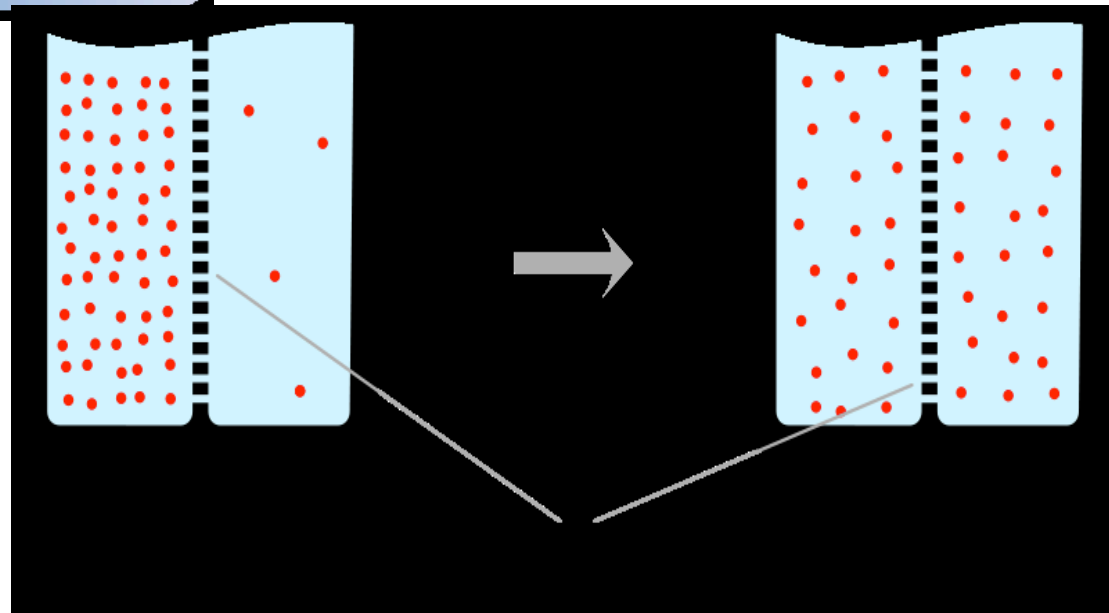
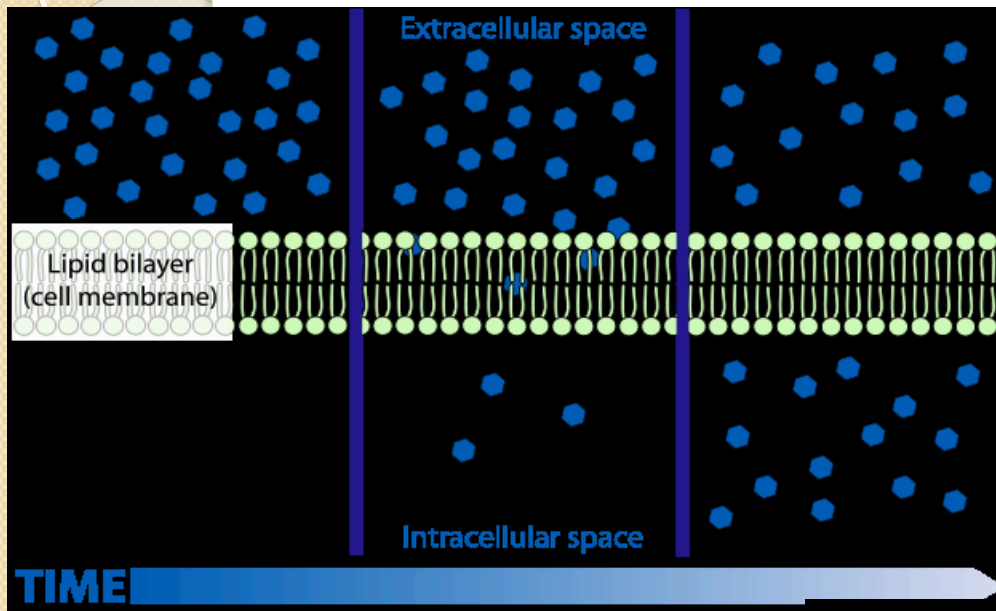
How do cells get the nutrients/ materials they need to survive?

- Cells Transport the things they need through the cell membrane
- They can do this two ways:
 1. Passive Transport (does not use energy)
 2. Active Transport (using energy)

Passive Transport

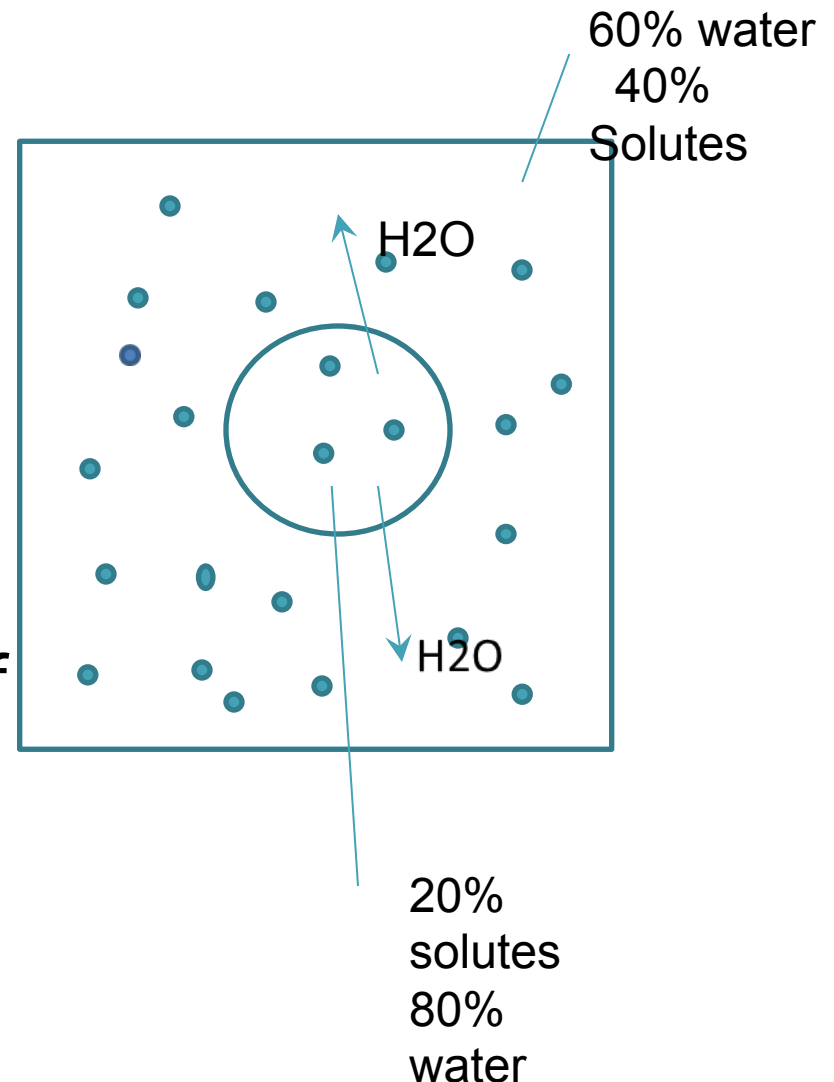
- Does NOT require energy to move things across the membrane
- Substances move with the concentration gradient (unequal distribution of particles)
- This means substances move with the flow from High concentration to low concentration
- Examples:
 - Diffusion – movement of particles (substances)
 - Osmosis – movement of water
 - Facilitated Diffusion – diffusion with the help of transport proteins

Passive Transport (cont.)

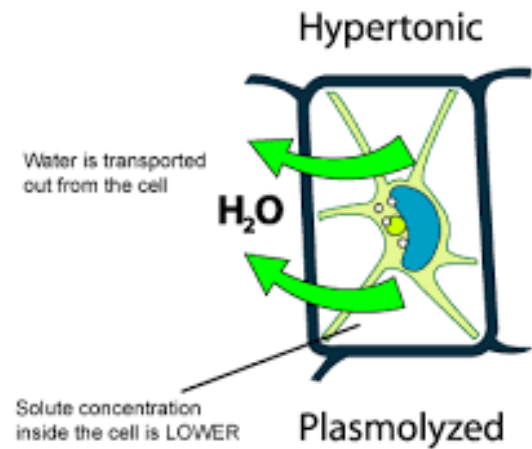
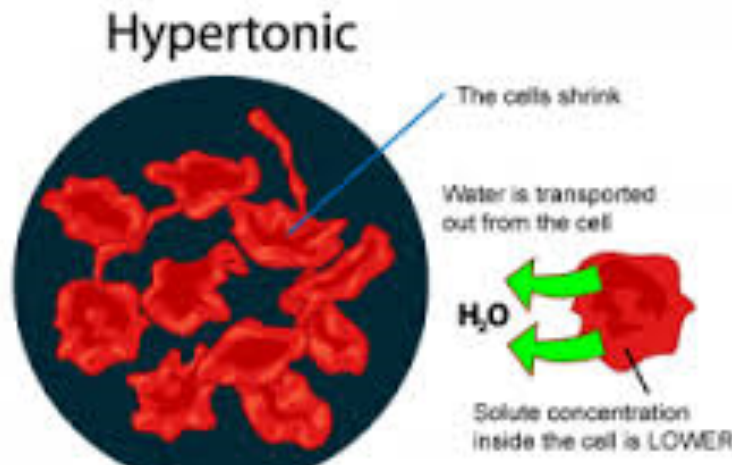


Movement of particles

- Hypertonic solutions
- Solutions in which there is more solutes (particles) then solvents (water)
- Water moves out of the cell
- Cell Shrinks as a result



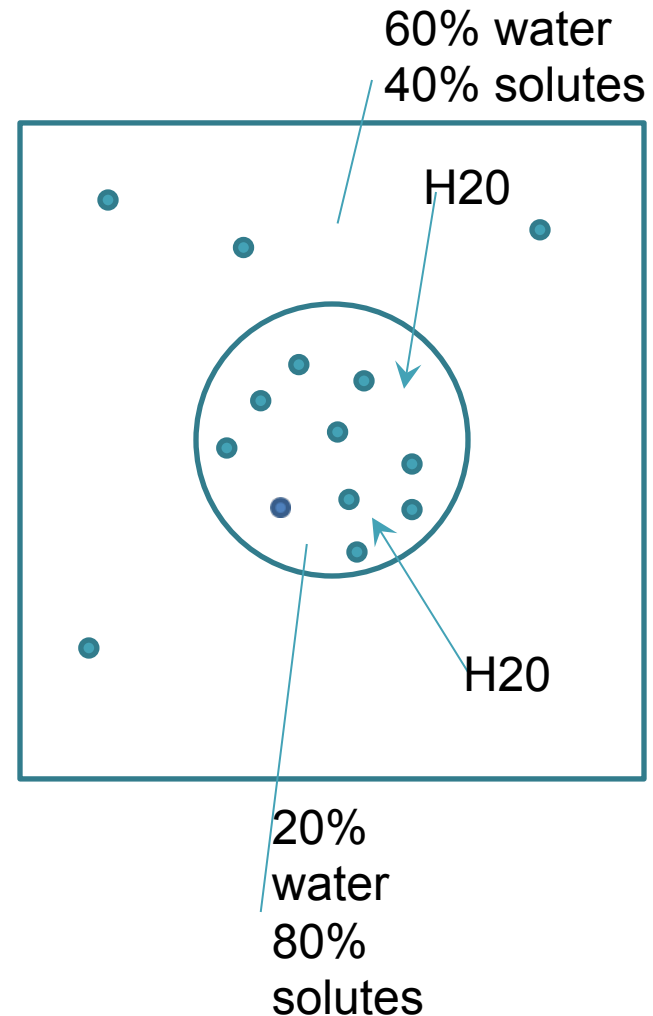
Hypertonic Solutions



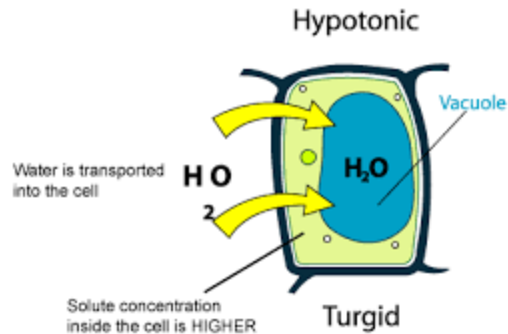
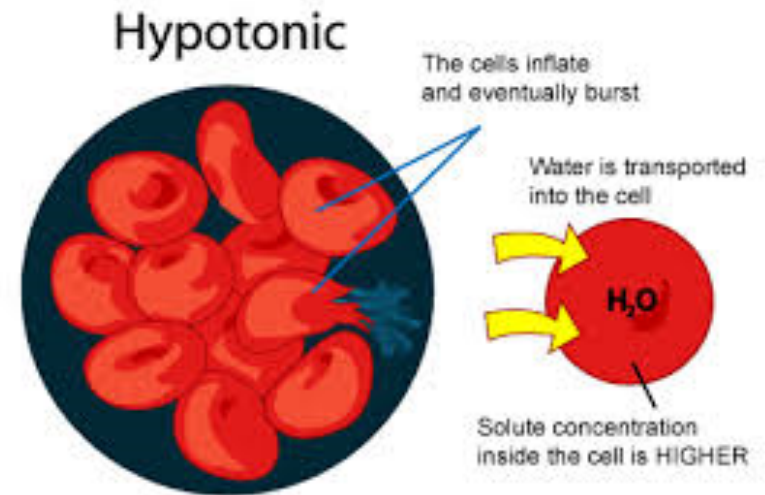
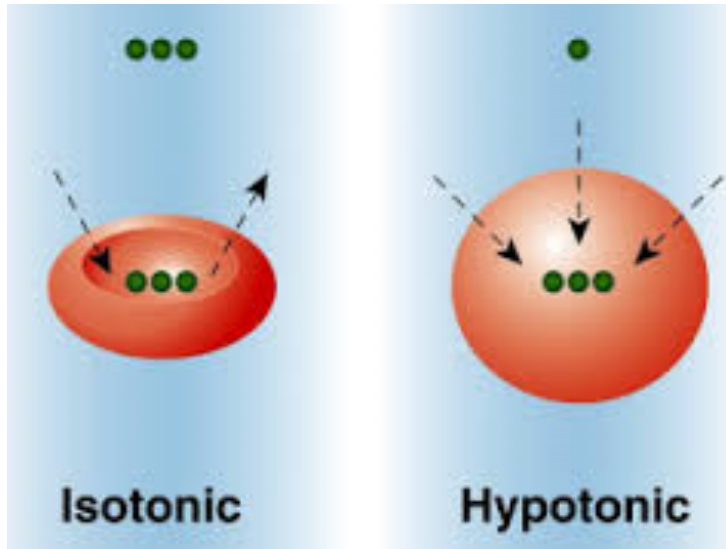
Movement of particles

- Hypotonic Solutions

- Solutions in which solvent(water) than solute(particles)
- Water moves into the cell
- Cell Swells – gets bigger



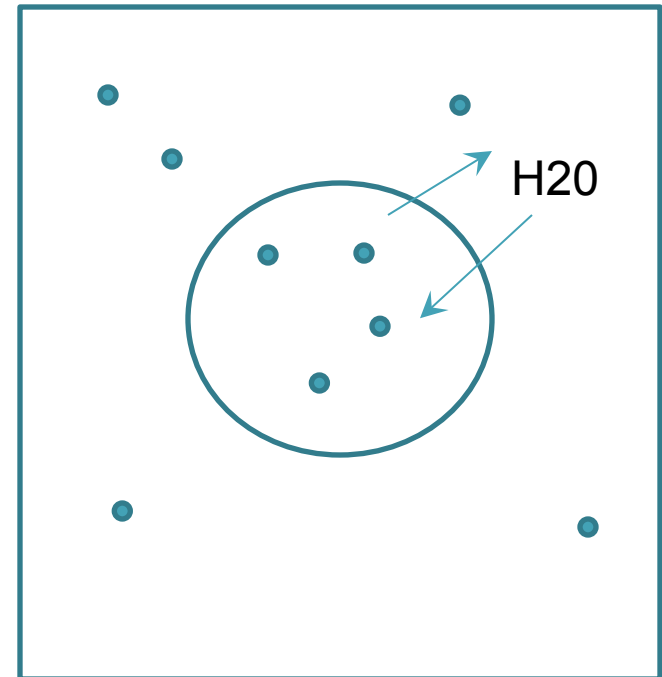
Hypotonic solutions



Movement of particles

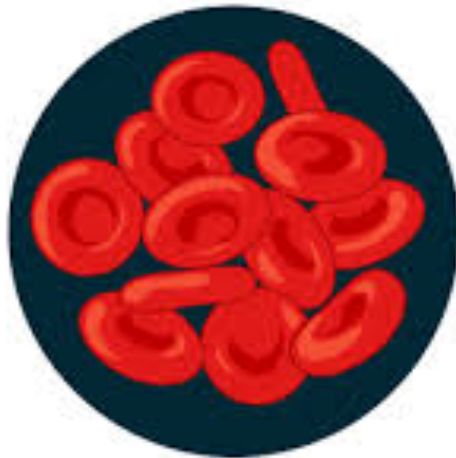
- Isotonic
Solution

- Solution in which the cell is at equilibrium with its surrounding
- Particles move in and out at equal rates

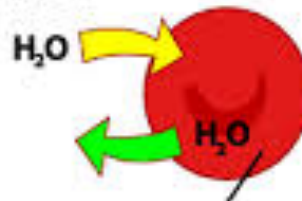


Isotonic Solutions

Isotonic



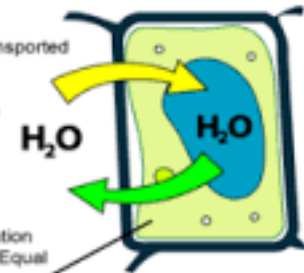
Amount of water transported into the cell equal to the amount of water transported out from the cell



Solute concentration inside the cell is Equal to the solution outside the cell

Isotonic

Amount of water transported into the cell equal to the amount of water transported out from the cell



Solute concentration inside the cell is Equal to the solution outside the cell

Flaccid

Cell

Shrunk



Normal



Swollen



Ion concentration
in extracellular
space

Hypertonic

Isotonic

Hypotonic

Active Transport

- Does require energy by the cell to move things across the membrane
- Substances move against the concentration
- Moving against the flow from low to high concentration
- Examples:

Exocytosis- substances exiting the cell

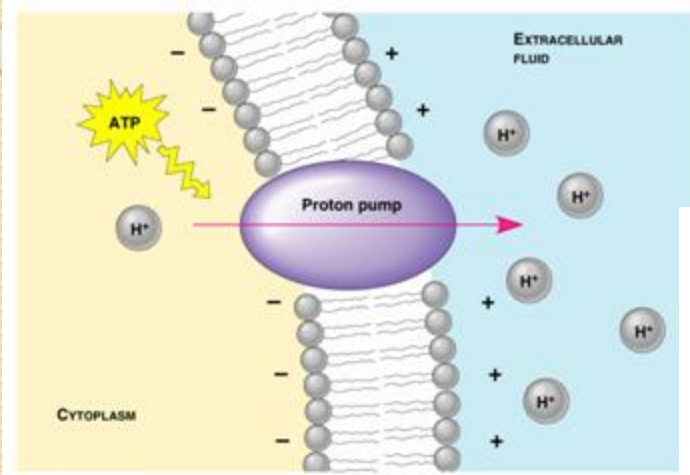
Endocytosis- substances entering the cell

Two Types:

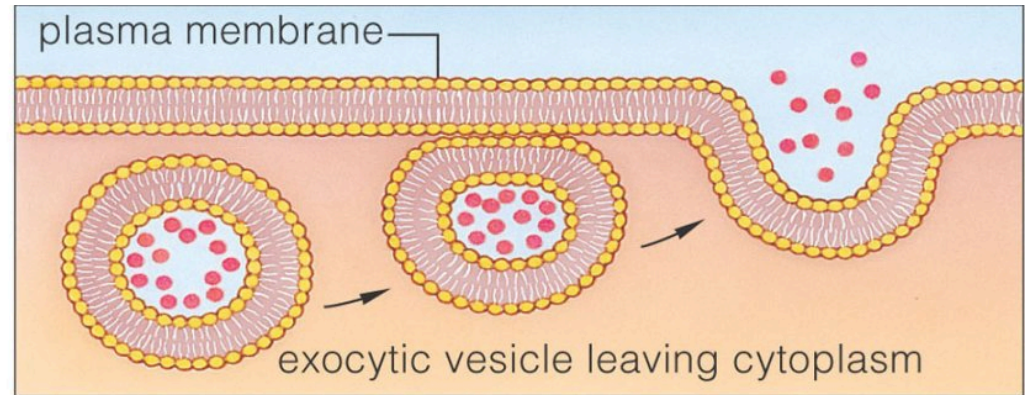
phagocytosis – cell eating

pinocytosis – cell drinking

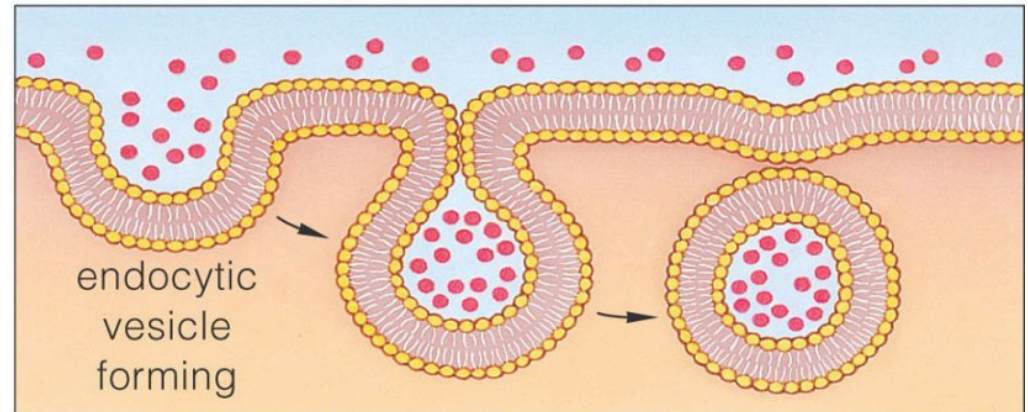
Active Transport (cont.)



a



b



Passive vs. Active Transport

