

Transport Across The Membrane

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Cell Membrane

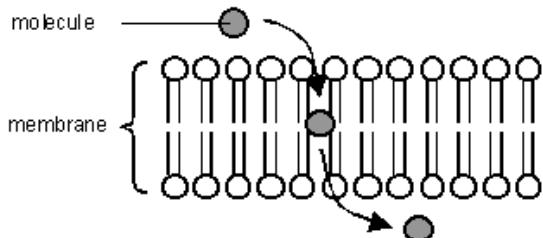
[Cell membranes](#) are a barrier to many substances, and these membranes allow materials to be concentrated inside cells or simply separated the cell from the outside environment. This compartmentalization is essential for life, because it induces. Eukaryotic cells can also compartmentalize materials inside organelles. In fact materials need to move in and out of the cell and it has some methods to allow substances to get in or get out of the cells.

The transport methods are

1. Simple Diffusion
2. Osmosis
3. Facilitated Diffusion
4. Active Transport
5. Vesicles

Cell Transport

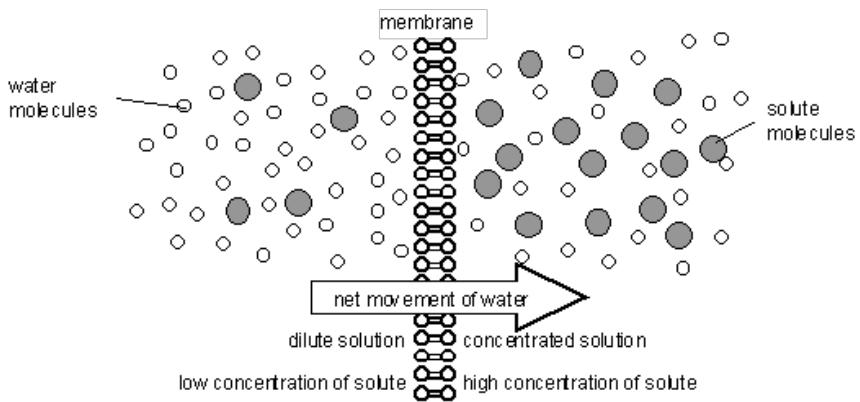
1. Simple Diffusion



Some substances can diffuse directly into the cell membrane through its main part - the lipid bi layer. Steroids are tiny molecules like oxygen. The membrane is not a barrier to these molecules. Cell cannot control the Lipid diffusion.

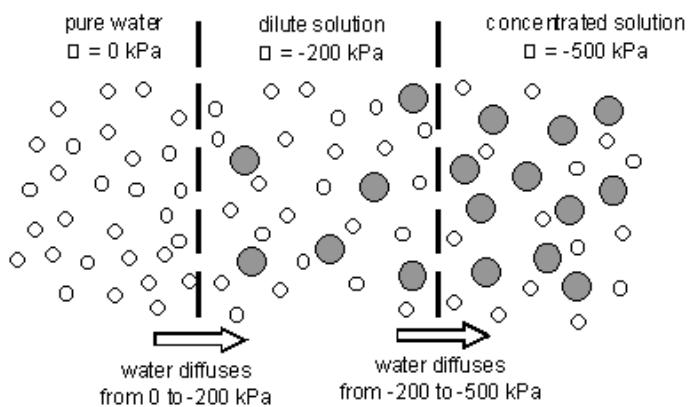
2. Osmosis

Diffusion of water across a membrane is termed as [Osmosis](#). It is exactly like lipid diffusion only but it is specially termed as osmosis because water is abundant in the cells and important as well. Water molecules can diffuse freely across a membrane, but always down their concentration gradient, so water therefore diffuses from a dilute solution that is low concentration solute to a concentrated solution that is high concentrated solute.



Water Potential

Osmosis can be quantified using water potential. The water movement and the speed of the water movement can be easily monitored. [Water potential](#) is a measure of the water molecule potential for movement in a solution. Pressure is the unit with which the water can be measured. The water always moves by osmosis from less negative potential to more negative water potential.



Osmosis

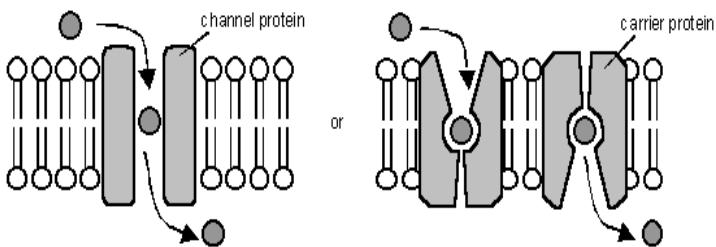
The concentration of the solution that surrounds a cell will affect the state of the cell, due to osmosis. There are three types of concentrations of solution are noted.

- [Isotonic](#) solution - a solution equals the concentration of a cell
- Hypertonic solution - a solution of higher concentration than a cell
- Hypotonic solution - a solution of lower concentration than a cell

Hypotonic solution	Isotonic solution	Hypertonic solution
Animal Cell water enters, cell swells and may burst (<u>lysis</u>).	Isotonic solution no net movement of water, cell normal size	Hypertonic solution water leaves, cell shrinks and <u>crenates</u>
Plant Cell water enters, cell swells a bit and becomes <u>turgid</u> .	 no net movement of water, cell normal size	 water leaves, cytoplasm shrinks and <u>plasmolyses</u>

The effects of the solutions on cells

3. Facilitated Diffusion



4. Active Transport (or Pumping)

Do you know how to draw active transport?

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Reference Links:

- <http://en.wikipedia.org/wiki/Osmosis>
- <http://en.wikipedia.org/wiki/Diffusion>
- http://en.wikipedia.org/wiki/Active_transport
- <http://www.youtube.com/watch?v=qcTUoHAeuY&feature=related>

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