

CELL TRANSPORT

PASSIVE VS. ACTIVE TRANSPORT

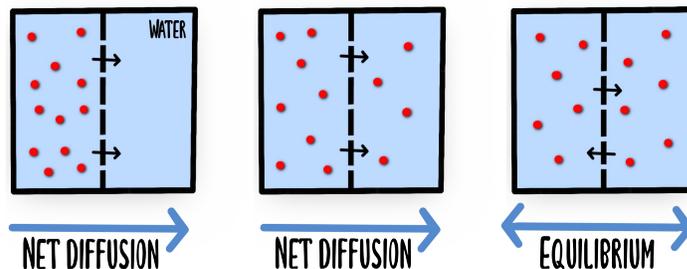
Passive transport refers to the movement of molecules and ions from a higher to a lower concentration without energy input.

Active transport refers to the movement of molecules and ions from a lower to a higher concentration with energy input (in the form of ATP).

TYPES OF PASSIVE TRANSPORT

DIFFUSION

Net movement of molecules from a region of higher concentration to a region of lower concentration. Diffusion is a spontaneous process, driven by a concentration gradient, and does not require an energy input.



OSMOSIS

Net movement or diffusion of solvent molecules through a semi-permeable membrane toward a higher concentration of solute until equilibrium is reached.

Tonicity refers to the ability of a surrounding solution to cause a cell to gain or lose water. The tonicity of a solution depends on the concentration of its solutes.

Isotonic (iso = same): two solutions, separated by a semipermeable membrane, that have equal solute concentrations.

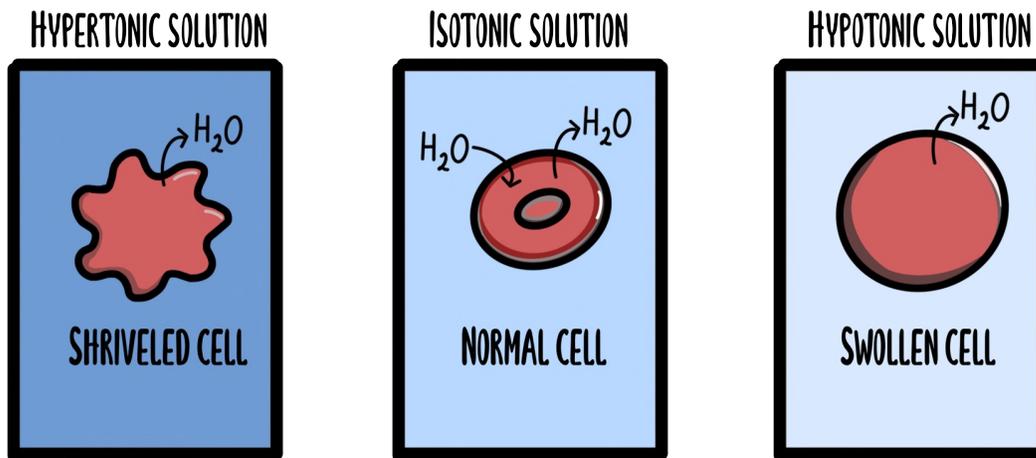
NO NET MOVEMENT OF SOLVENT

Hypertonic (hyper = greater): solution with a higher solute concentration than the solution found on the opposite side of the semipermeable membrane.

CELLS PLACED IN HYPERTONIC SOLUTIONS WILL LOSE WATER AND BECOME SHRIVELED

Hypotonic (hypo = less): solution with a lower solute concentration than the solution found on the opposite side of the semipermeable membrane.

CELLS PLACED IN HYPOTONIC SOLUTIONS WILL GAIN WATER AND BECOME SWOLLEN.



TYPES OF ACTIVE TRANSPORT

EXOCYTOSIS

Exo- = outside; -cytosis = refers to cells

Form of active transport in which cells export molecules. Vesicles fuse with the cell membrane to release molecules out of the cell.

ENDOCYTOSIS

Endo- = inside; -cytosis = refers to cells

Form of active transport in which cells import molecules. Vesicles fuse with the cell membrane to release molecules into the cell.

Pinocytosis: the cells "gulps" droplets of extracellular fluid into tiny vesicles.

Phagocytosis: the cells engulfs a particle by wrapping pseudopodia around it and packaging it within a food vacuole.

Receptor-mediated endocytosis: molecules are transported into the cell after binding to cell-surface receptors.