

# CELL TRANSPORT

## PASSIVE VS. ACTIVE TRANSPORT

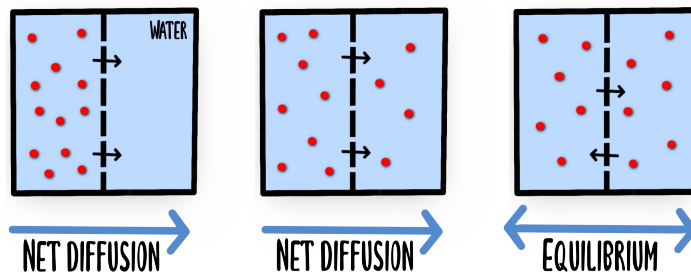
Passive transport refers to the movement of molecules and ions from a higher to a lower concentration without energy input.

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.

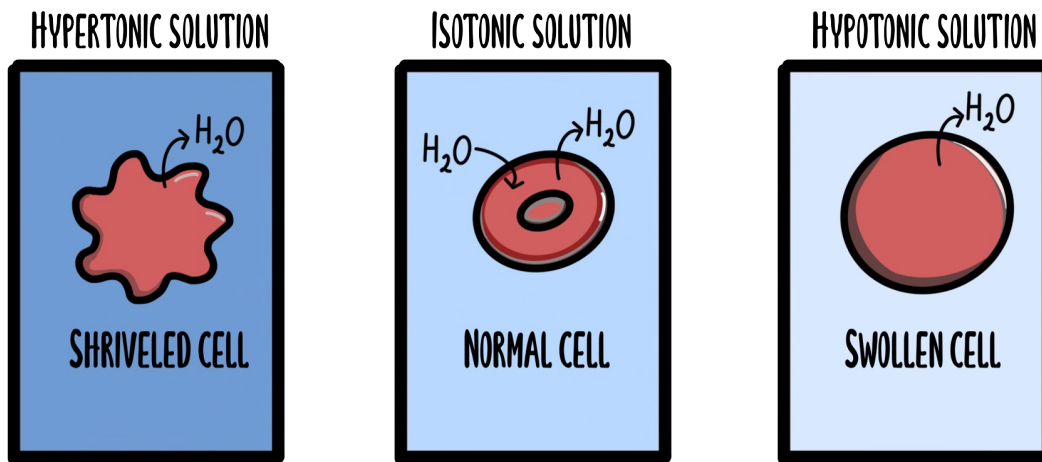
NO NET MOVEMENT OF SOLVENT

**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.