

membrane transport

① Passive Transport (no energy)

↳ molecule have KE, hv collision, high conc → low conc

↳ simple diffusion: Pass thru phospholipid bilayer

ie. lipids, non-polar, small (O_2 , CO_2)

↳ facilitated diffusion: use carrier proteins to pass thru

ie. water soluble, polar, small $\psi = 0$ (pure)

↳ Osmosis (for water ONLY): high water potential → low water potential
 ↳ (sugars, ions) $\psi = -100$

osmolarity

low solut conc

high solut conc

when equilibrium is reached

no change

Sodium Potassium Pump (NaK Pump)

↳ main purpose: move $3Na^+$ out of cell and $2K^+$ into cell

① $3Na^+$ binds to specific protein

② Phosphorylation: $ATP \rightarrow ADP + \text{Phosphate}$

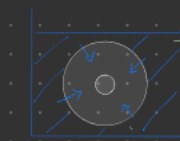
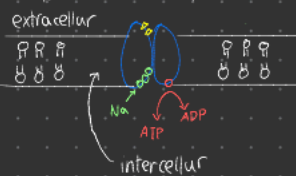
↳ ATP loses phosphate to form ADP

③ Phosphate binds to allosteric site, changes protein shape
 + Expel Na^+ to exterior due to changed shape

④ $2K^+$ bind to Protein, cause release of phosphate group

⑤ Protein returns to org form, $2K^+$ enter cell

type of active transport

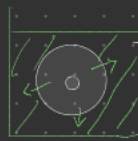


animal cell

plant cell

cell bursting

become turgid (hard)
because cell wall



animal cell

plant cell

shrink

plasmolyzed

② Active Transport

↳ we energy in form of ATP ie. glucose, amino acid

↳ need proteins

↳ low conc → high conc ie. intestine

↳ some protein need ATP

↳ ATP attached to proteins

(conformational change)

↳ can also use FD

against conc gradient

↳ larger quantity

Factors affecting Diffusion

① Temperature:

↳ more KE, more collision, higher rate

② Distance

↳ shorter distance, faster, travel less

③ SA of membrane:

↳ more SA, increased rate

④ Concentration gradient

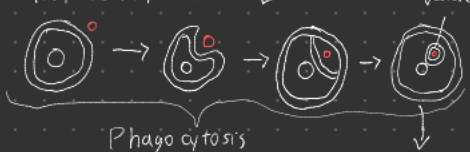
↳ steeper concentration → more high to more low

⑤ Number of Proteins (FD only)

↳ more proteins → faster rate

Endocytosis (enter cell)

↳ Phospholipid bilayer is fluid



Phagocytosis

Phagocytosis

Smith digest vesicle,
vesicle rejoin membrane

↳ Phagocytosis (solid)

↳ large matter enter cell

① Portion of membrane pinched off to enclose molecule

② Formation of vesicle (later digested)

③ End of cell membrane rejoin → fluidity

↓
Bulk transport

↳ Pinocytosis: extracellular fluids (liquid)

Osmolarity

↳ Osmolarity: solute concentration

↳ isotonic solution: same osmolarity as cell

Exocytosis (Exit the cells)

↳ Proteins manufactured in Ribosome (Part of Endoplasmic Reticulum)

↳ released in vesicles, vesicle enter Golgi apparatus from cis side

↳ protein modified in Golgi apparatus, transported from cis → trans

↳ vesicle exit from trans side of Golgi and fuse with cell

↳ release content out of cell

↳ excretion: remove waste out

↳ secretion: move one pt to another