

Name	Protein Gate Required?	Direction of Particles (concentration gradient)	Energy Required	Active or Passive	Example	Picture
Simple Diffusion	No	High to Low Down conc. grad.	No	Passive	Food coloring in H ₂ O CO ₂ , O ₂ through cell membrane	<p>A diagram showing a cell membrane with phospholipids. On the outside, there are many small pink dots representing particles. On the inside, there are fewer. Two red arrows point from the outside to the inside, indicating the direction of movement.</p>
Facilitated Diffusion	Yes ion channels carrier proteins	High to Low Down conc. grad.	No	Passive	Glucose uses insulin (protein) to enter cell	<p>A diagram showing a cell membrane with phospholipids and a protein channel. On the outside, there are many small pink dots. On the inside, there are fewer. A red arrow points from the outside through the protein channel to the inside.</p>
Active Transport	Yes carrier proteins w/ ATP	Low to High Against conc. grad.	Yes	Active	Sodium-Potassium Pump 3Na ⁺ out, 2K ⁺ in w/ ATP	<p>A diagram showing a cell membrane with phospholipids and a sodium-potassium pump. On the outside, there are many small circles (Na+) and fewer triangles (K+). On the inside, there are fewer circles (Na+) and more triangles (K+). A red arrow points from the inside to the outside, indicating the movement of Na+ ions. Another red arrow points from the outside to the inside, indicating the movement of K+ ions.</p>

Endocytosis

No, but Vesicle



Yes!

Active

Phagocytosis - Amoeba, white blood cells (neutrophils)

Pinocytosis

Inside cell

Exocytosis

No, but vesicle




Yes!

Active

Waste Removal from cell

Outside Cell

VESICLE:  = small organelles - Fluid enclosed by lipid bilayer