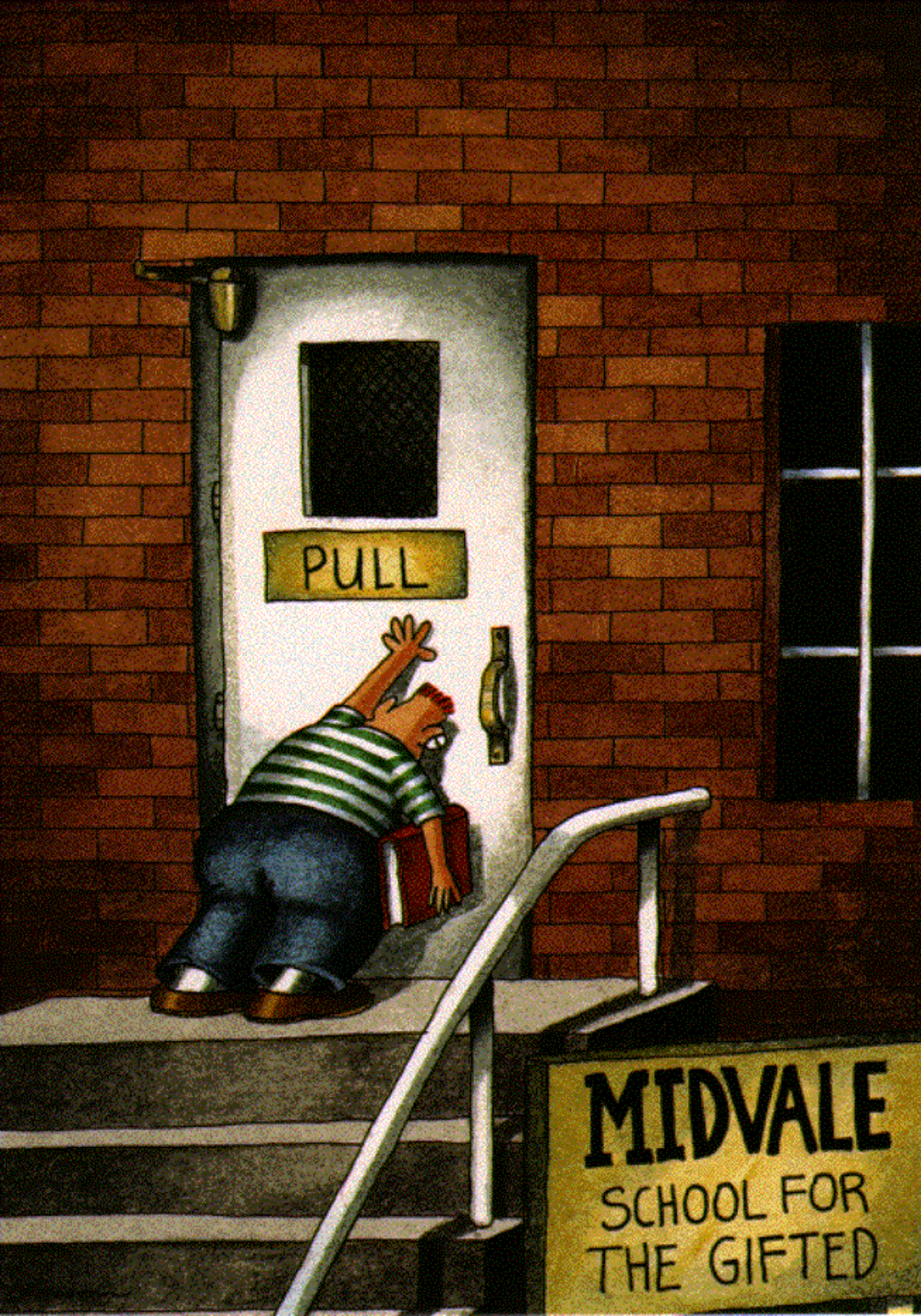
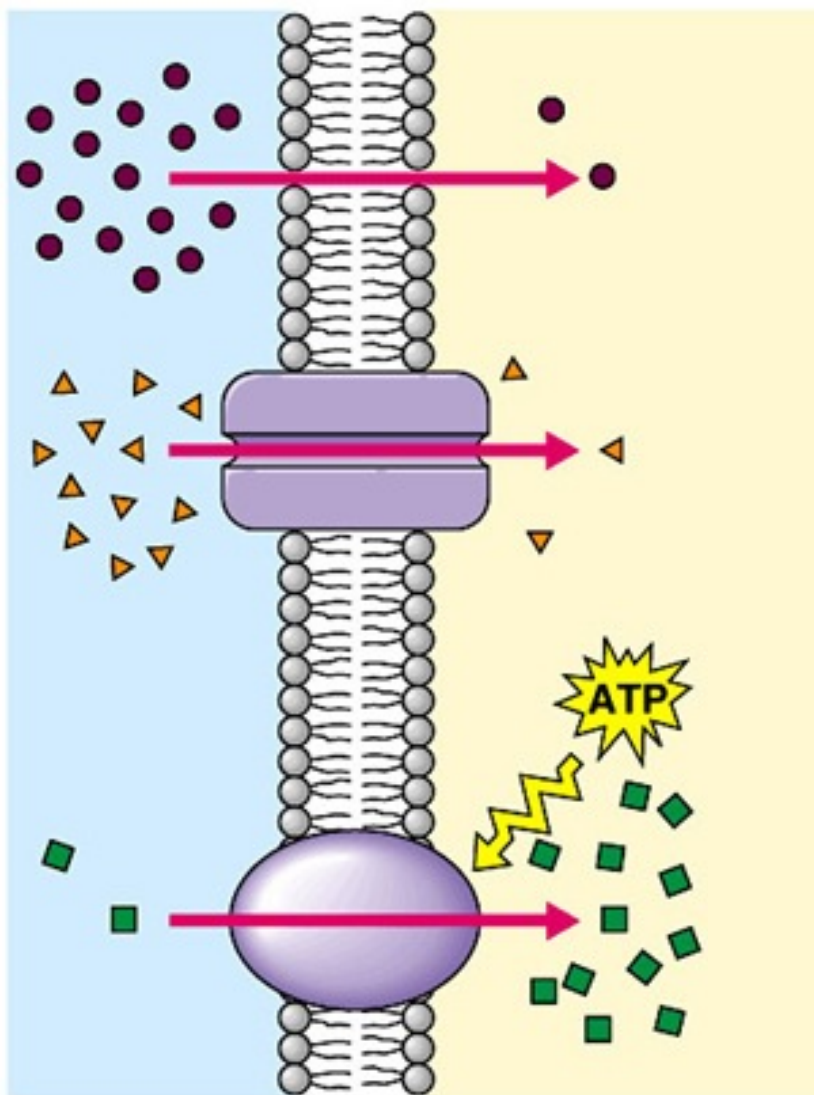
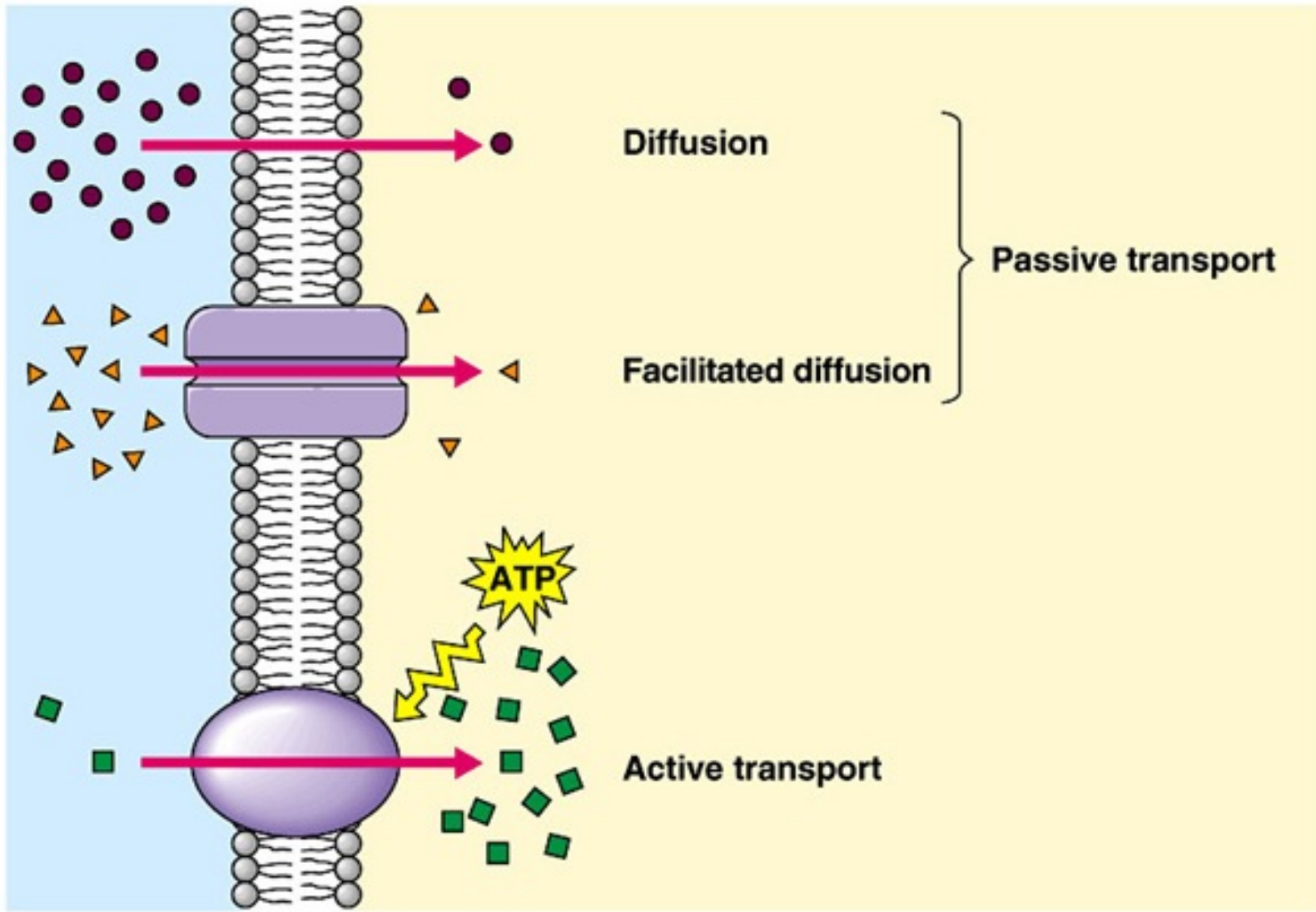


Active Transport

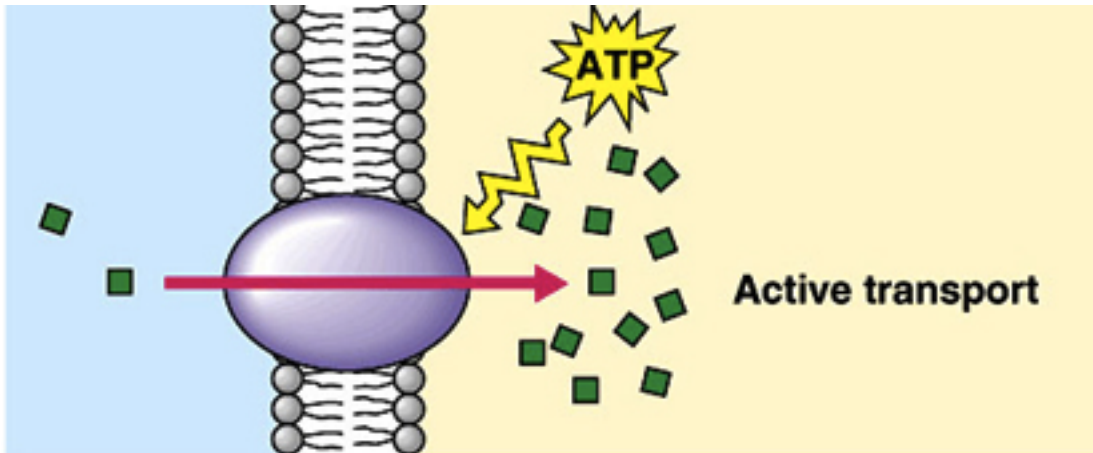






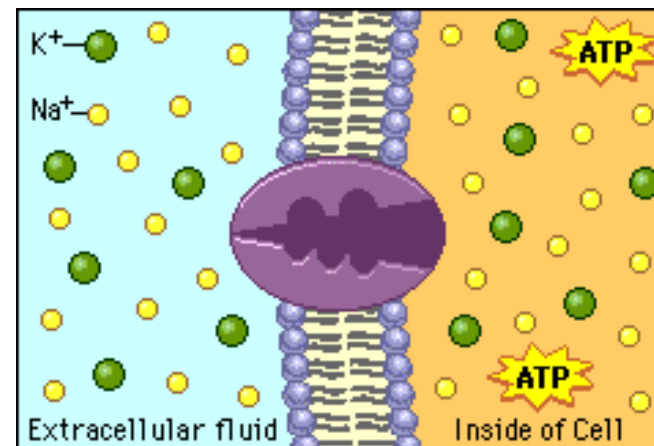
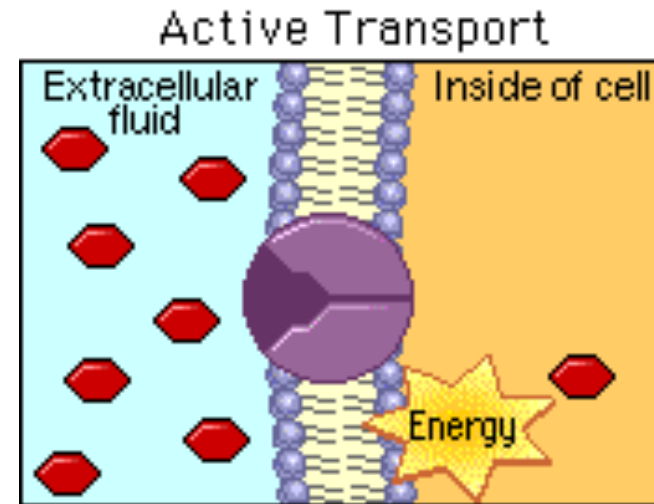
Active Transport

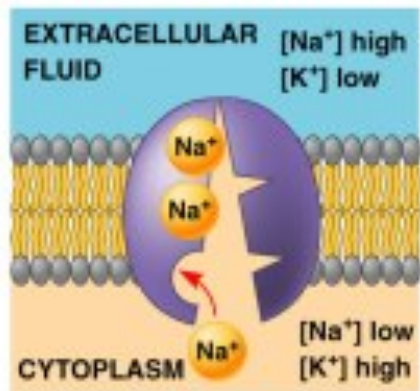
- the movement of materials against the concentration gradient
- requires cellular energy (ATP)



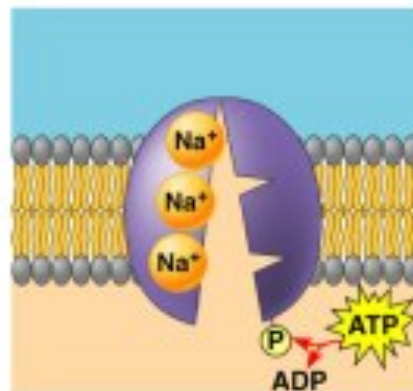
Primary Active Transport

- pumps move positively charged ions (H^+ , Ca^{2+} , Na^+ , K^+) across membranes
- creates electrochemical gradient

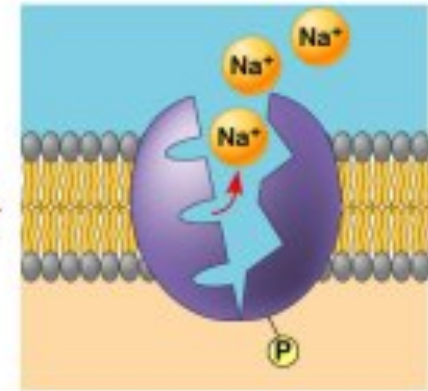




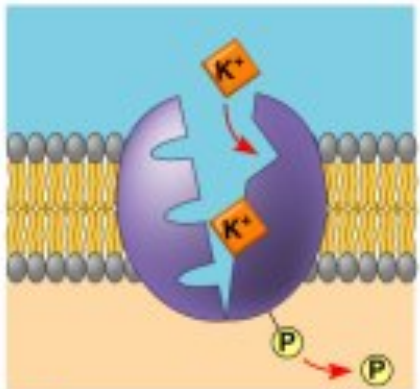
1 Cytoplasmic Na⁺ binds to the sodium-potassium pump.



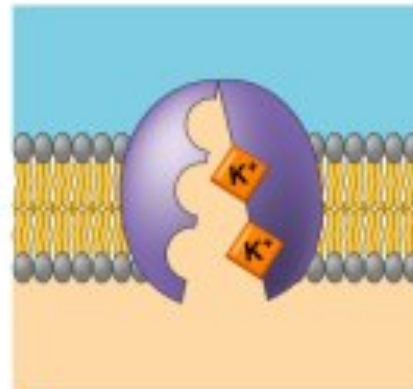
2 Na⁺ binding stimulates phosphorylation by ATP.



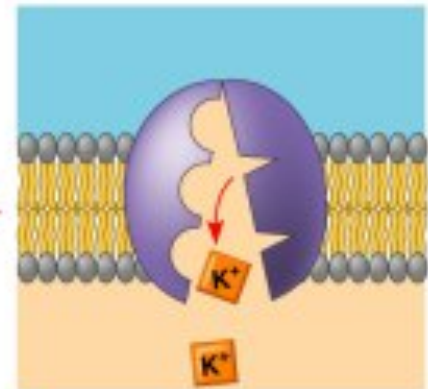
3 Phosphorylation causes the protein to change its conformation, expelling Na⁺ to the outside.



4 Extracellular K⁺ binds to the protein, triggering release of the phosphate group.



5 Loss of the phosphate restores the protein's original conformation.

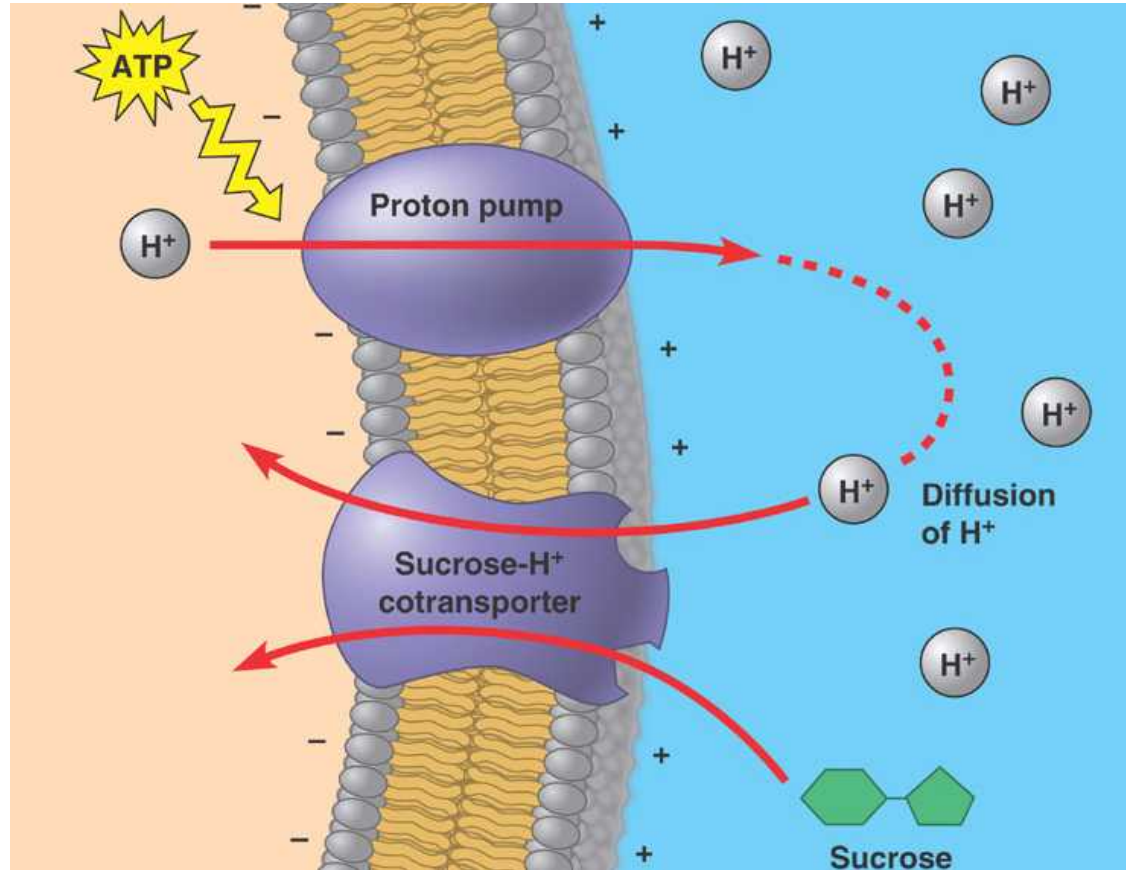


6 K⁺ is released and Na⁺ sites are receptive again; the cycle repeats.

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Secondary Active Transport

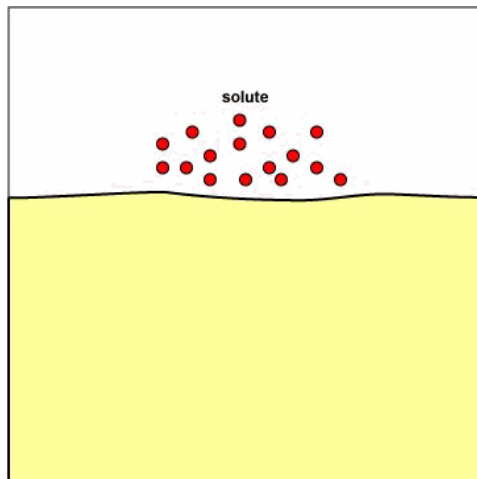
- uses gradient established by a primary active transport pump to power a second pump.



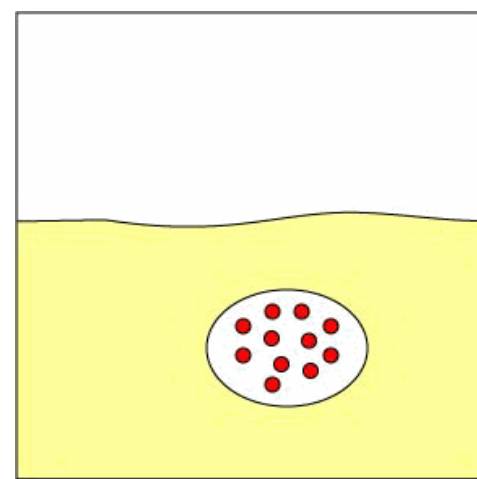
Bulk Transport- Endocytosis and Exocytosis

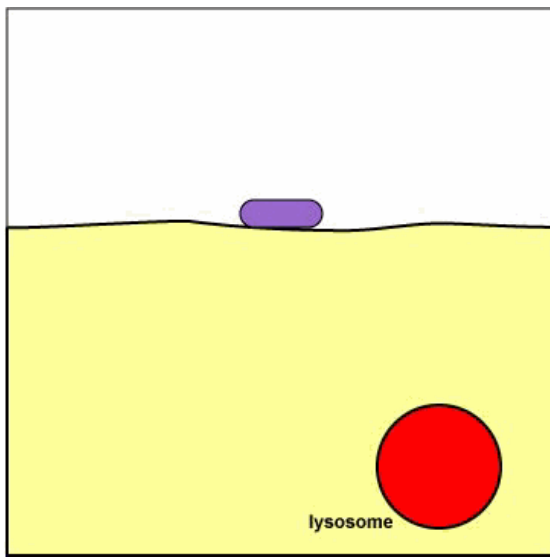
- movement of larger substances across a cellular membrane
- requires energy (ATP)
- endocytosis vs exocytosis

Membrane removed



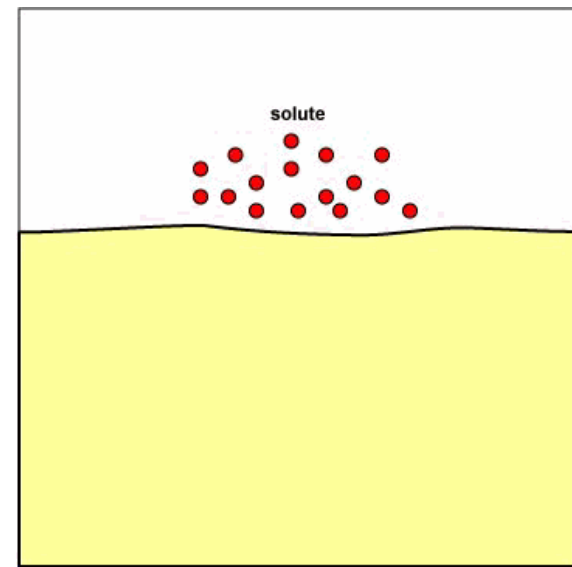
Membrane added





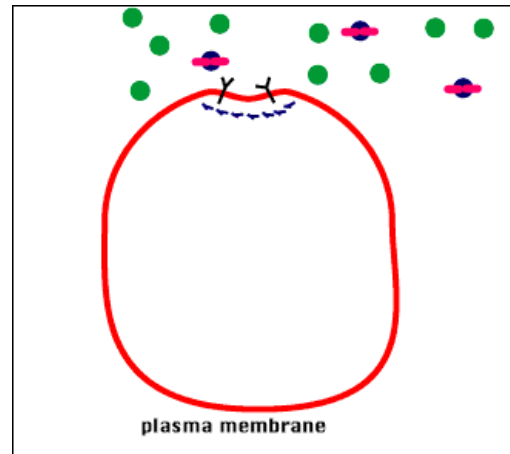
Phagocytosis=
cell bulk eating

- Using pseudopods
- vesicle forms/fuses with lysosome

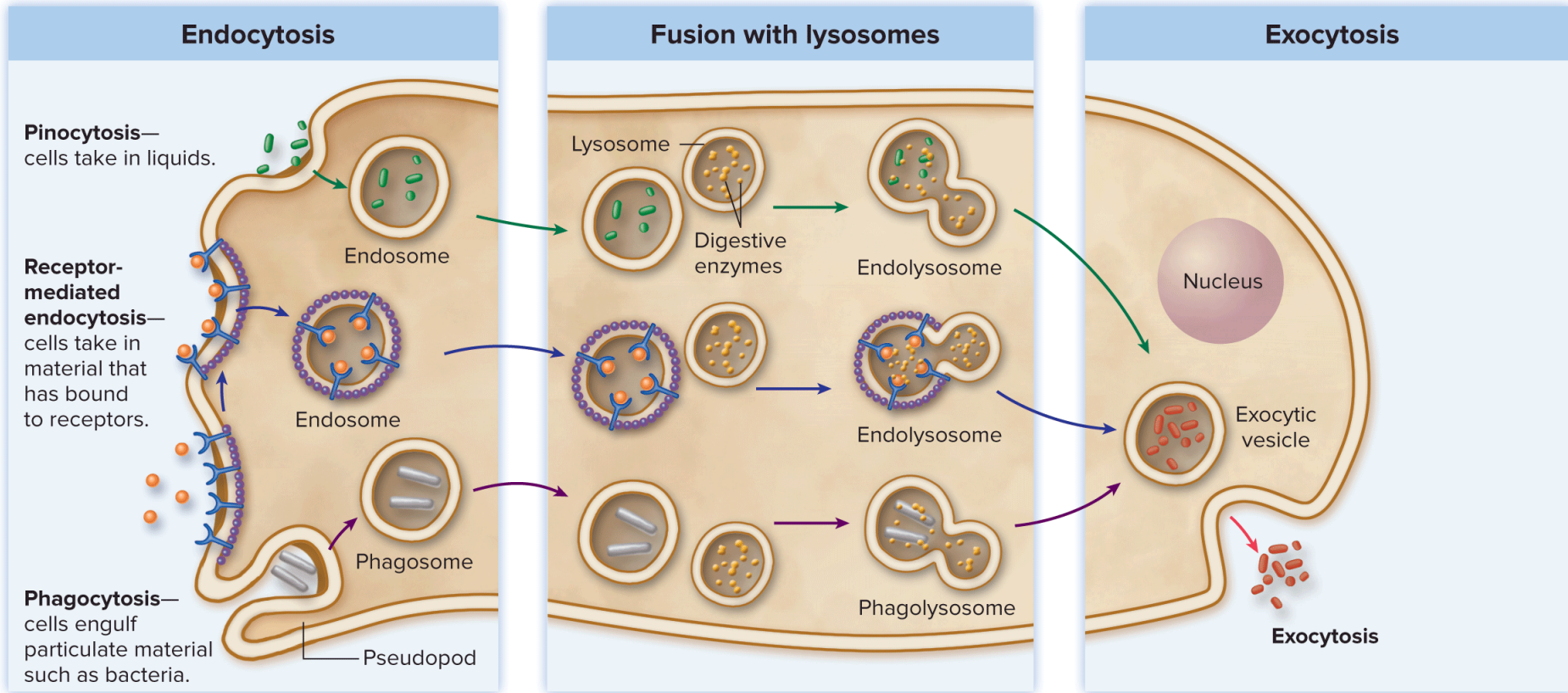


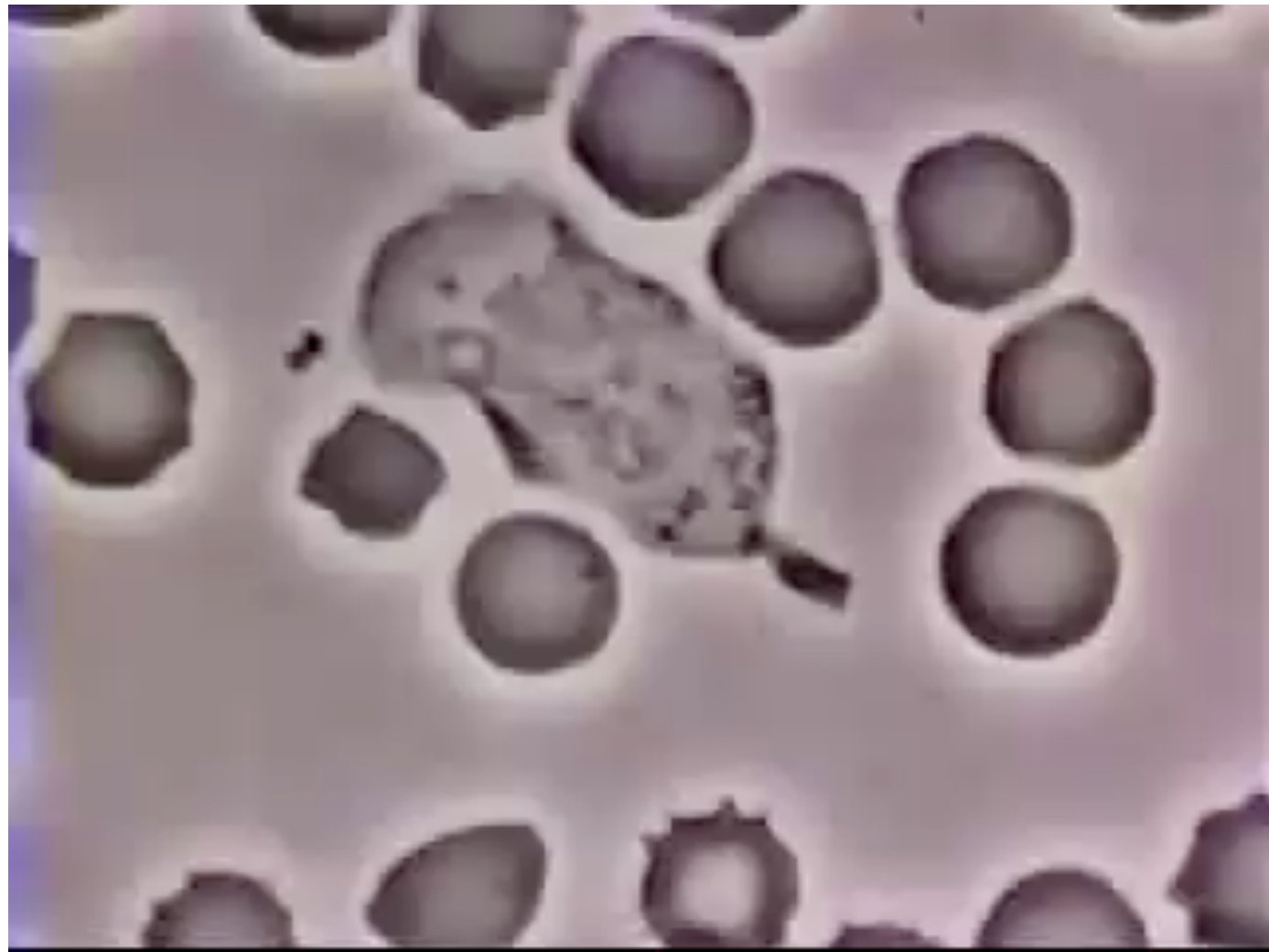
Pinocytosis=
Cell Drinking

- membrane collapses inward



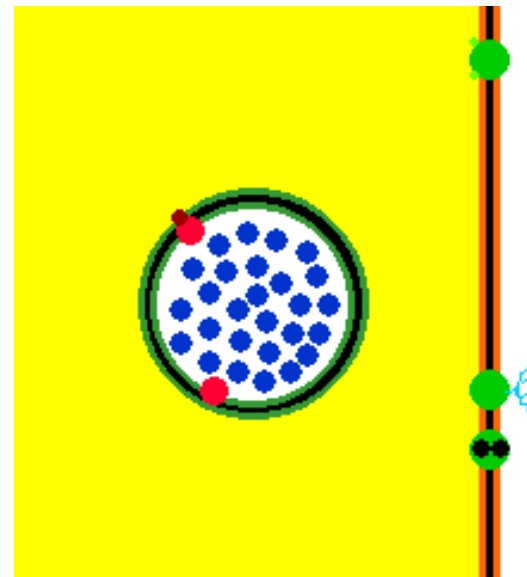
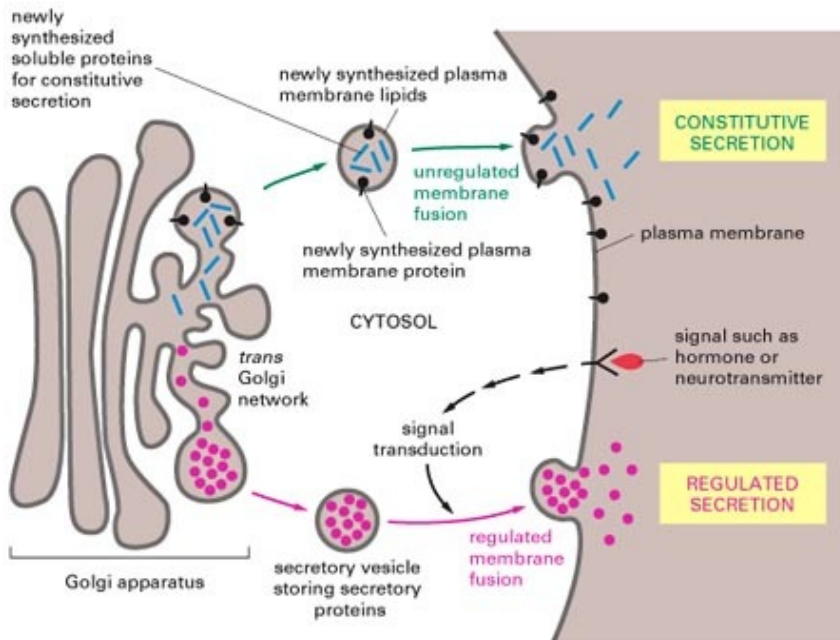
Receptor Mediated
•receptors are filled before the vacuole forms





Amoeba eats two paramecia

Exocytosis



- Packages are generally made in the golgi apparatus.
- The removal of cell products or waste

Transport Method	With/ Against the gradient	Energy required	How it Works	In/Out
Diffusion				
Osmosis				
Facilitative diffusion				
Active Transport Pump				
Pinocytosis				
Phagocytosis				
Receptor Mediated				
Exocytosis				