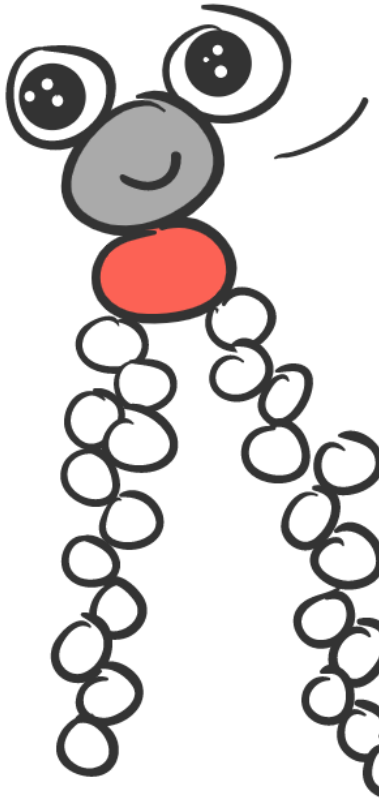
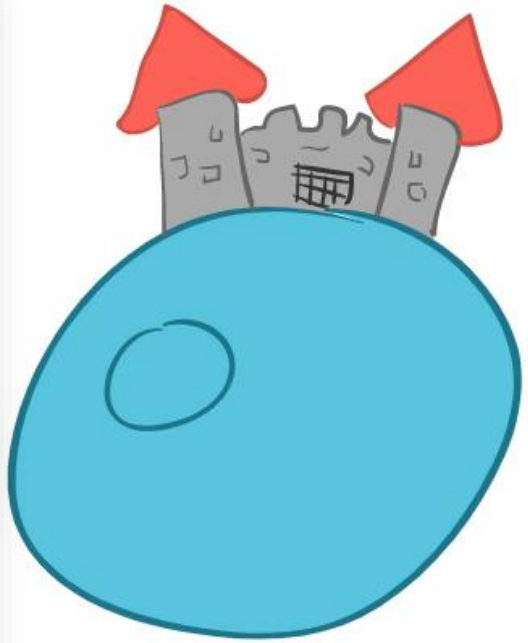
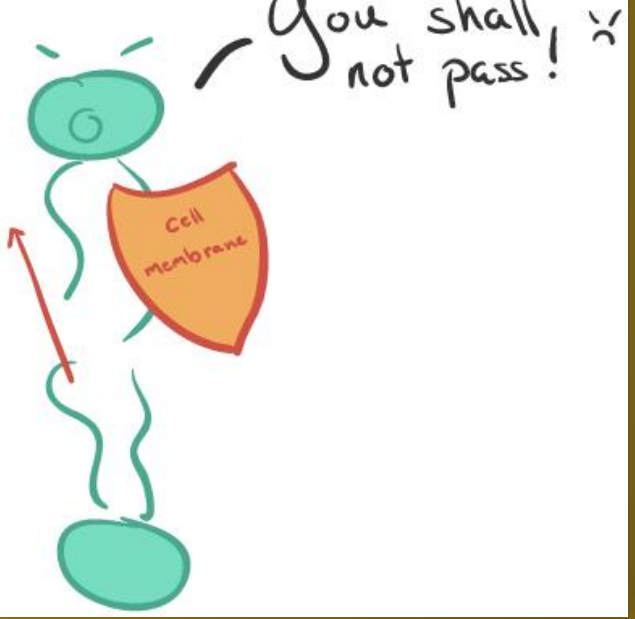
Methods of Cell Transport

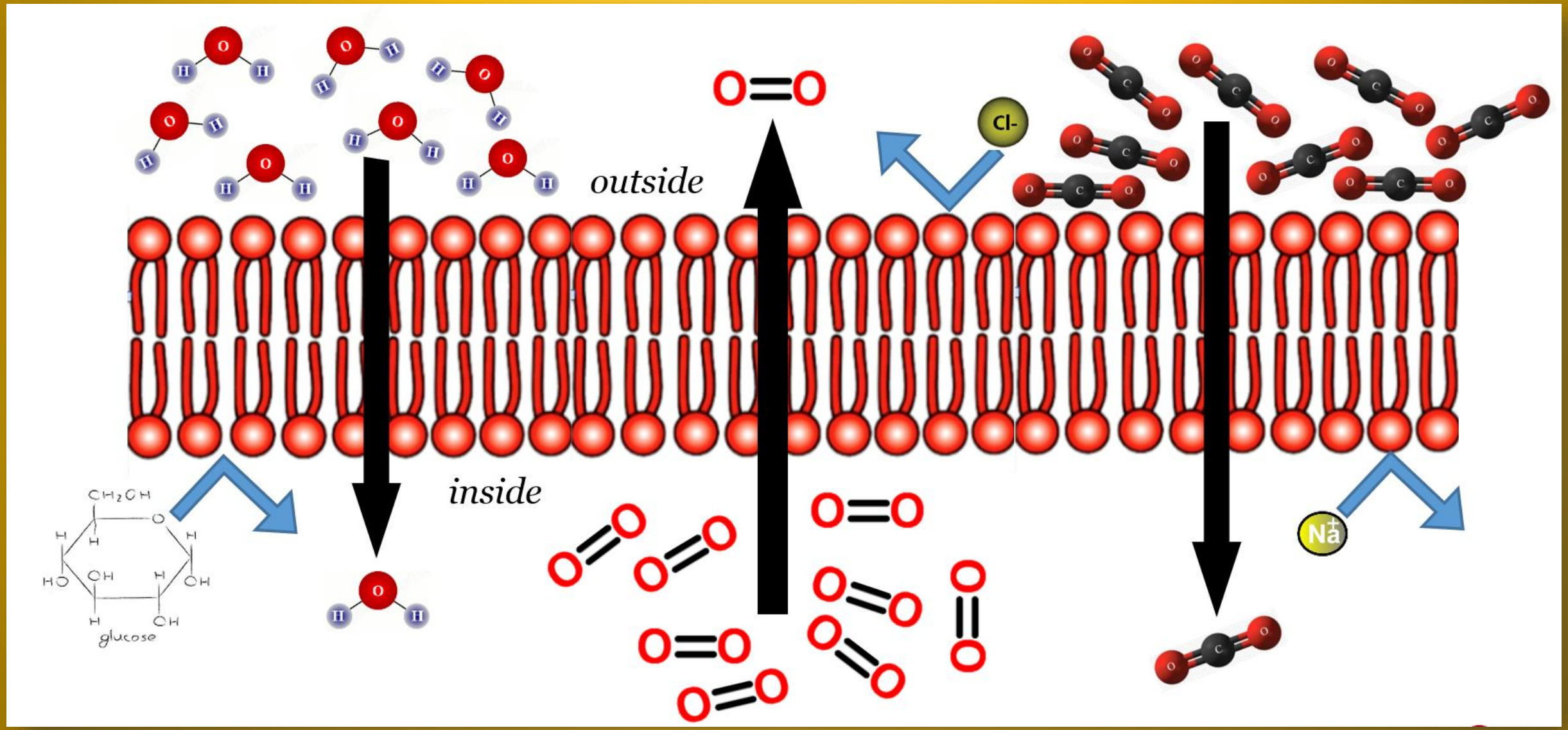


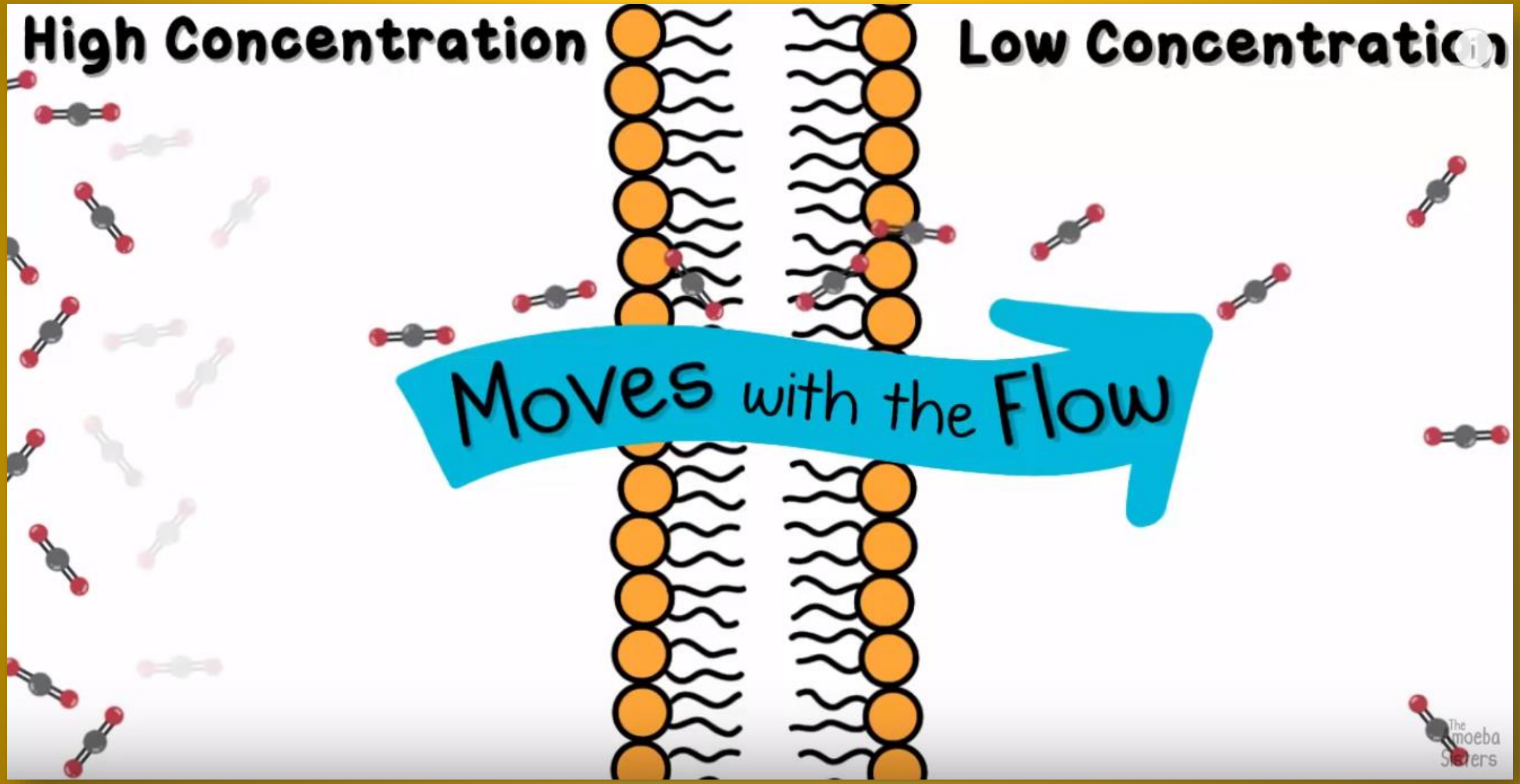
The molecules must be small enough to move between other molecules, and nonpolar in order to pass through the hydrophobic (water-fearing) lipid core of cell membrane molecules like me!





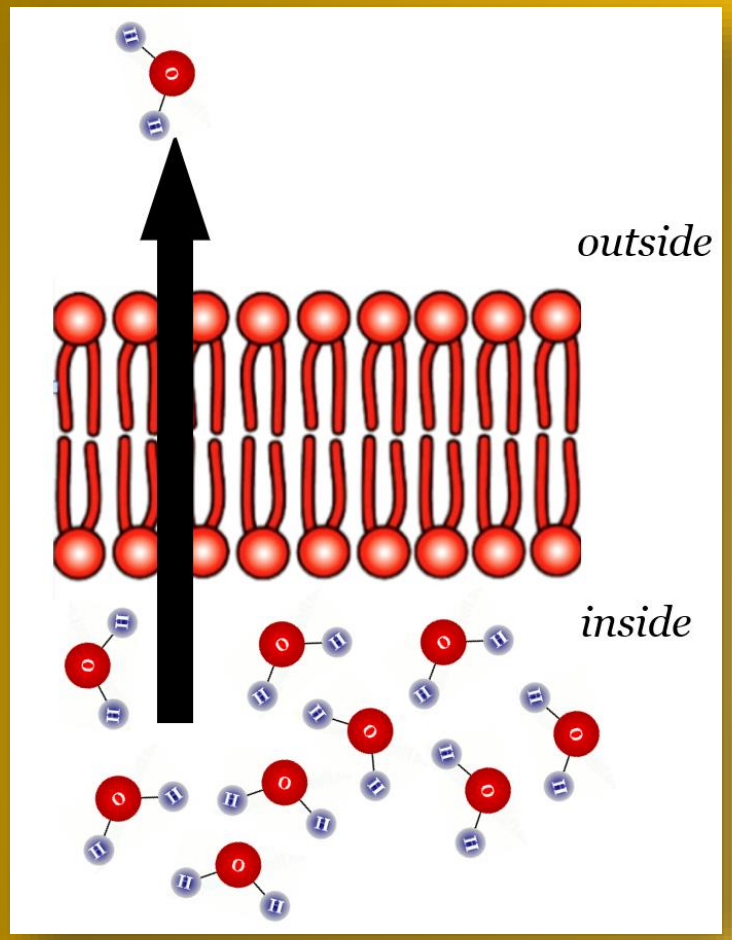
Simple diffusion (aka passive transport)

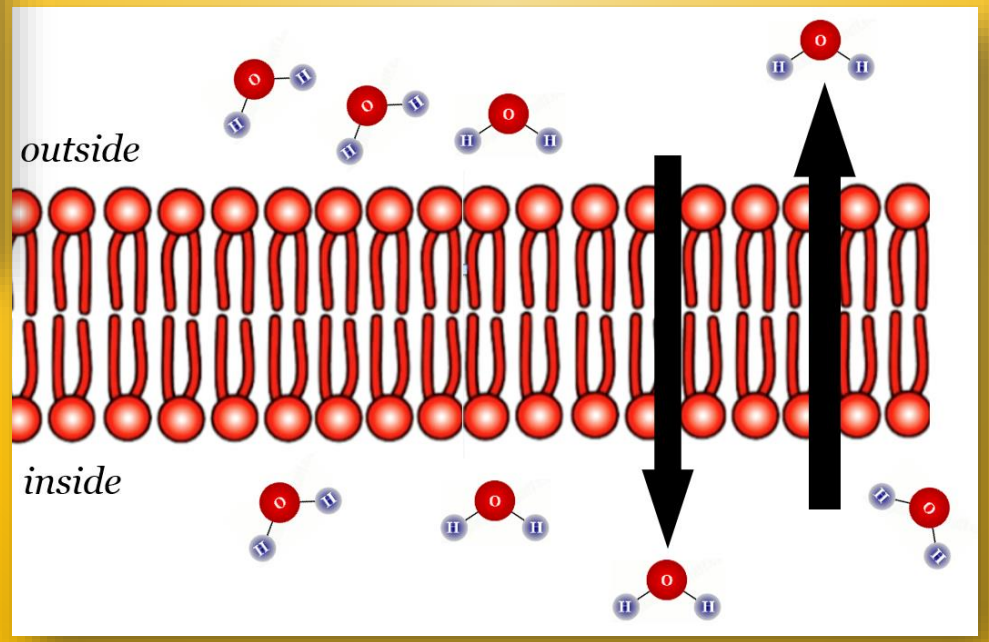


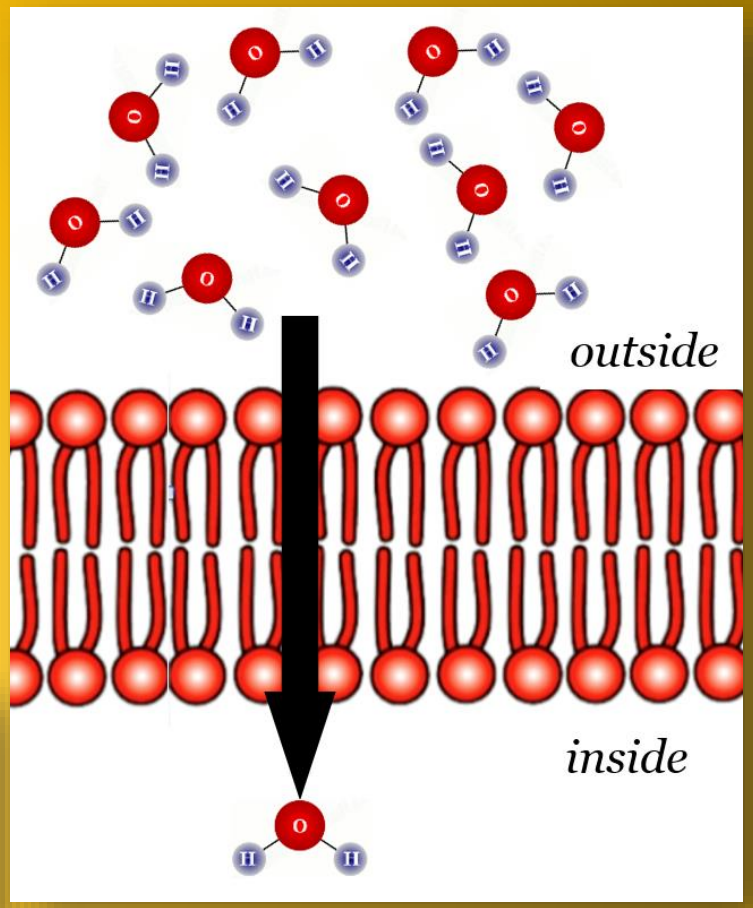

High Concentration
Low Concentration
Moves with the Flow
The Amoeba Sisters

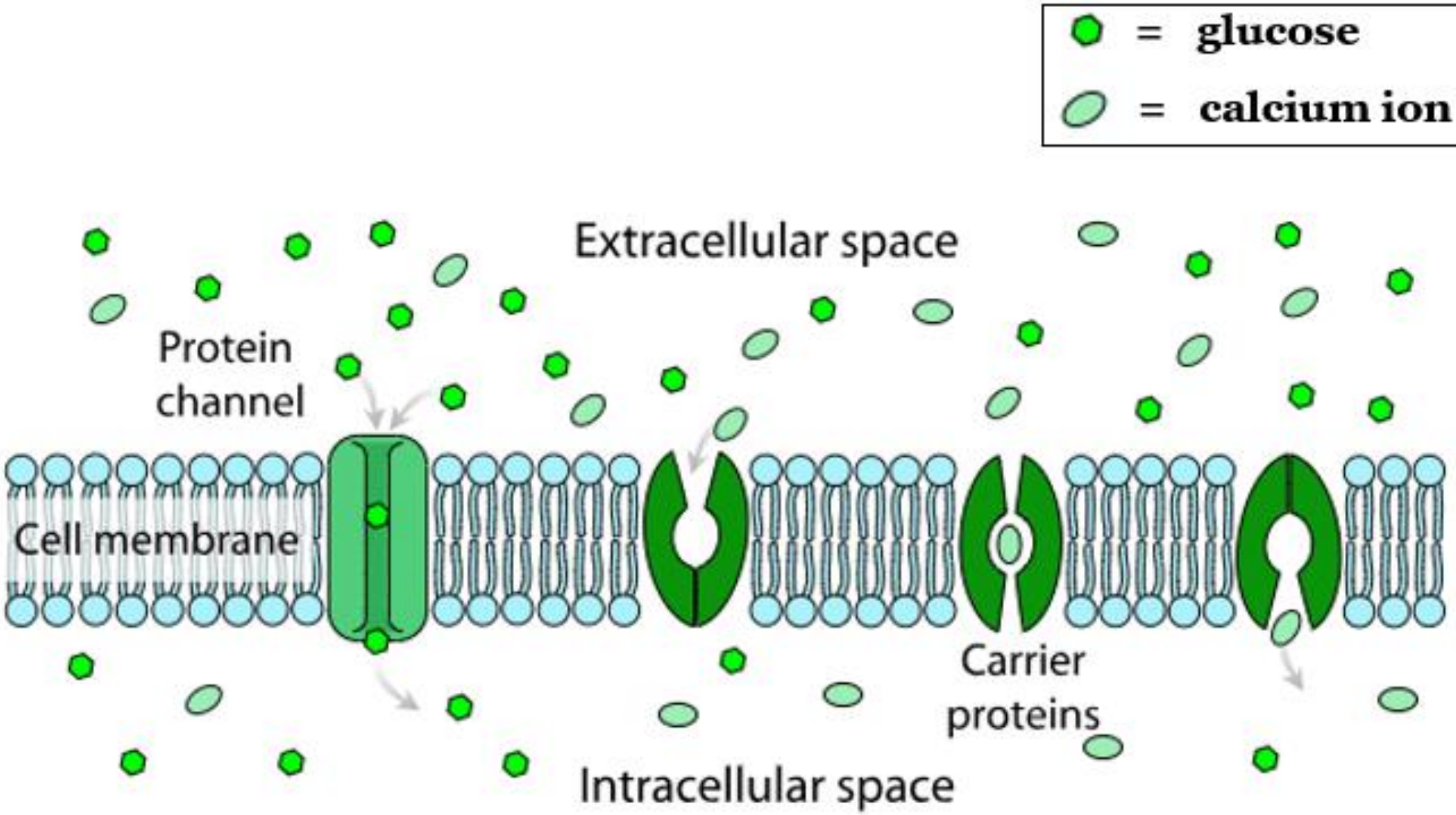
Osmosis

A special case of simple diffusion (aka passive transport) of water

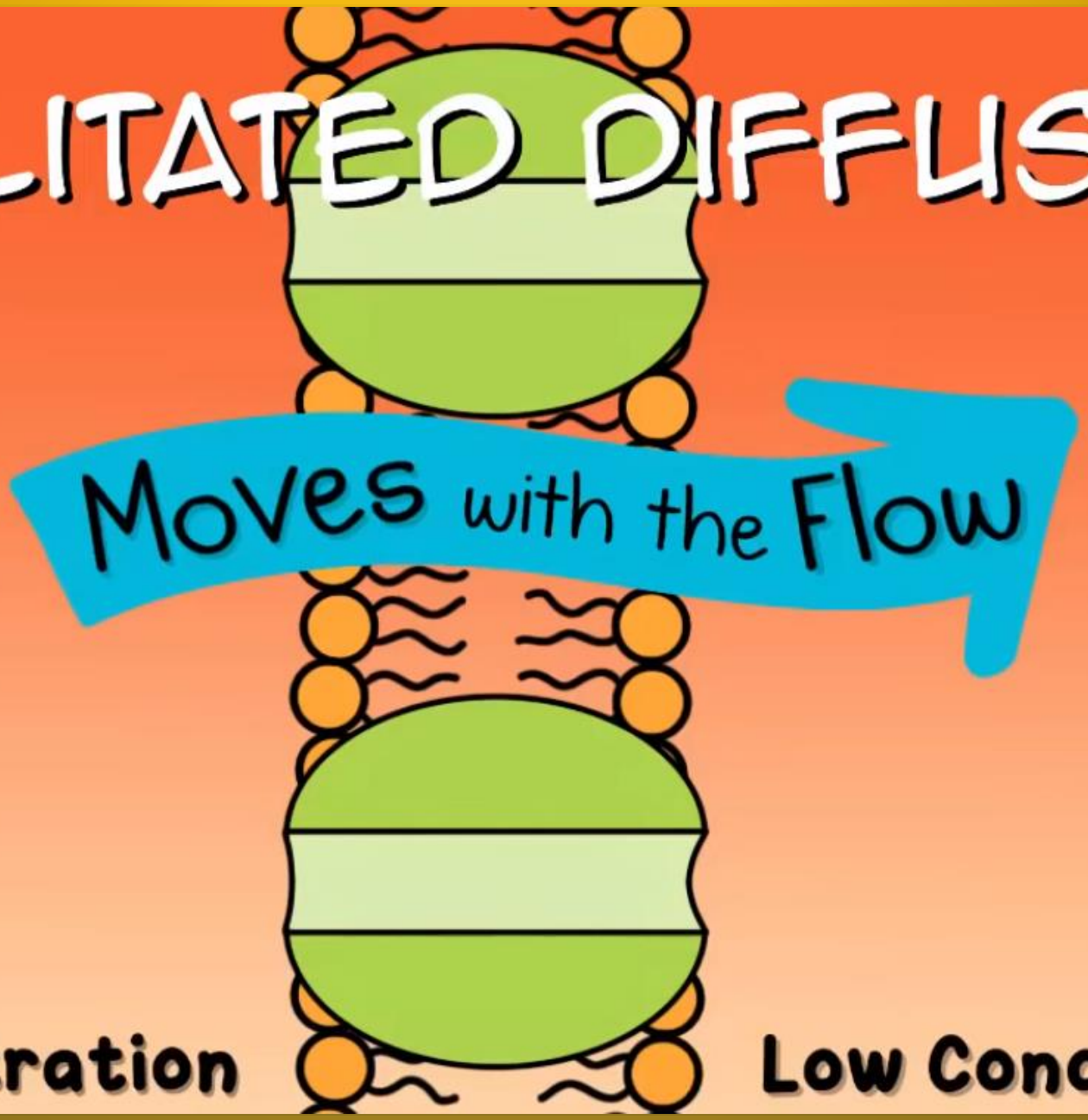






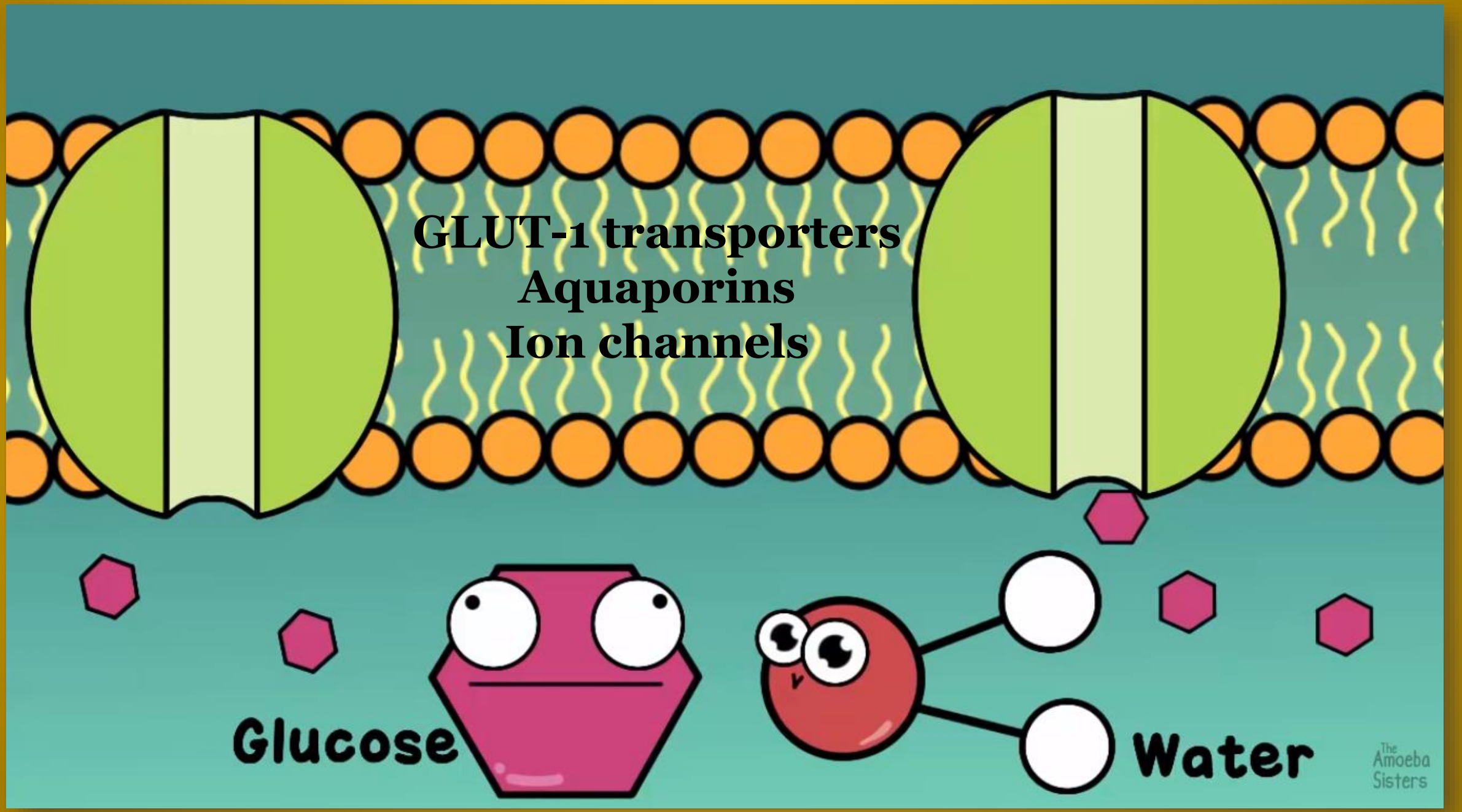

= glucose
= calcium ion
Extracellular space
Protein channel
Cell membrane
Carrier proteins
Intracellular space

FACILITATED DIFFUSION



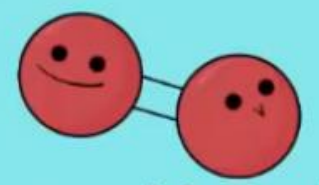
High Concentration

Low Concentration

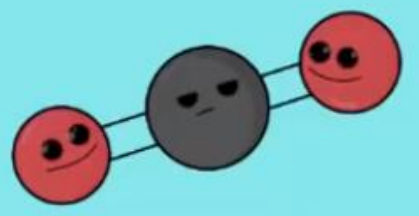

GLUT-1 transporters
Aquaporins
Ion channels
Glucose
Water
The Amoeba Sisters

2 TYPES OF PASSIVE TRANSPORT

Simple Diffusion



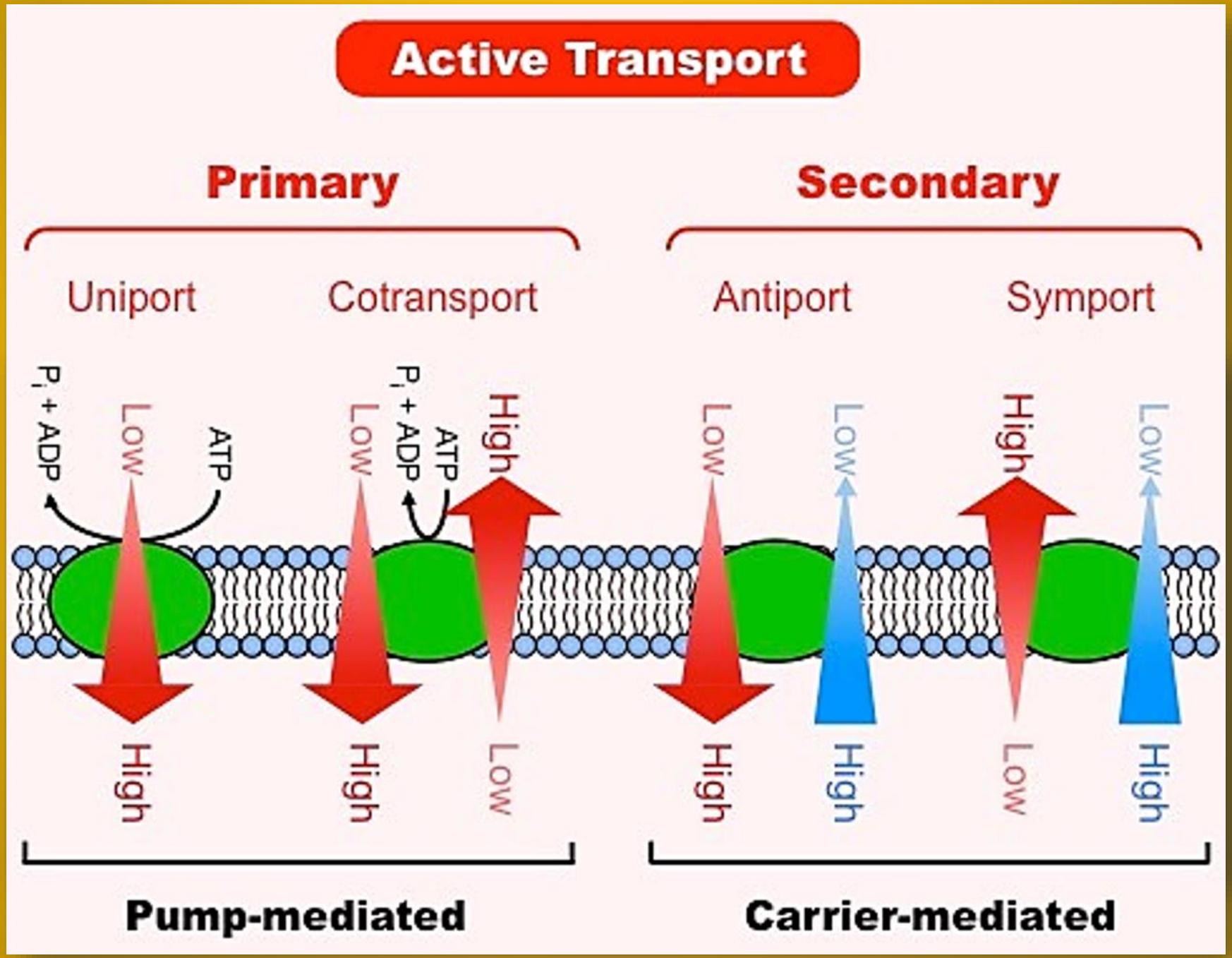
Does Not Require Transport Protein

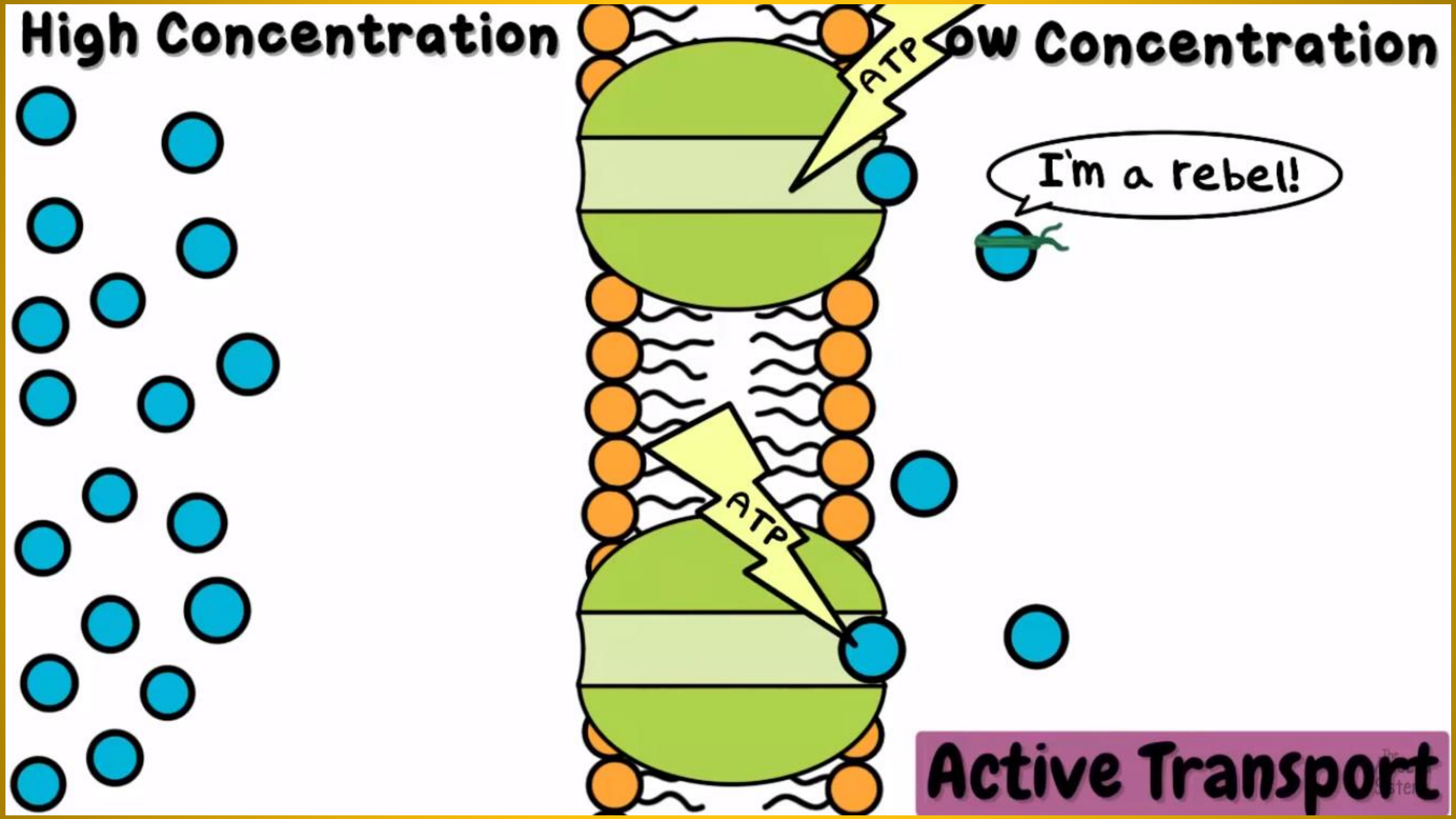


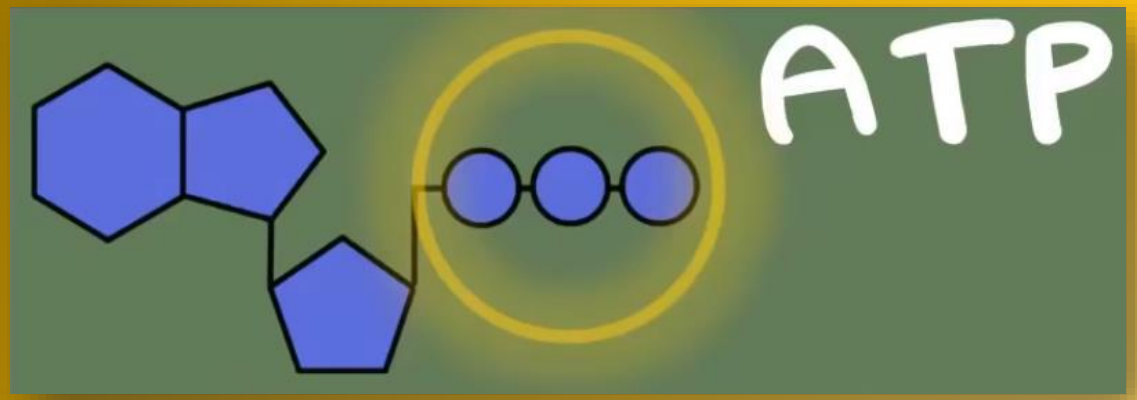
Moves with Concentration Gradient

Facilitated Diffusion

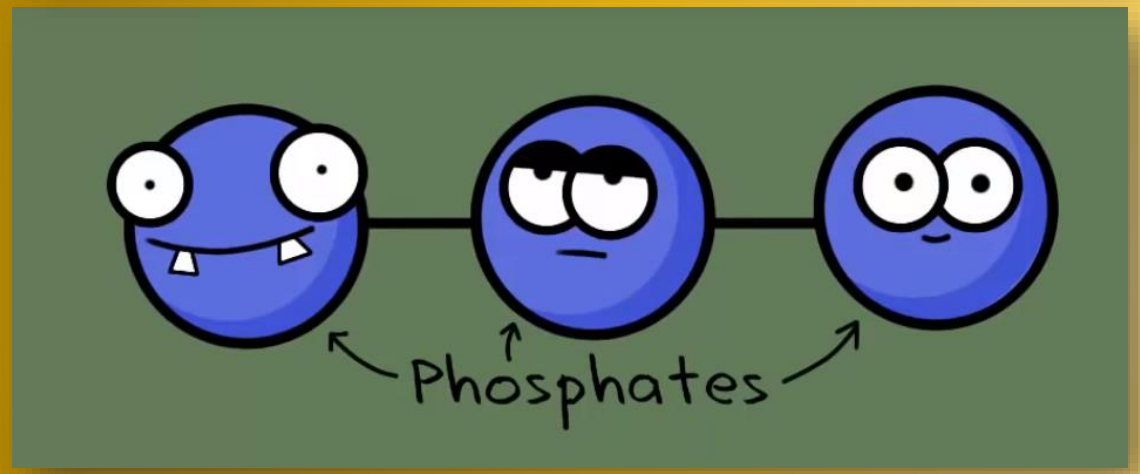
Requires Transport Protein

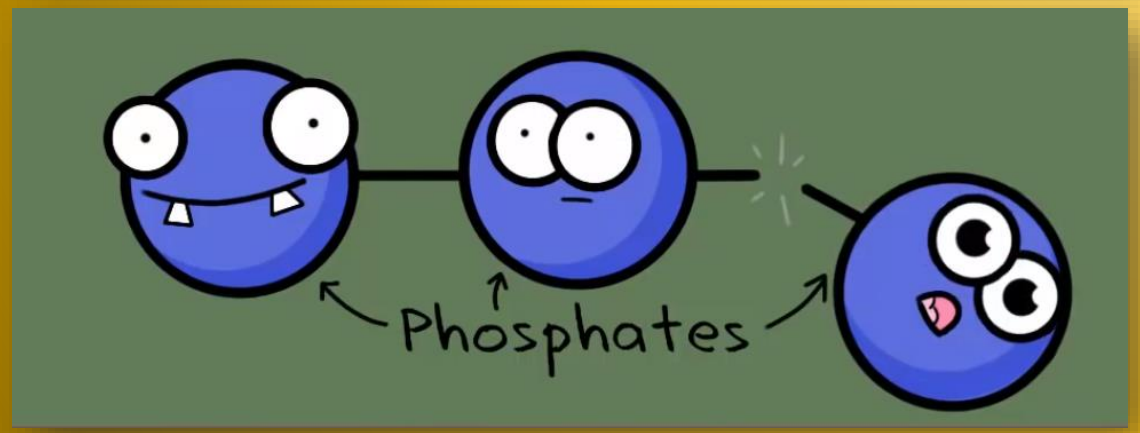

Active Transport
Primary
Secondary
Uniport
Cotransport
Antiport
Symport
P_i + ADP
ATP
Low
High
Pump-mediated
Carrier-mediated

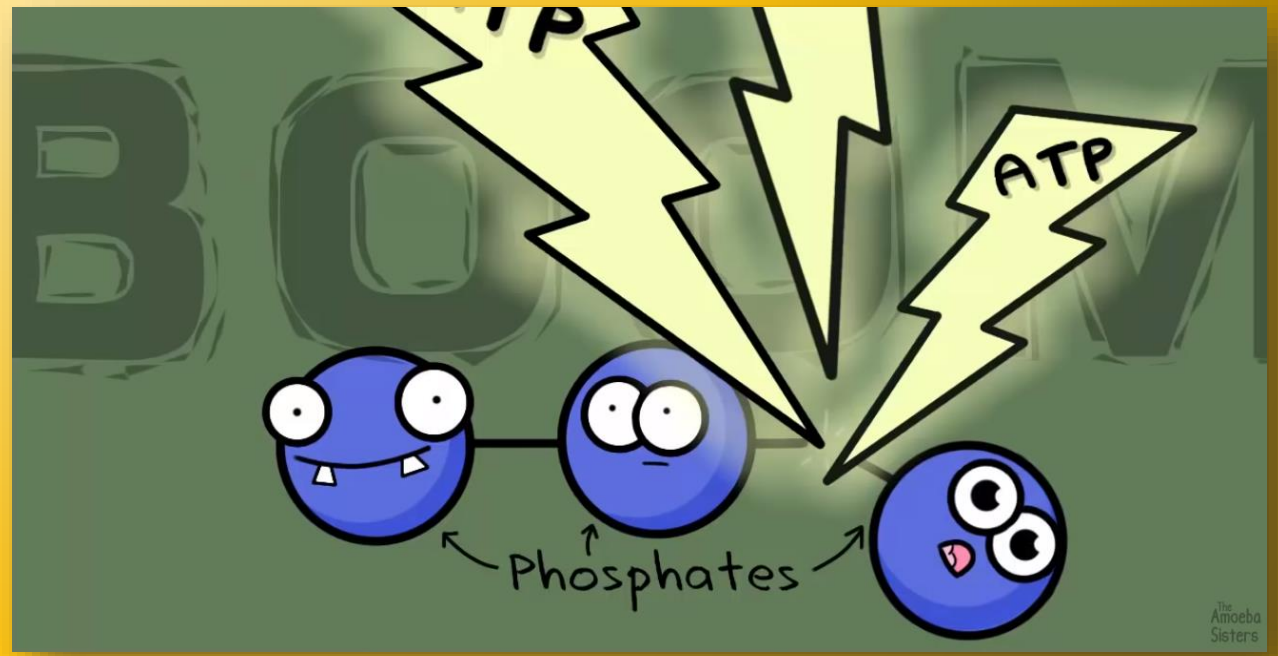

High Concentration
ow Concentration
ATP
I'm a rebel!
ATP
Active Transport



stands for
"adenosine triphosphate"








Active
Transport
IT'S FUSING TIME!

Endocytosis

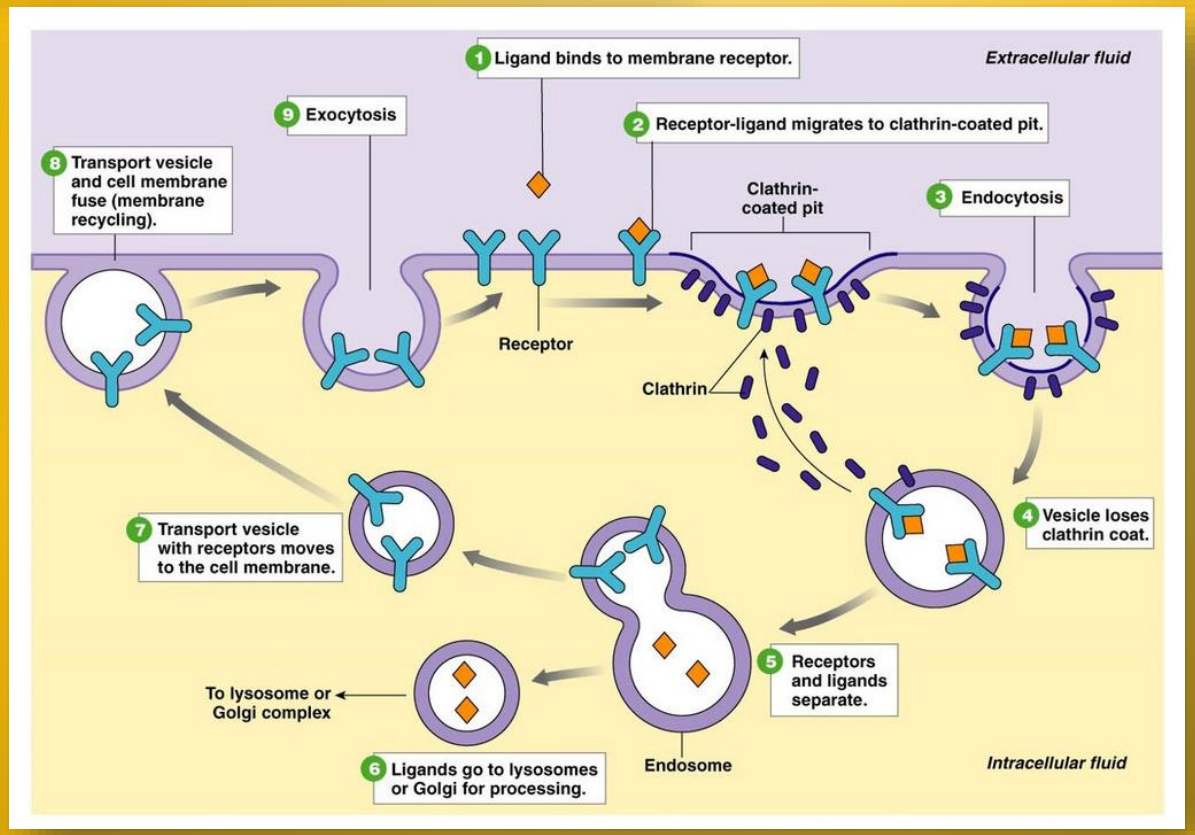
- Phagocytosis
- Receptor-mediated Endocytosis
- Pinocytosis

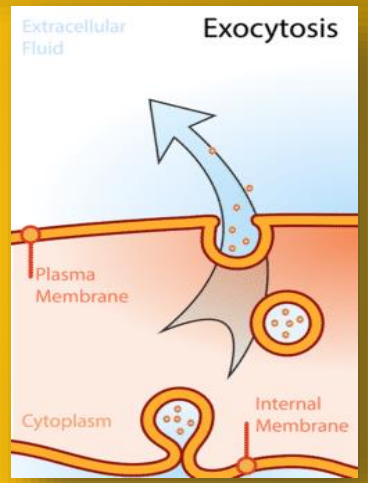
vs.

Exocytosis

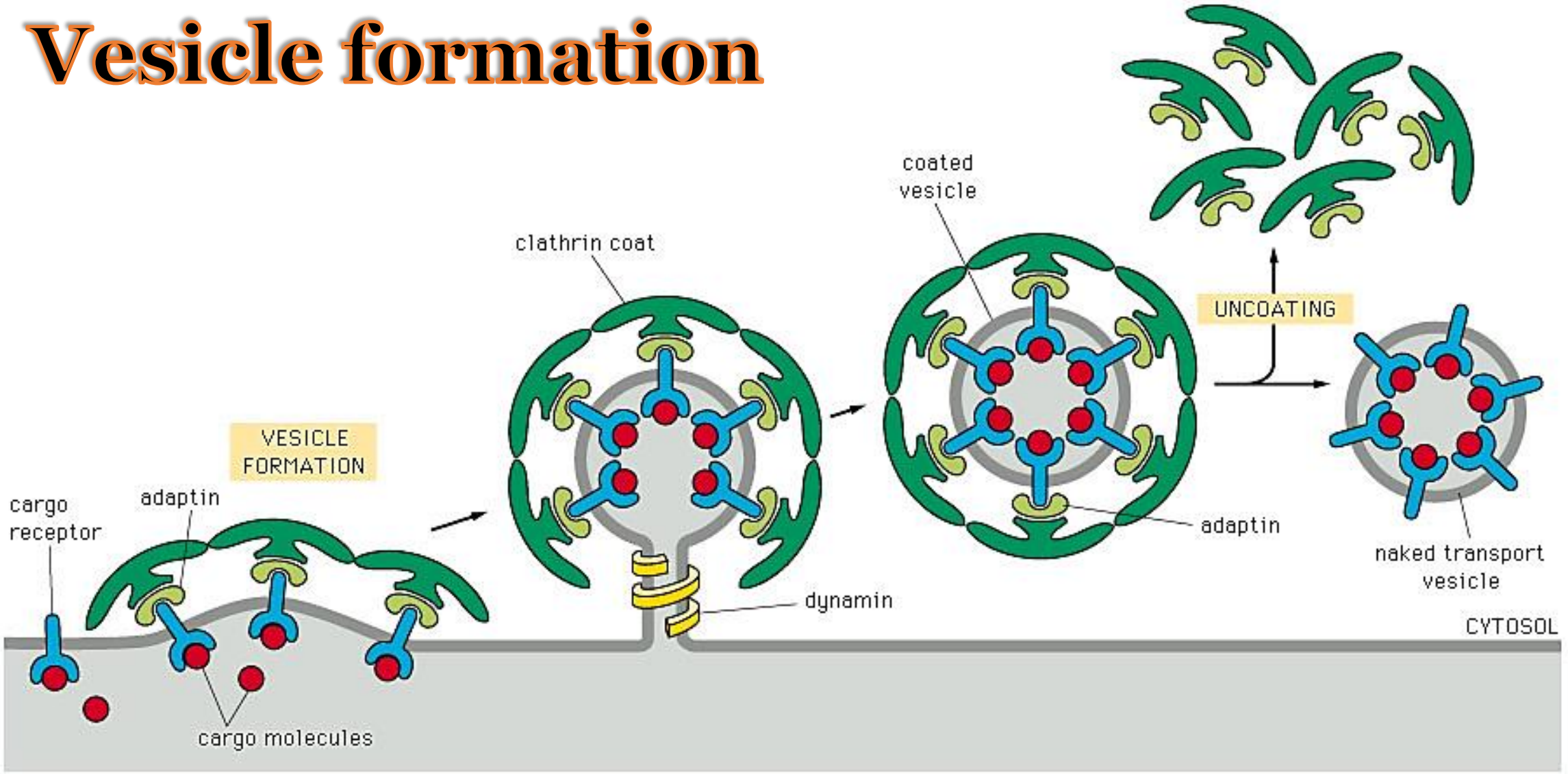
= exit

vs.





Vesicle formation



Transport	Molecules moved	Uses energy?	Example transporter/disease
Simple diffusion	Small, nonpolar	No	Pulmonary edema
Facilitated diffusion	Polar molecules, larger ions	No	GLUT4 / Diabetes Mellitus Type II
Primary active transport	Molecules moving against their gradient coupled to the hydrolysis of ATP	Yes	Sodium-potassium pump, proton pump / atrial fibrillation, acid reflux
Secondary active transport	Molecule going with + molecule going against gradient	Yes	Sodium-calcium exchanger, SGLT2