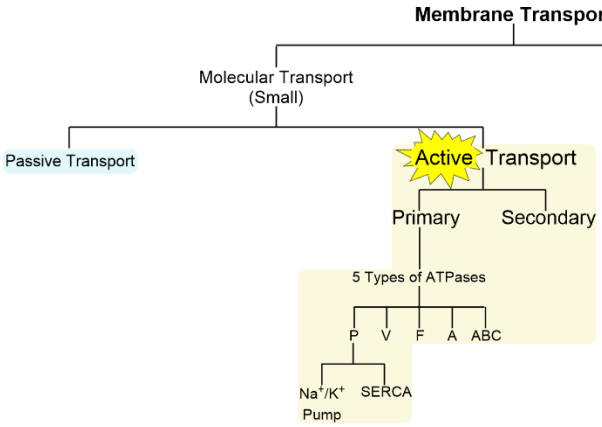
CONCEPT: PRIMARY ACTIVE MEMBRANE TRANSPORT

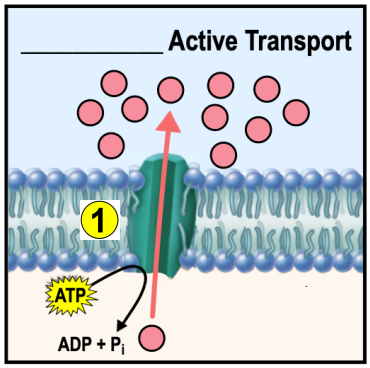
●*Recall*: *Active transport*: an active, _____-driven process transporting molecules *against* their concentration gradient.

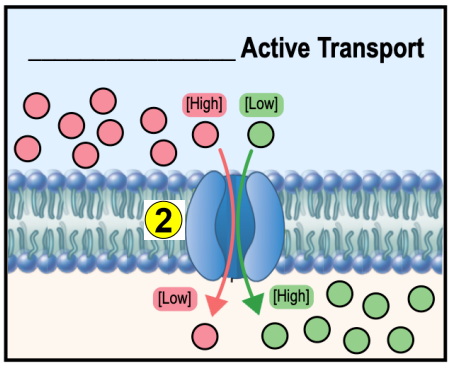
2 Types of Active Membrane Transport

1. _____ *Active Transport*: directly driven by energy source (such as ATP hydrolysis).
2. _____ *Active Transport*: directly driven by an *electrochemical ion gradient*.

EXAMPLE: Primary vs. Secondary Active Transport.







Types of Primary Active Transport ATPases

●*Primary Active Transport ATPase*: transporters that *hydrolyze* _____ to pump molecules *against* their gradients.

□ _____ types of *Primary Active Transport* ATPases:

ATPase Type	Function
1) ____-type ATPase	Transports cations (ex. Na^+ & K^+) & are reversibly **P**hosphorylated by ATP.
2) ____-type ATPase	Transports H^+ to *acidify* intracellular regions of **V**esicles. Lysosome
3) ____-type ATPase	Transports **F**ree H^+ across mitochondrial membranes producing ATP (ATP synthase). You're Free!
4) ____-type ATPase	Transports **A**nions across **A**rchaeal cell membranes.
5) _____ Transporters	Transports many types of solutes (ex. drugs) utilizing an **A**TP-**B**inding **C**assette. ATP Mixtape

CONCEPT: PRIMARY ACTIVE MEMBRANE TRANSPORT

PRACTICE: What initial effect would the loss of ATP production have on a cell's ability to transport substances?

a) The cell would only be able to transport substances using active transport.
b) The cell would be able to transport substances using active and passive transport.
c) The cell would only be able to transport substances using passive diffusion.
d) The transport of all substances across the membrane would stop.

PRACTICE: What is the main difference between active transport and facilitated transport?

a) Facilitated transport uses proteins, but active transport does not.
b) Active transport uses ATP to power transport, but facilitated transport does not.
c) Active transport occurs across the plasma membrane, but facilitated transport does not.
d) Active transport moves a substance from higher concentration low concentration, while facilitated transport moves a substance from low concentration to high concentration.
e) All of the above are differences between active and facilitated transport.

PRACTICE: P-type ATPases _____.

a) Transport phosphate against its concentration gradient.
b) Undergo reversible phosphorylation by ATP hydrolysis.
c) Transport anions only.
d) Transports phosphate with its concentration gradient.
e) Phosphorylates cations so they can be transported into the cell.