

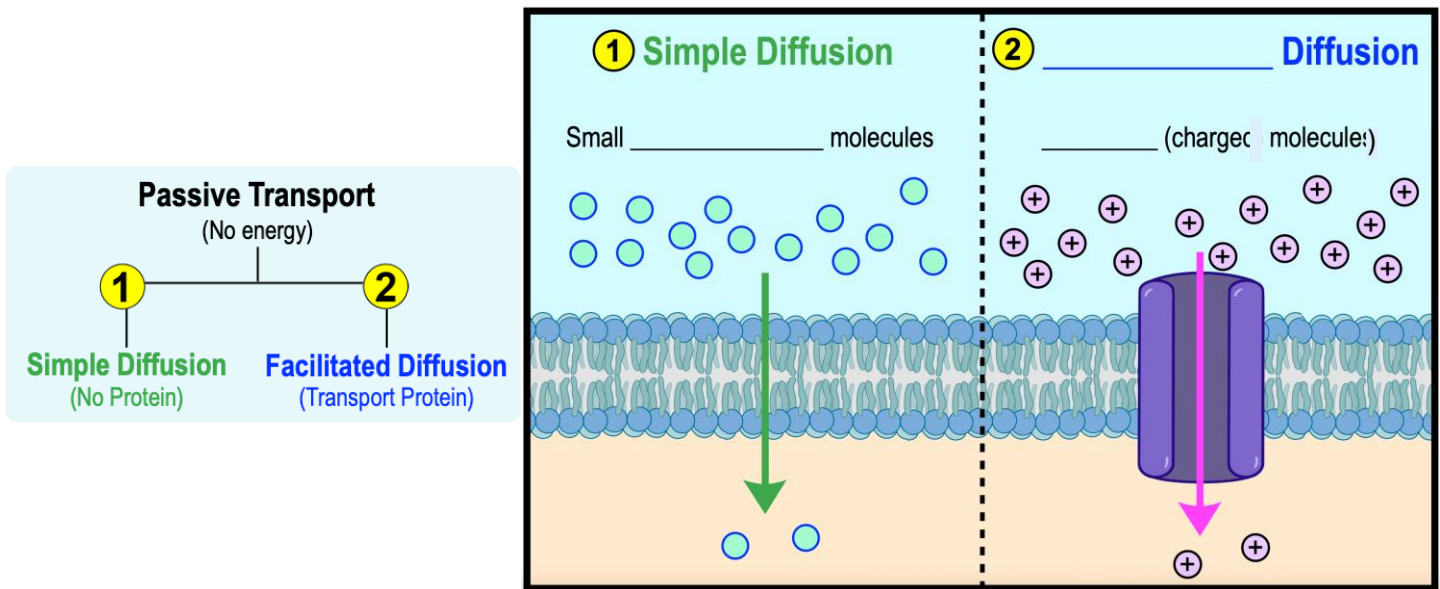
CONCEPT: SIMPLE & FACILITATED DIFFUSION

• Simple & facilitated diffusion are types of _____ transport (_____ energy).

① _____ **Diffusion**: simple & direct diffusion of small *uncharged* molecules through a cell membrane.

② **Facilitated Diffusion**: non-energetic diffusion of *charged* molecules facilitated by a transport _____.

EXAMPLE: Simple vs. Facilitated Diffusion.



PRACTICE: Which of the following processes includes all of the others?

- a) Osmosis.
- b) Facilitated diffusion.
- c) Passive transport.
- d) Transport of an ion down its electrochemical gradient.

PRACTICE: The difference between simple and facilitated diffusion is that facilitated diffusion:

- a) Requires a protein transporter.
- b) Moves molecules against their concentration gradient.
- c) Requires energy.
- d) Freely diffuses molecules against their concentration gradient.

CONCEPT: SIMPLE & FACILITATED DIFFUSION

Transport Proteins of Facilitated Diffusion

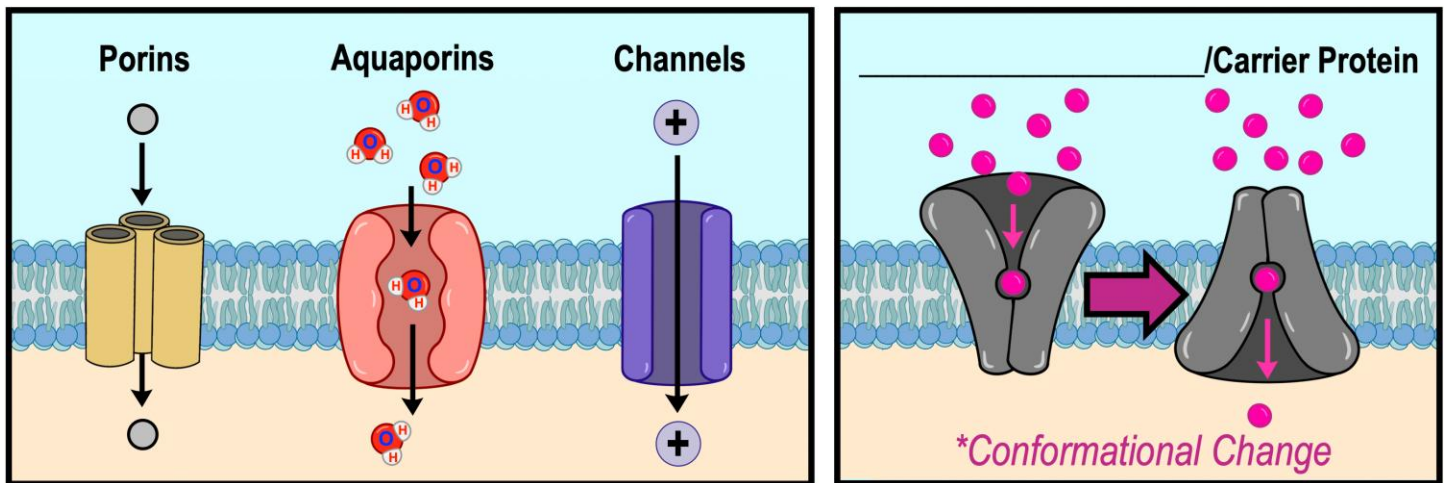
- _____ types of transport proteins involved in *facilitated diffusion*:

1) **Porins/Channels**: form an obvious *membrane-spanning*-_____.

□ *Aquaporins*: used to transport _____ molecules through a cell membrane (facilitating *osmosis*).

2) **Transporters/Carriers**: undergoes *conformational* changes to move molecules across a membrane.

EXAMPLE: Porins/Aquaporins/Ion-Channels & Transporters/Carriers.



PRACTICE: Which of the following does not accurately describe a channel or a carrier?

- a) Channel – open to both sides of the membrane simultaneously.
- b) Carrier – open to one side of the membrane at a time.
- c) Carrier – requires a conformation change to complete function.
- d) Channel – not selective for molecules that move through it.

PRACTICE: Which type(s) of molecules cannot enter/exit the cell via simple diffusion and require facilitated diffusion?

- a) Nonpolar oxygen gas molecules.
- b) Charged Ca^{2+} ions.
- c) Nonpolar carbon dioxide gas molecules.
- d) Nonpolar water molecules.
- e) Charged Na^{+} ions.
- f) b and e only.
- g) a, c, and d only.