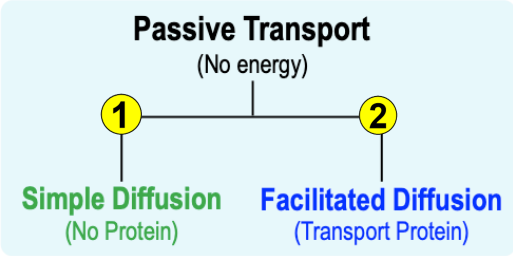
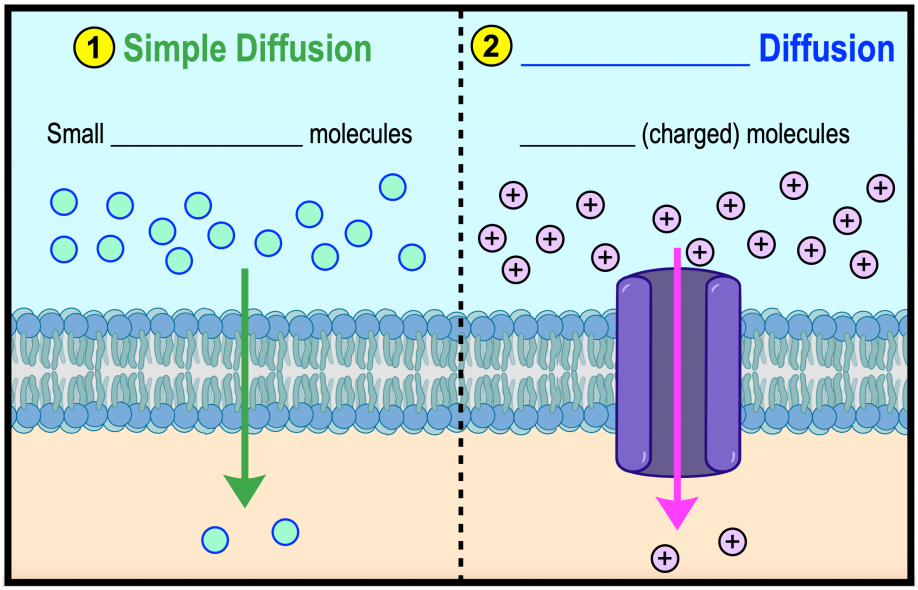
CONCEPT: SIMPLE & FACILITATED DIFFUSION

- *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.

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Transport Proteins of Facilitated Diffusion

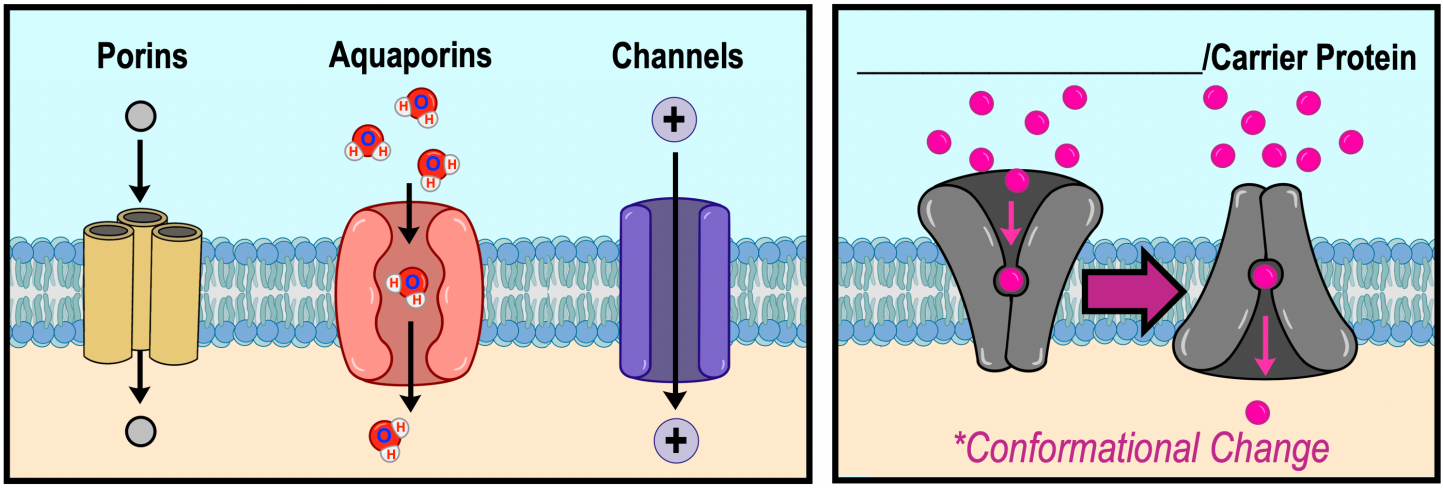
- _____ types of transport proteins involved in *facilitated diffusion*:

    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.