Aim: How do transport proteins facilitate the movement of molecules across a membrane?

Specific proteins facilitate passive transport of water and selected solutes: *a closer look*

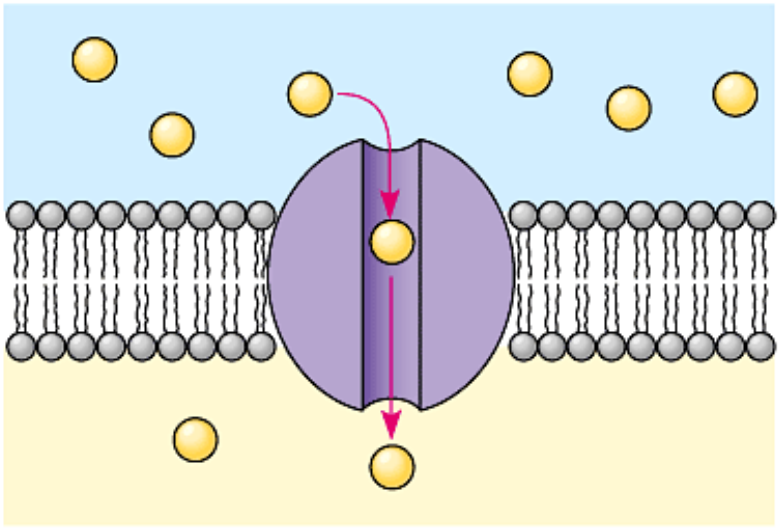
- The passive movement of molecules down its concentration gradient via a transport protein is called **facilitated diffusion**.

Transport proteins have much in common with enzymes.

- They may have specific binding sites for the solute.
- Transport proteins can become saturated when they are translocating passengers as fast as they can.
- Transport proteins can be inhibited by molecules that resemble the normal "substrate."
  - When these bind to the transport proteins, they outcompete the normal substrate for transport.

Channel proteins

- Many transport proteins simply provide corridors allowing a specific molecule or ion to cross the membrane.
  - These *channel proteins* allow fast transport.
  - For example, water channel proteins, **aquaprorins**, facilitate massive amounts of diffusion.

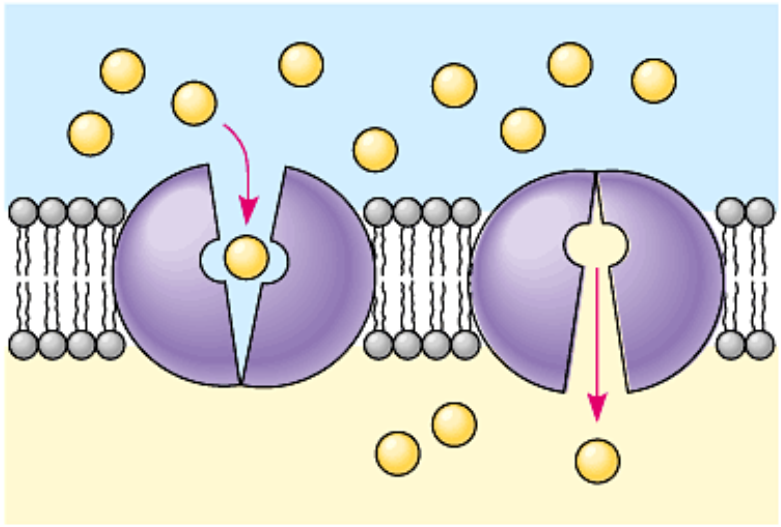


(a)

Channel proteins

- Some channel proteins, **gated channels**, open or close depending on the presence or absence of a physical or chemical stimulus.
  - The chemical stimulus is usually different from the transported molecule.
  - For example, when neurotransmitters bind to specific gated channels on the receiving neuron, these channels open.
    - This allows sodium ions into a nerve cell.
    - When the neurotransmitters are not present, the channels are closed.

- Some transport proteins do not provide channels but appear to actually translocate the solute-binding site and solute across the membrane as the protein changes shape.
- These shape changes could be triggered by the binding and release of the transported molecule.



(b)