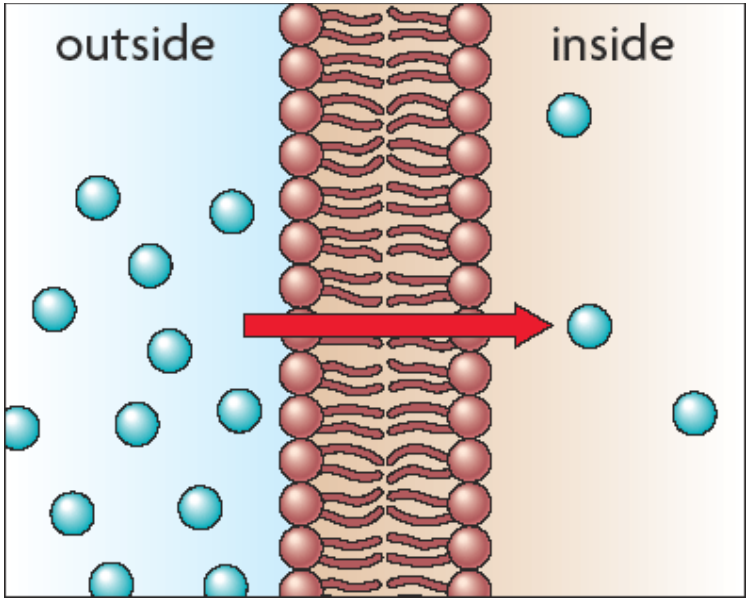
3.4 Diffusion and Osmosis

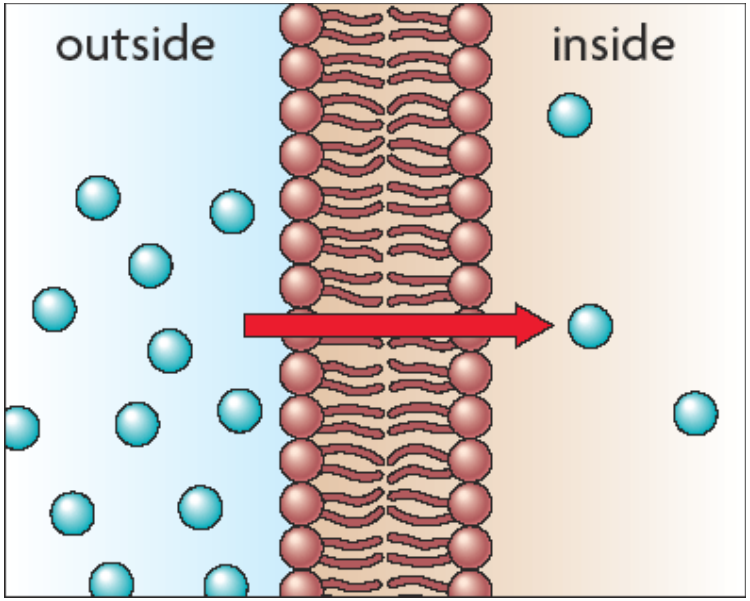
KEY CONCEPT **Materials move across membranes because of concentration differences.**



3.4 Diffusion and Osmosis

Passive transport does not require energy input from a cell.

- Molecules can move across the cell membrane through passive transport.
- There are two types of passive transport.
  - diffusion
  - osmosis



3.4 Diffusion and Osmosis

Diffusion and osmosis are types of passive transport.

- Molecules diffuse down a concentration gradient.

3.4 Diffusion and Osmosis

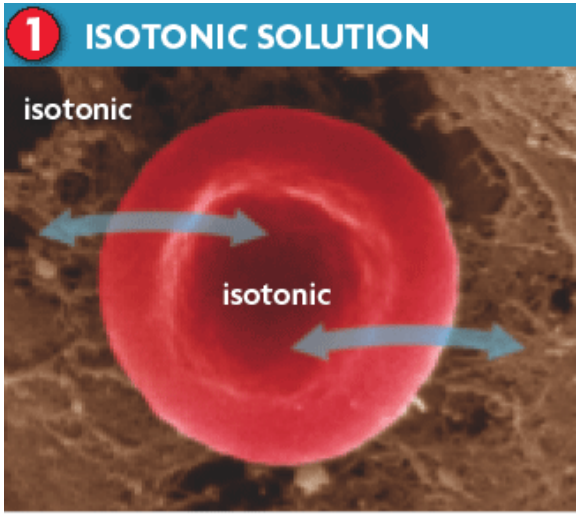
Diffusion and osmosis are types of passive transport.

- Osmosis is the diffusion of water molecules across a semipermeable membrane.

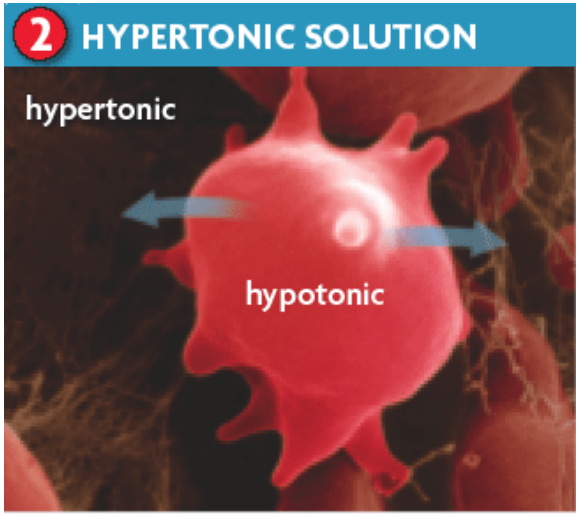
3.4 Diffusion and Osmosis

Diffusion and osmosis are types of passive transport.

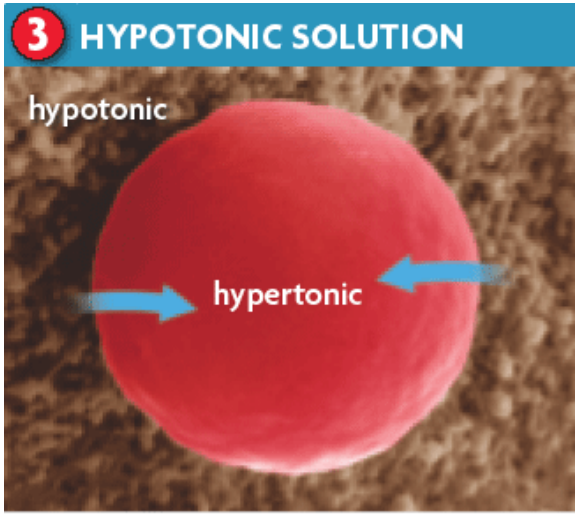
- There are three types of solutions.
  - isotonic
  - hypertonic
  - hypotonic



A solution is isotonic to a cell if it has the same concentration of solutes as the cell. Equal amounts of water enter and exit the cell, so its size stays constant.



A hypertonic solution has more solutes than a cell. Overall, more water exits a cell in hypertonic solution, causing the cell to shrivel or even die.



A hypotonic solution has fewer solutes than a cell. Overall, more water enters a cell in hypotonic solution, causing the cell to expand or even burst.

3.4 Diffusion and Osmosis

Some molecules can only diffuse through transport proteins.

- Some molecules cannot easily diffuse across the cell membrane.
- Facilitated diffusion is diffusion through transport proteins.