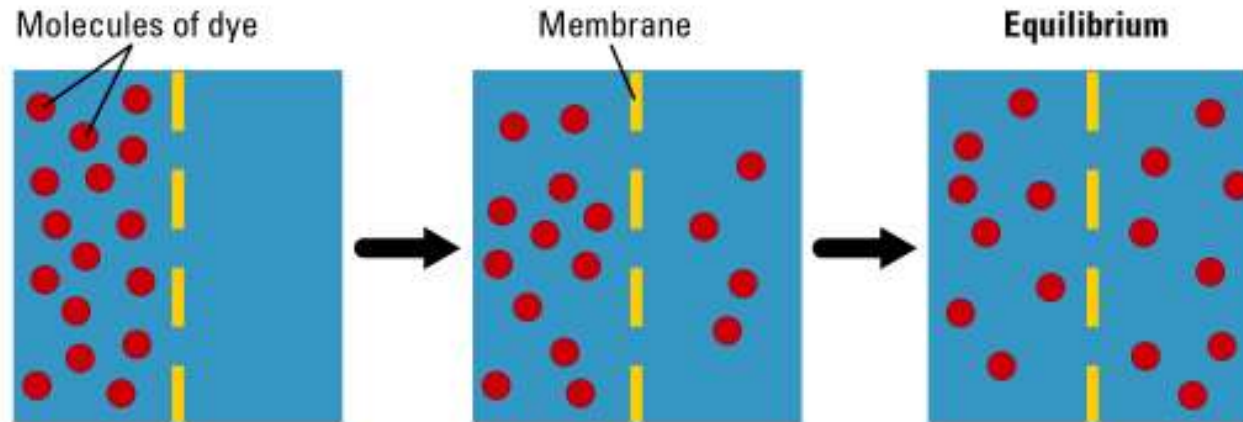
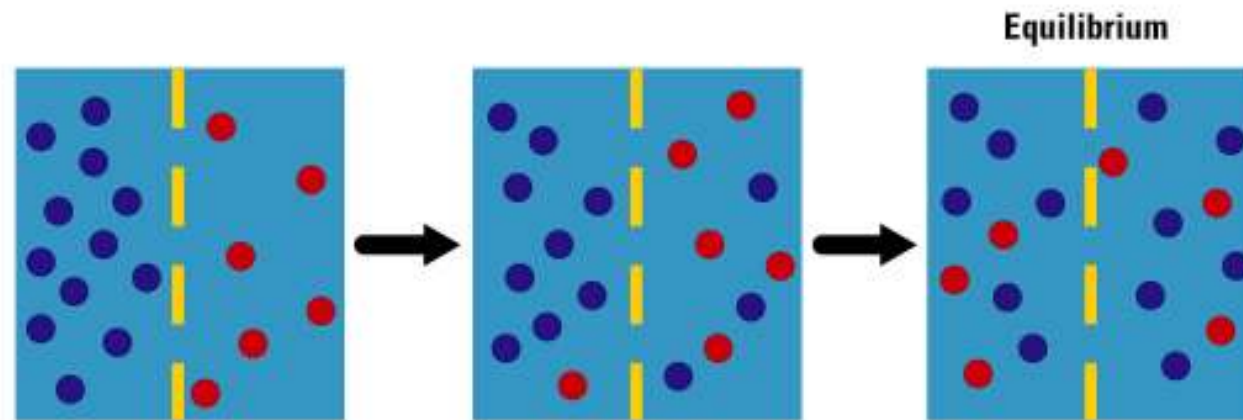


Diffusion and Osmosis

- **Diffusion** - the tendency of molecules to move from a higher concentration to a lower concentration until equilibrium is reached.



(a) Passive transport of one type of molecule



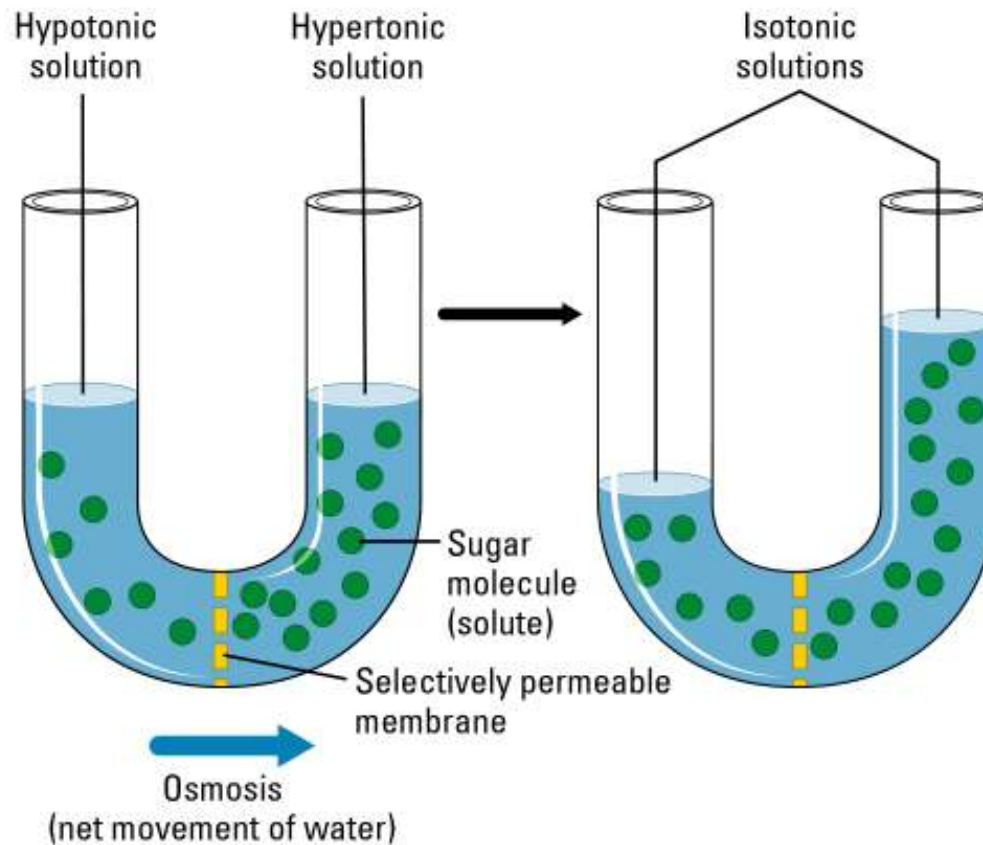
(b) Passive transport of two types of molecules

Diffusion video??

Passive Transport

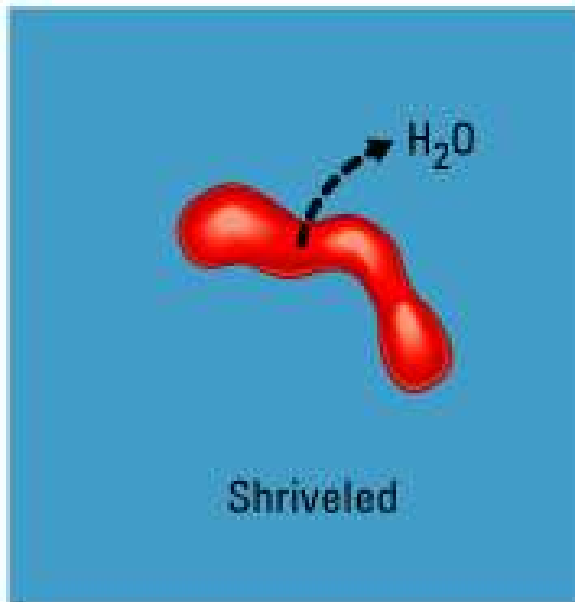
- Diffusion across a membrane.
- Cell does **not** use any energy for diffusion.
- Selectively permeable membrane.
- Examples – water, O₂ and CO₂ gas exchange

- **Osmosis** - passive transport of water across a semi-permeable membrane.
- The water is the substance that moves across membrane not the solute.

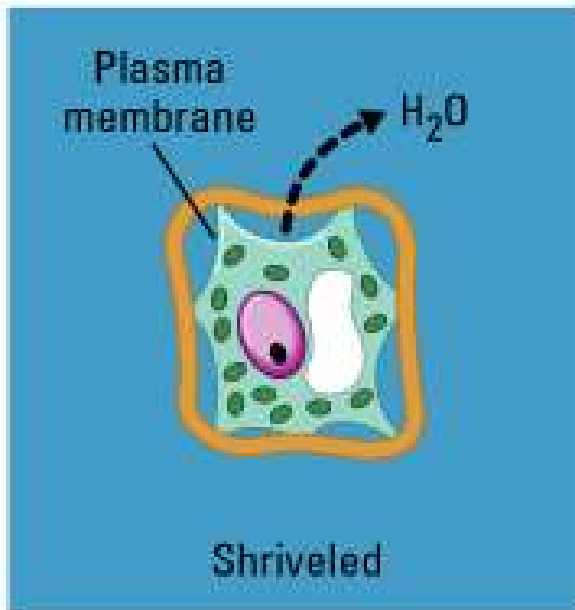


Hypertonic

Animal cell



Plant cell

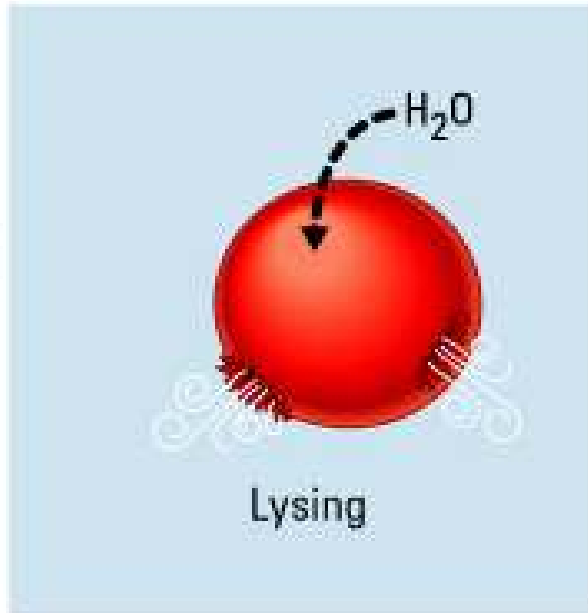


(c) Hypertonic solution

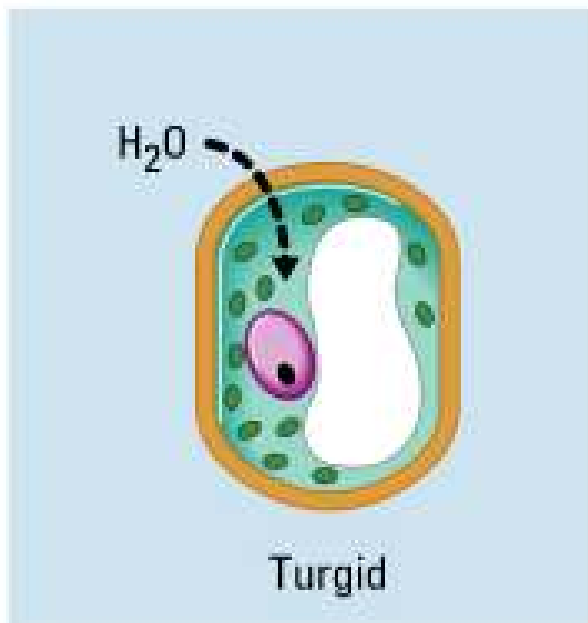
- Solution with a higher concentration of solute and a lower concentration of water.
- Hyper = above

Hypotonic

Animal cell



Plant cell

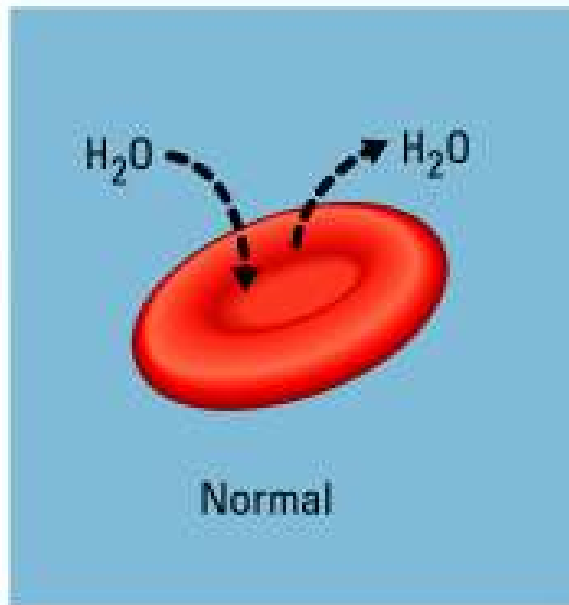


(b) Hypotonic solution

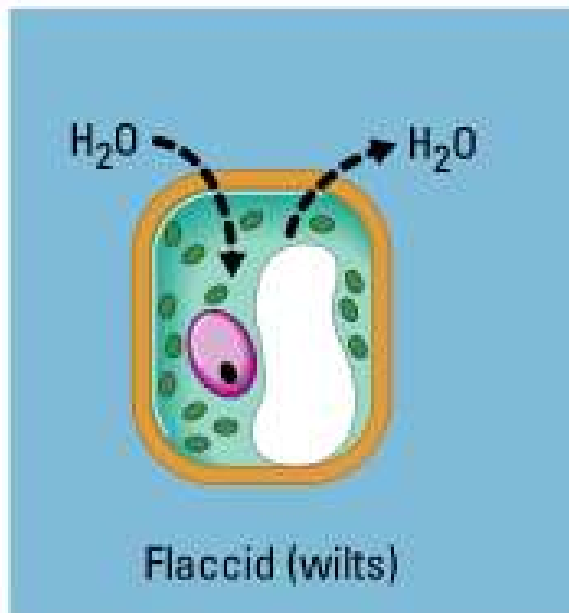
- Solution with a lower solute concentration and a higher water concentration.
- Hypo = below

Isotonic

Animal cell



Plant cell

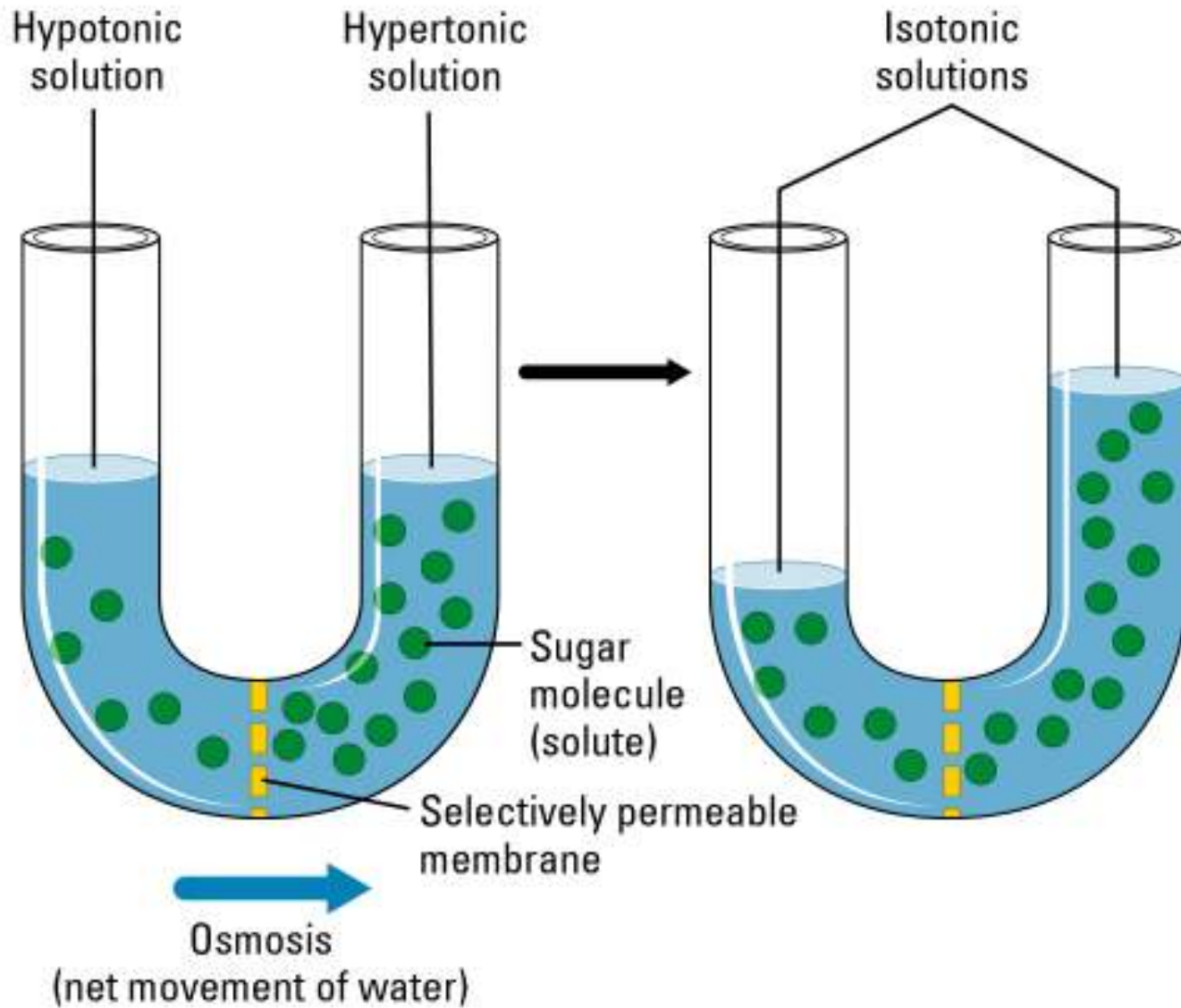


(a) Isotonic solution

- Solutions of equal solute concentration.
- Isos = equal

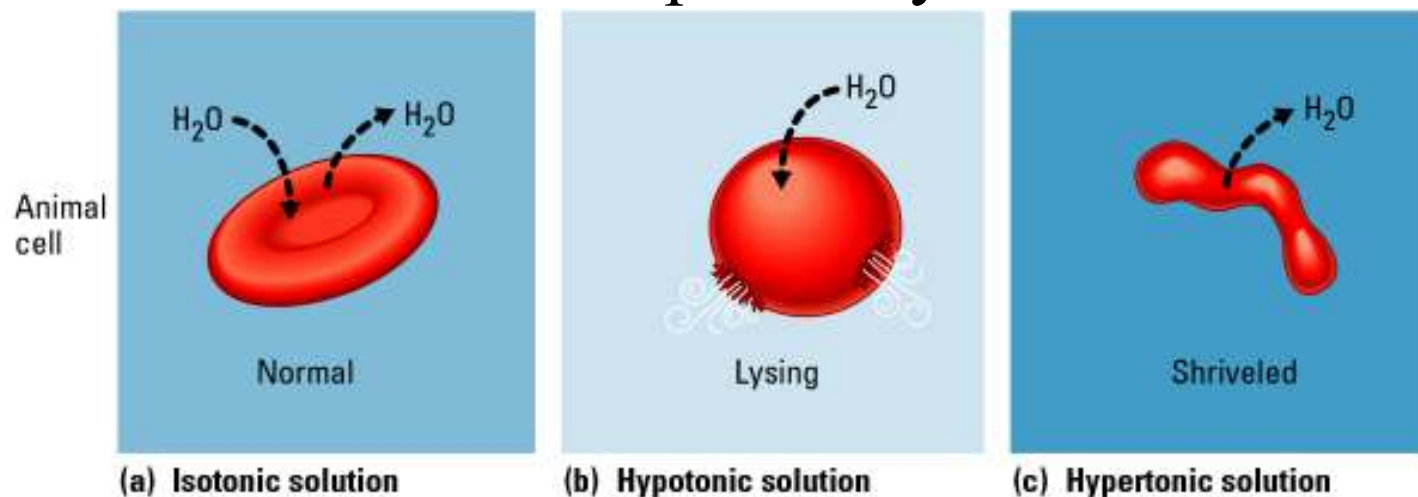
Osmosis video??

Review



Effect on living animal cells

- Osmoregulation – control of water balance.
 - Animals must use this when exposed to hypertonic and hypotonic environments for survival.
 - Example – fresh water fish live in hypotonic environment use kidneys and gills to prevent excess water buildup in body.



Effect on living plant cells

- Most plants thrive in a hypotonic environment when cell wall is turgid and vacuole is full.
- Plants become wilted in isotonic environment.
- Plasmolysis – plant in hypertonic environment causes cell water loss, cell shrivels and the cell membrane pulls away from the cell wall and can kill the cell.

