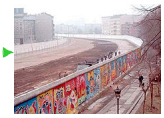
DIFFUSION & OSMOSIS

What is the difference in getting through...

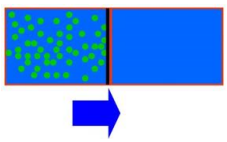
Country border (UK)


Berlin Wall (GER)


Tea bag


Milk bag

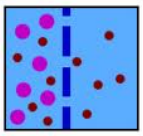
Impermeability: Membranes (made of matter) that are **not permeable** to other substances (nothing gets through). There are no holes in the membrane.



Ex. Milk bags are impermeable

Selective Permeability: Membranes that allow only certain materials through it. Cell membranes are **selectively permeable**.

Cells control what substances it will let through the cell membrane.



Eg. Tea bags will let water through, but the tea leaves stay contained.

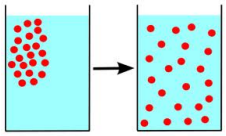
Why is it when you put a liquid in water it eventually mixes in?

Tea in bags will mix in hot water

Drops of blue food colouring will turn all the water in a container blue

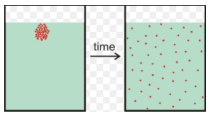
Particles/atoms of liquids and gases are in constant motion. Gas particles move faster than liquid particles. They constantly spread out and bump into each other.

Diffusion: The spreading out of particles in a liquid or gas. **Particles will move from an area of higher concentration** (crowded spot) **to an area of lower concentration** (spread even).



If someone was to peel an orange at the back of the classroom without anyone knowing, everyone would eventually smell "orange" in the air. This is due to diffusion.

Diffusion is a type of Passive Transport. It is responsible for the movement of particles (liquids and gases) in and out of cells. **No energy** is used for diffusion.



Osmosis is the **spontaneous movement of water in and out of cells (Passive Transport).**

If a cell has less water inside of it than outside, water will seep into the cell, to the area of low water concentration.

https://www.youtube.com/watch?v=KmQyVWtxeqM

https://www.youtube.com/watch?v=IaZ8MtF3C6M&t=319s

Carrots will become crisp again if they are placed in water. Osmosis at work.

Active Transport

The **controlled movement** of particles through the cell membrane. The controlled openings are called **Carrier Proteins** (like gates). Active transport **uses energy** (when you want to go against diffusion).

Ex: sugar, salt

https://www.youtube.com/watch?v=PtmlvteiI8hw