

# WJEC Wales Biology GCSE

## 1.1 (e) to (h) - Movements across Membranes

### Flashcards

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# Why can substances pass through cell membranes?



# Why can substances pass through cell membranes?

Cell membranes are partially permeable, enabling some molecules to pass through



By what three methods can different substances pass through cell membranes?



By what three methods can different substances pass through cell membranes?

- Diffusion
- Osmosis
- Active transport



# What is diffusion?



## What is diffusion?

The net movement of molecules from an area of high concentration to an area of low concentration down a concentration gradient



Why is diffusion described as a passive process?





Why is diffusion described as a passive process?

It does not require energy



What substances can pass through cell membranes by diffusion?



What substances can pass through cell membranes by diffusion?

Small molecules e.g. carbon dioxide,  
oxygen



What two factors affect the rate of diffusion?



# What two factors affect the rate of diffusion?

- Temperature
- Concentration gradient



# How does temperature affect the rate of diffusion?



How does temperature affect the rate of diffusion?

The higher the temperature, the more energy possessed by molecules and the faster the rate of diffusion



How does concentration gradient affect the rate of diffusion?





How does concentration gradient affect the rate of diffusion?

The steeper the concentration gradient, the faster the rate of diffusion



# What is osmosis?



# What is osmosis?

The net movement of water molecules from an area of high water (low solute) concentration to an area of low water (high solute) concentration across a partially permeable membrane



Describe what happens to an animal cell if it is placed into a more dilute solution



## Describe what happens to an animal cell if it is placed into a more dilute solution

- Higher concentration of water in surrounding solution
- Water enters cell by osmosis
- Pressure inside cell increases ∴ cell bursts



Describe what happens to a plant cell if it is placed into a more dilute solution



## Describe what happens to a plant cell if it is placed into a more dilute solution

- Higher concentration of water in surrounding solution
- Water enters cell by osmosis
- Cell wall resists increase in pressure  $\therefore$  cell turgid



Describe what happens to an animal cell  
if it is placed into a more concentrated  
solution





## Describe what happens to an animal cell if it is placed into a more concentrated solution

- Lower concentration of water in surrounding solution
- Water leaves cell by osmosis
- Pressure inside cell decreases ∴ cell shrinks



Describe what happens to a plant cell if it is placed into a more concentrated solution



# Describe what happens to a plant cell if it is placed into a more concentrated solution

- Lower concentration of water in surrounding solution
- Water leaves cell by osmosis
- Pressure inside cell decreases ∴ cytoplasm shrinks
- Cytoplasm pulls away from cell wall - plasmolysis



Describe what happens to a cell if it is placed into a solution of equal water concentration



Describe what happens to a cell if it is placed into a solution of equal water concentration

No net movement of water molecules into or out of the cell



What is active transport? (higher)



What is active transport? (**higher**)

The movement of molecules across a cell membrane from an area of low concentration to an area of high concentration, against the concentration gradient, using energy

