

# WJEC (Wales) Biology A-level

## Unit 1.3 - Cell membranes and transport Flashcards

This work by [PMT Education](https://www.pmt.education) is licensed under [CC BY-NC-ND 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/)



What are the principle components of the plasma membrane?



# What are the principle components of the plasma membrane?

- Intracellular and extracellular proteins
- Glycoproteins
- Phospholipids
- Cholesterol



# What is the fluid-mosaic model?



## What is the fluid-mosaic model?

A model that describes membrane structure as a 'sea' of mobile phospholipids studded with various proteins.



# What are intrinsic proteins?



# What are intrinsic proteins?

Proteins found within the phospholipid bilayer. Includes channel and carrier proteins.



# Outline the functions of intrinsic proteins





## Outline the functions of intrinsic proteins

- Structural support
- Carry water-soluble molecules across the phospholipid bilayer
- Form ion channels to enable active transport



# What are extrinsic proteins?



# What are extrinsic proteins?

Proteins found at the edges of the phospholipid bilayer.



Outline the functions of extrinsic proteins.



# Outline the functions of extrinsic proteins.

- Receptors
- Act as antigens, enabling cell recognition
- Help cells adhere to each other



# What is the glycocalyx?



# What is the glycocalyx?

A glycoprotein and glycolipid coating surrounding the cell membrane of some cells.



Name the factors affecting the permeability of the plasma membrane.





Name the factors affecting the permeability of the plasma membrane.

- Temperature
- Organic solvents
- pH



How does temperature affect the permeability of the plasma membrane?



How does temperature affect the permeability of the plasma membrane?

As temperature increases, the phospholipids have more kinetic energy and move more, increasing the fluidity and permeability of the plasma membrane.



What happens to the plasma membrane if the temperature becomes too high?



# What happens to the plasma membrane if the temperature becomes too high?

- Channel and carrier proteins will become denatured, affecting membrane permeability
- The cell will eventually break down completely



How do organic solvents affect the permeability of plasma membranes?



How do organic solvents affect the permeability of plasma membranes?

Organic solvents dissolve membranes, disrupting cells. This increases the fluidity and permeability of the plasma membrane.



# Define diffusion





## Define diffusion

The **passive** movement of small non-polar, lipid-soluble molecules from an area of high concentration to an area of low concentration.



State the factors that affect the rate of diffusion.



State the factors that affect the rate of diffusion.

- Temperature
- Steepness of concentration gradient
- Size of molecule
- Diffusion distance
- Surface area



# Define osmosis



## Define osmosis

The **passive** diffusion of water molecules from a region of high water potential to a region of lower water potential (down a water potential gradient) through a **selectively permeable membrane**.



# What is water potential ( $\Psi$ )?



# What is water potential ( $\Psi$ )?

A measure of the tendency of water molecules to move from one area to another.



# What is incipient plasmolysis?





# What is incipient plasmolysis?

- The effect produced by placing plant cells in an isotonic solution
- Causes the cell membrane to pull away from the cell wall in some areas
- The cell is neither plasmolysed nor turgid



# Define facilitated diffusion



## Define facilitated diffusion

The net movement of substances from a high concentration to a lower concentration (down their concentration gradient) through **transport proteins** without the use of energy.



Give an example of facilitated diffusion.



Give an example of facilitated diffusion.

Co-transport



# Define active transport



## Define active transport

The movement of substances from a low concentration to a higher concentration (**against** the concentration gradient) through **carrier proteins** with the use of energy in the form of **ATP**.



# How does cyanide affect active transport?





# How does cyanide affect active transport?

Cyanide inhibits cytochrome oxidase, stopping the production of ATP. This prevents active transport.



What are the two mechanisms of bulk transport?



What are the two mechanisms of bulk transport?

Endocytosis

Exocytosis



# Define endocytosis



## Define endocytosis

The bulk uptake of substances into a cell by invagination of the membrane to form a vesicle. Uses energy in the form of ATP.



State the two types of endocytosis.



State the two types of endocytosis.

Phagocytosis

Pinocytosis



# What is pinocytosis?





# What is pinocytosis?

The bulk uptake of **liquids** into the cell using energy in the form of ATP.



# What is phagocytosis?



# What is phagocytosis?

The bulk uptake of **solids** into the cell using energy in the form of ATP.



# Define exocytosis



## Define exocytosis

The bulk transport of substances out of a cell via a vesicle that fuses with the plasma membrane. Uses energy in the form of ATP.

