What is the Cell Membrane?

Worksheet

The cell membrane is a phospholipid bilayer embedded with proteins, cholesterol, and carbohydrates that encloses the cell and selectively controls the movement of substances in and out.

Questions

1. What are the main components of the cell membrane?

A) DNA and RNA
B) Phospholipids and proteins
C) Cellulose fibers
D) Chlorophyll molecules

2. Which transport type requires ATP?

A) Diffusion
B) Osmosis
C) Active transport
D) Facilitated diffusion

3. What term describes the membrane's selective control over what passes through?

A) Impermeable
B) Selectively permeable
C) Rigid
D) Isotonic

4. What model describes the cell membrane's structure?

A) Lock and key model
B) Fluid mosaic model
C) Central dogma model
D) Endosymbiotic model

5. Why does water move into a plant cell placed in pure water?

6. How does a nerve cell move sodium ions out against their concentration gradient?

7. A large protein cannot cross the membrane by diffusion. How does the cell get it out?

8. Define: What is the basic structure of the cell membrane?

9. Define: What does 'selectively permeable' mean?

10. Define: What is osmosis?

Answer Key

1. B) Phospholipids and proteins - The membrane is a phospholipid bilayer embedded with proteins.

2. C) Active transport - Active transport moves substances against their gradient, which requires energy.

3. B) Selectively permeable - Selective permeability lets some molecules pass and blocks others.

4. B) Fluid mosaic model - The fluid mosaic model describes proteins floating in a fluid lipid bilayer.

5. Water moves from an area of high water concentration (outside) to low water concentration (inside the cell, which has solutes) This is osmosis, a form of passive transport across the membrane No energy is needed because it follows the concentration gradient

6. Sodium is more concentrated inside than the pump wants, so it must move against the gradient The sodium-potassium pump uses ATP to force sodium out and potassium in This is active transport because it requires energy

7. The protein is too large to pass through the phospholipid bilayer or channel proteins The cell packages it into a vesicle that fuses with the membrane This process, called exocytosis, releases the protein outside the cell

8. A phospholipid bilayer with embedded proteins, cholesterol, and carbohydrates.

9. The membrane allows some substances through easily while blocking or regulating others.

10. The passive diffusion of water across a membrane from high to low water concentration.