How Nerve Cells Talk to Each Other

KS4 BIOLOGY Ages 11-14 ⏰ 3 min read

What Are Nerve Cells?

Nerve cells, also called **neurons**, are special cells in your brain and body that carry messages. Every thought you have, every movement you make, and every feeling you experience depends on millions of these cells working together. But how do they actually chat with each other?

Sending Messages with Electricity and Chemicals

When a **nerve cell** wants to send a message, it starts with **electricity**. Inside the cell, **ions** (tiny charged particles) move in and out, creating an **electrical signal**. This signal travels down a long, thin part of the cell called the **axon**.

Think of it like a relay race: the electrical signal runs along the axon like a runner passing the baton, getting faster and faster until it reaches the end.

The Gap Between Cells

Here's where it gets interesting. Nerve cells don't actually touch each other. There's a tiny gap between them called a **synapse**. So how does the message jump across?

When the electrical signal reaches the end of one cell, it triggers the release of special chemicals called **neurotransmitters**. These are messenger molecules that float across the **synapse** and land on the next nerve cell, like keys fitting into locks. When they connect, they either make the next cell excited (ready to fire) or calm it down.

Think of it like passing a secret message in class: one person whispers it to their neighbour, who then whispers it to the next person, creating a chain of communication.

Why This Matters

This whole process happens incredibly fast—in just **milliseconds**. Thousands of these connections are firing right now as you read these words. Your brain uses this system

to control everything: your muscles, your senses, your memories, and your emotions.

Scientists study how **nerve cells** communicate because when something goes wrong with this process, it can cause problems like **Parkinson's disease** or **depression**. Understanding the chemistry and electricity of nerves helps doctors create better treatments to help people.