Inside a Cell: Every Part and Its Job

KS3 Ages 11-14 ⏰ 3 min read

What is a Cell?

Every living thing is made of **cells** — tiny, invisible structures so small you need a powerful microscope to see them. Your body contains around **37 trillion cells**, and they work together like a massive team to keep you alive. Some creatures, like bacteria, are just a single cell. Others, like humans, are made of billions of cells working in harmony.

Just as a school has different rooms for different purposes — a gym for sport, a library for books, a kitchen for cooking — a cell has different parts, called **organelles**, each with its own important job.

The Cell Membrane

Imagine the **cell membrane** as a protective skin around the cell. It's a thin, flexible barrier that lets useful things in (like food and water) and lets waste out. Think of it like a security guard at a club — it decides what gets through and what stays out.

Think of it like... a bouncer at a nightclub who lets friendly guests in but keeps troublemakers out.

The Nucleus

The **nucleus** is like the cell's control room or brain. It's the largest organelle and contains **DNA**, which is the instruction manual for everything the cell does. It controls how the cell grows, reproduces, and behaves. When a cell needs to make a copy of itself, instructions come from the nucleus.

The Mitochondria

These are the cell's **power stations**. The **mitochondria** (plural of mitochondrion) take nutrients from food and convert them into energy that the cell can use. Without mitochondria, your cells would have no power to function.

Think of it like... a power plant that turns coal or gas into electricity to power your house.

The Ribosomes

Ribosomes are tiny factories that build **proteins**. Proteins are essential for almost everything your body does — from building muscles to fighting infections. The ribosomes follow instructions from the nucleus to make exactly the right proteins.

The Endoplasmic Reticulum

This is a network of tubes and sacs that transport materials around the cell. The **rough endoplasmic reticulum** (covered in ribosomes) helps make proteins, while the **smooth endoplasmic reticulum** helps make fats and breaks down harmful substances.

The Golgi Apparatus

Think of this as the cell's post office. The **Golgi apparatus** receives proteins and lipids from the endoplasmic reticulum, packages them, and ships them to where they need to go — either to other parts of the cell or out of the cell entirely.

Think of it like... a sorting office that packages letters and sends them to their destinations.

The Lysosomes

These are the cell's **recycling bins**. The **lysosomes** contain special chemicals that break down waste and dead materials, keeping the cell clean and healthy.

The Cytoplasm

This is the jelly-like substance that fills the cell and holds all the organelles in place. It's where many chemical reactions happen that keep the cell alive.