



What Happens When Cells Use Energy

KS3

Ages 11-14 ⌚ 3 min read

What Is Cell Energy?

Every living thing is made of tiny units called **cells**, and every cell needs **energy** to survive and do its job. Your brain cells need energy to think, your muscle cells need energy to move, and your heart cells need energy to beat. But where does this energy come from? It comes from the food you eat, and cells release it through a special process.

How Do Cells Release Energy?

Cells release energy by breaking down food molecules, especially **glucose** (a type of sugar). This process is called **respiration**, and it happens inside tiny structures in the cell called **mitochondria**. Think of mitochondria as the cell's power stations—they're where the real energy action happens.

Think of it like a power station burning coal to make electricity. Cells burn glucose to make energy.

During respiration, glucose combines with **oxygen** (the gas you breathe in) and breaks apart into water and carbon dioxide. When these bonds break, the energy stored inside is released. This energy is captured in a special chemical called **ATP** (adenosine triphosphate), which is like a rechargeable battery for the cell.

What Happens to the Energy?

Once cells have ATP energy, they use it for all sorts of important jobs. Muscle cells use it for movement, nerve cells use it to send messages around your body, and stomach cells use it to digest your food. Even when you're sleeping, your cells are still using energy to keep you breathing, maintain your body temperature, and repair damage.

Think of it like spending money from your wallet. ATP is the cell's money, and it spends it on different tasks throughout the day.

What Happens to the Waste?

When cells use energy, they produce waste products. The main waste is **carbon dioxide**, which your blood carries to your lungs, and you breathe it out. Your cells also produce heat, which is why your body stays warm. This is why exercise makes you hot—your muscle cells are using lots of ATP and creating lots of heat as a side effect.

Understanding how cells use energy helps explain why you need food, oxygen, and why you feel tired when you've been working hard. Your cells are literally running out of ATP fuel!