How Traits Pass From Parents to Children

KS4 BIOLOGY GENETICS INHERITANCE Ages 11-16 ⏰ 3 min read

What Are Traits?

A **trait** is any characteristic you inherit from your parents — like eye colour, hair colour, height, or even the shape of your ears. Some traits are physical things you can see, while others, like certain talents or health conditions, work behind the scenes in your body.

The Secret Code: DNA and Genes

Inside almost every cell in your body is something called **DNA** (deoxyribonucleic acid). Think of DNA like an instruction manual for building a human. It's written in a special code that tells your body how to grow and develop.

Within DNA are smaller sections called **genes**. Each gene is responsible for one specific trait. You have roughly **20,000 genes**, and you inherit half of them from your mum and half from your dad.

Think of it like a recipe book: DNA is the whole book, and each gene is a single recipe that tells your body how to make something specific, like brown eyes or curly hair.

How Inheritance Works

When a baby is made, it receives one copy of each gene from its mum's egg and one from its dad's sperm. This means you get two versions of most genes — a pair. Sometimes these genes work together perfectly. Other times, one gene is **dominant** (stronger) and one is **recessive** (weaker), so you only see the dominant trait.

Think of it like mixing two paint colours: if you mix a strong blue with weak yellow, you see mostly blue, not green.

Not Everything Is Genes

While genes control many things, they're not responsible for everything. Your **environment** — the food you eat, how much you exercise, and what you learn — also

shapes who you become. You might inherit the genes for tall height, but if you don't eat well, you might not reach your full potential height.

Why Siblings Look Different

Even though brothers and sisters share the same parents, they don't always look identical. That's because each parent gives a random selection of their genes to each child. It's like shuffling two decks of cards and dealing them out differently each time.

Understanding how traits are passed on helps scientists explain why families look alike and even helps doctors predict and prevent certain inherited health conditions.