How animals change and adapt over millions of years

KS3 Ages 11-14 ⏰ 3 min read

What does it mean for animals to change over time?

Animals don't stay exactly the same forever. Over millions of years, they slowly change and develop new features that help them survive better in their environment. This process is called **evolution**, and it's one of the most important ideas in science.

Think about how your family might change over many generations. Your great-great-grandparents might have looked different from you, and your descendants in the future might look different too. But animal evolution happens much more slowly and in much bigger ways.

Think of it like a video game where characters slowly level up new skills over many, many playthroughs. Each time, they keep the useful abilities and develop new ones that help them win.

How does evolution actually work?

Evolution works through a process called **natural selection**. Here's the basic idea: in any animal population, individuals have small differences. Some might be faster, some stronger, some have thicker fur. When the environment is tough—maybe there's a drought or new predators arrive—the animals with the most useful features are more likely to survive and have babies.

Those babies inherit the helpful features from their parents. Over thousands and thousands of years, more and more animals in the population have these useful traits. Eventually, the whole species changes.

Think of it like a school sports day. The fastest runners are more likely to win races and feel confident. If being fast is really valuable, more students might train hard to run faster. Over many years, the whole school becomes faster on average.

Real examples of evolution

We see evolution all around us. **Darwin's finches** in the Galápagos Islands are a famous example. When scientists studied these birds, they discovered that finches with bigger beaks were better at cracking hard seeds. When seeds became scarce, the birds with bigger beaks survived better and had more babies. The average beak size actually changed within just a few decades!

Another amazing example is **peppered moths** in England during the Industrial Revolution. Before factories, most moths were light-coloured because they blended in with light tree bark. But when factories made trees darker with soot, dark moths suddenly had the advantage. Within decades, most peppered moths became dark.

Think of it like a game of hide-and-seek. If the seeker is really good at spotting bright colours, you'd want to wear darker clothes. Everyone who picks dark clothes will be better at hiding, so eventually everyone wears dark clothes.

Evidence that evolution is real

Scientists have found lots of evidence for evolution. **Fossils** show us that animals from the past looked different from animals today. **DNA** proves that all animals share common ancestors—we even share **50% of our DNA with bananas**! And we can actually watch evolution happen in real time with animals like bacteria that reproduce very quickly.

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