

Your Shortcut to... The Theory of Evolution

It's a story that's been billions of years in the making, it explains life on Earth and how it changes over time, and is the reason why we can't just grow wings to fly to school. This is your Squiz Kids Shortcut to Evolution—the podcast where we dive into the who, what, when, where, why and how of the big news stories. I'm Christie Kijurina.

And I'm Bryce Corbett.

Bryce, have you been out into your garden or your local park lately?

Well actually Christie I've just come back from walking my dog Louis in the park.

That's great Bryce, what did you see?

There were some big tall eucalypts, some spindly grass that made me a bit itchy, and some trees called banksias with really weird seed pods. Oh, and I heard some cicadas chirping and a green tree frog. And there was a big hairy dog, taking itself for a walk.

That sounds lovely Bryce! Isn't it amazing how our planet is home to such a diverse mix of plants, animals, and even tiny life forms like bacteria and fungi? Did you ever wonder how all these different beings came to exist?

As a matter of fact, I have -- and today, we're diving into the primordial soup to find out WHAT evolution is, WHO came up with the current theory of evolution, and HOW every living thing on Earth is connected. So grab your binoculars and your magnifying glasses, because here we go!

Listen carefully - there's a Squiz at the end!

WHAT

Bryce, let's jump into the Squiz Kids Time Machine and travel back in time, waaaay back - more than three billion years (TIME MACHINE SOUND EFFECT), the only life we'd find here on would be itty bitty microscopic cells, too tiny for our eyes to even see. Now lets hop back into the Time Machine and move forward to the present day. As we're speeding through time, life is morphing and changing ever so slowly into the dazzling array of creatures we share our planet with today, like those trees and that hairy dog at the park.

That's right Christie, that's the Theory of Evolution. That every living thing that exists today, is a descendant of previous life forms that inhabited Earth millions and even billions of years ago.

In everyday language, we use the word 'theory' to describe a guess that doesn't have a lot of solid evidence to back it up. But in the realm of science, the word theory has a very different meaning. In science, a theory is an explanation based on lots of facts and evidence that fits what we'd expect to see and is accepted by almost all scientists as the most likely explanation.

So, what evidence supports the Theory of Evolution? How do we know that life didn't simply appear, as it is now, overnight?

That's a great question Bryce! One form of evidence we have is fossils. Fossils are the preserved remains of plants or animals that died a long time ago. Because the conditions were just right when they died, they were preserved, either underground or under water and today, scientists use them as clues to piece together the past.

So that's how we know what dinosaurs might have looked like? Because dinosaurs and humans weren't around at the same time.

That's right. And the different layers of rock that fossils are found in can tell us how long ago they lived. So, when we see small changes in plants and animals that are found in different layers, that shows us that they were evolving.

Imagine a world without evolution. No dogs, no cats, no humans. Just a few basic unchanging species. Sounds pretty dull!

It does. And over time the Earth itself changes shape too. Tectonic plates move and push up new mountains and volcanoes, and the climate fluctuates too. From a steaming hot atmosphere filled with carbon dioxide, to ice ages, to our current conditions today. So when the Earth changes, it's really important that species adapt to new conditions, or else they might die out. And evolution is the process that allows this to happen.

It sure is Christie. But as you said, we need evidence to have a theory of evolution. So who was responsible for discovering this evidence?

WHO

People have been trying to figure out the puzzle of how things came into being for thousands of years! Different cultures and religions all over the world have their own stories about how life started. But the real scientific adventure began with a young guy named Charles Darwin. In 1831, he set sail on a ship called the HMS Beagle for an epic five-year journey around the globe, and that trip changed everything.

Darwin, I've heard of him. He wrote a book called "On The Origin of Species?" Darwin visited a chain of islands called the Galápagos Islands - smack bang in the middle of the ocean near South America - and whilst there, he noticed something super interesting about the finches that lived there. Finches are a type of small bird. Each island had finches, but their beaks were all different shapes, perfectly suited to munching on the seeds found right there on their specific island.

Yeah - and this got him scratching his head and wondering why animals and plants seem just right for the places they live, and why they're so different from one place to another.

Meanwhile, back in England, another scientist named Alfred Russel Wallace was thinking the same big thoughts around the same time.

They were like the Sherlock Holmes and Doctor Watson of nature, picking up clues from fossils, the way living things are spread across the globe, and similarities in anatomy (that's how bodies are built) to solve the mystery of life.

Fast forward to the 20th century, and enter Rosalind Franklin, James Watson, and Francis Crick, who discovered something amazing called DNA. Christie, what exactly is DNA?

Well, imagine it as the ultimate instruction book. Every cell in your body has it, and it tells them how to build you. Finding DNA was like discovering the secret rulebook of evolution, showing us how traits are passed down and change from generation to generation.

So, Christie, if Darwin and Wallace gave us the big idea of evolution and Franklin, Watson, and Crick showed us how it works, how does evolution actually do its thing?

HOW

Imagine nature as a giant science lab, constantly mixing and matching life's ingredients. Every living thing, from tiny ants scuttling underfoot to the grand elephants roaming the savannahs, plays a part in this grand experiment. It's like a game where the best tricks for staying alive are the ones that win the prize.

So it's all about survival? It kinda reminds me of the Hunger Games

And you're not wrong! It's all about who can survive and who can pass on their winning tricks, or DNA, to their kids. These winners get to hand down the traits that helped them stay in the game. Over time, this can lead to new looks or even brand new species popping up.

Wait, so a cactus hoarding water in the desert or a chameleon changing colors isn't just them showing off? They're actually survival tactics that have been perfected over generations?

Exactly! This whole process is called Natural Selection, or as some like to say, Survival of the Fittest.

But hold on, doesn't DNA just make a perfect copy of itself? Shouldn't all offspring look exactly like their parents?

Great point, Bryce! While it's true that babies get a mix of traits from both mum and dad, there's also something called mutations. Sometimes there are tiny mistakes when DNA copies itself. Most mutations might not make a big splash, but sometimes, they strike gold with a new trait that's super helpful- like a beetle born with a brighter shell so that it's more attractive to the ladies. Over time, these lucky breaks can lead to entirely new species.

So, there you have it, folks. Evolution isn't just a boring chapter in a science book; it's the epic saga of life itself. It tells us how we're all connected, part of a web that stretches back to the dawn of life.

THE S'QUIZ

"This is the part of the podcast where you get to test how well you've been listening...

1. What is the name of the theory that explains how every living thing on Earth came to be the way it is today? (Theory of Evolution)"

2 Who travelled to the Galapagos Islands in search of clues about evolution? (Charles Darwin)

3 What is the name of the molecule that carries the instructions for making every living thing? (DNA)

That's all we have time for today. Thanks for joining us as we explored the who, what, how, where, when, and why of Evolution. Teachers, there are a whole heap of excellent classroom resources related to this topic on the Squiz Kids website and there's a link to them in the episode notes.

Now get out there, and have a most excellent day!

Over and out.