



# Charles Darwin

## Getting started

What do you know about evolution? How do scientists believe that humans evolved? Why might their ideas be shocking to some people?

## Reading

**1** **5.12** Listen and read *Background* and the text: *Charles Darwin and the Origin of Species*. Why was Darwin's theory of evolution so controversial?

## Background

### Natural history in the 19<sup>th</sup> century

In the early 19<sup>th</sup> century, most Europeans believed that the Bible's version of the creation of the world was literally true. They believed that God had made the world in six days, and that he had created all the different species on Earth at the same time.

The 1800s were a time of great interest in the natural world. Fossil-hunting was a popular hobby. People had always found fossils, but before the 19<sup>th</sup> century no one had properly understood what they were. But in the 19<sup>th</sup> century, scientists started to understand that there had once been strange species of animals on the Earth which were now extinct. These discoveries challenged the Bible's view of creation.

**2** Find six words you don't know in *Background* and the text, and guess their meaning. Check in the Glossary (pp.264–272).

**3** Read *Background* and the text again. Match the sentence beginnings (1–5) to the endings (a–e).

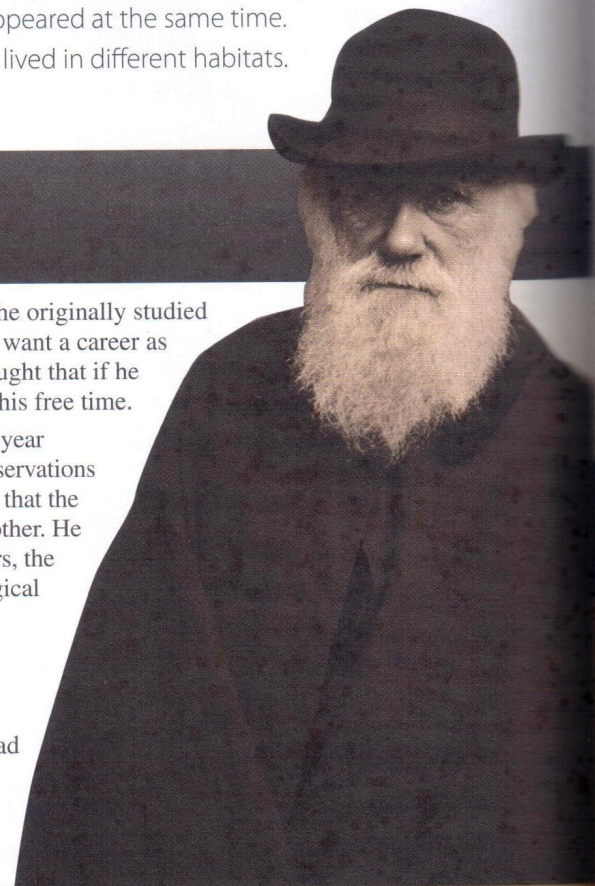
- 1 ..... The study of fossils in the 19<sup>th</sup> century was significant because...
  - 2 ..... Darwin studied Theology because...
  - 3 ..... The birds on the Galapagos Islands were interesting to Darwin because...
  - 4 ..... He thought that the birds had evolved in different ways because...
  - 5 ..... People were shocked at Darwin's theories because...
- a they suggested that humans had evolved from apes.
  - b he noticed differences between birds of the same species.
  - c he was thinking of getting a job in the Church.
  - d it revealed that Earth's natural species hadn't all appeared at the same time.
  - e they lived in different habitats.

## Charles Darwin and the *Origin of Species*

Charles Darwin was born in 1809. He came from a wealthy academic family and he originally studied Medicine at Edinburgh University. However, Darwin soon realised that he did not want a career as a doctor, and changed to studying Theology at Cambridge University. Darwin thought that if he became a country priest, he could continue with his passion – natural history – in his free time.

In 1831, Darwin joined a scientific expedition on the ship *HMS Beagle*. On the five-year voyage, he visited South America, Australia and South Africa. He made detailed observations of the different plant and animal species. On the Galapagos Islands, Darwin noticed that the finches (a small species of bird) on each island were very slightly different to each other. He concluded that, because each island had a slightly different environment to the others, the finches on each island had adapted in slightly different ways. He realised that biological species were not fixed, but that they changed, or 'evolved', with every generation.

Darwin worked on his theory for 20 years. In 1859, he finally published it in one of the world's most famous books: *On the Origin of Species*. Darwin's book was shocking to many people in Victorian Britain. Accepting Darwin's theory meant accepting that humans were simply another species of animal, and that they too had evolved from an earlier species – probably apes. It also suggested that the Bible's version of creation couldn't be correct. Darwin was criticised by the Church, and his theories made many people doubt their religious beliefs. *On the Origin of Species* changed people's view of religion and the natural world forever.



## FACT FILE

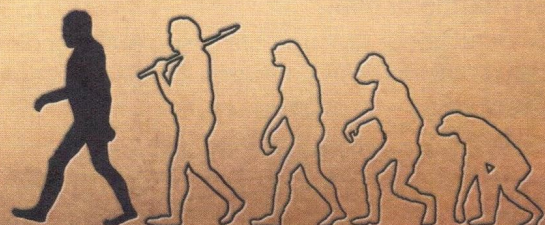
**Name:** Charles Darwin

**Dates:** 1809–1882

**Nationality:** English

**Role:** naturalist and geologist


**Known for:** theory of evolution; *On the Origin of Species*

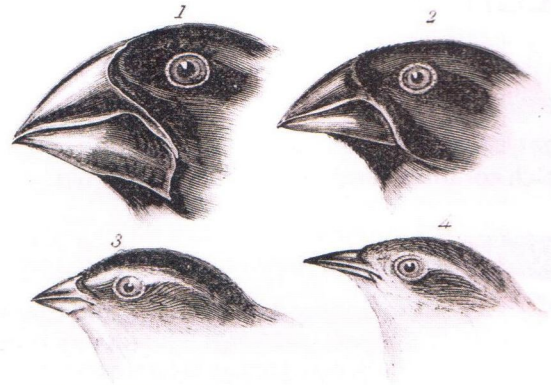




## Natural selection

### Listening


- 1 Look at Darwin's drawings of finches on the Galapagos Islands. How are their beaks different?
- 2  5.13 Listen to a scientist talking about Darwin's observations of the finches on the Galapagos Islands. Complete the paragraph. **P**



### Darwin's observations

Darwin observed that the finches on the different Galapagos Islands had beaks of different <sup>1</sup>..... and <sup>2</sup>..... The type of beak varied according to the type of <sup>3</sup>..... that the finches <sup>4</sup>..... On each island, the finches had developed beaks which were <sup>5</sup>..... for their <sup>6</sup>..... The birds who lived in areas where there were lots of nuts had developed <sup>7</sup>..... <sup>8</sup>..... beaks, while the birds who lived in areas where there were lots of <sup>9</sup>..... had developed <sup>10</sup>....., sharp beaks.

### Reading

- 3  5.14 Listen and read the text: *Darwin's theory of natural selection*. Are the sentences True or False? Write T or F. Correct the false ones. **P**

- 1 There are enough resources in nature for every animal that is born. ....
- 2 Changes in DNA can cause mutations. ....
- 3 All mutations are bad for a species. ....
- 4 The babies of an animal with a mutation will never have the same mutation. ....
- 5 A mutation that is useful to a species will become common in that species. ....

### Darwin's theory of natural selection

Most animals produce more than one offspring, but the size of their population usually remains the same. This is because not all offspring survive. There may not be enough food for all of them, or they may lose their habitat, so some of them die.

Mutations sometimes occur in animals. We now know that these mutations happen because of <sup>5</sup> changes to an animal's DNA. Sometimes that mutation makes it more difficult for the animal to survive. An example of this is an animal born with deformed legs. It wouldn't be able to escape from predators and it would soon die. In other cases, however, the mutation makes it easier for the animal to survive. An example of this is a primate whose thumb developed in a different way, helping it to hold things.

- <sup>10</sup> An animal with a beneficial mutation grows and reproduces itself more successfully than others in its species. Its offspring inherit the beneficial mutation, and that gives them, too, a better chance of survival. Over time, the beneficial mutation spreads to the whole species. This is the 'survival of the fittest' – Darwin's theory of natural selection.

### CLIL vocabulary

beneficial = <i>benefico</i>	predators = <i>predatori</i>
deformed = <i>deformato</i>	primate = <i>primate</i>
inherit = <i>ereditare</i>	reproduce = <i>riprodurre</i>
mutations = <i>mutazioni</i>	spread = <i>trasmettere/ diffondere</i>
offspring = <i>piccoli/ cuccioli</i>	

### Discussion 21<sup>st</sup>-century skills

- 4 Some people with strong religious beliefs still disagree with Darwin today. Is it possible to be a Christian and still believe in Darwin's theories?

In one of his letters, Darwin said that presenting his ideas on evolution was like 'confessing a murder'. Why do you think he said that?

### Webquest 21<sup>st</sup>-century skills

- 5 Choose *one* of the tasks. Research your task on the Internet and produce a three- to five-minute presentation or film.
- 1 Find information about how scientists believe humans developed from primates.
  - 2 Find information about Galileo, another scientist whose theories shocked the world and caused conflict with the Church.

