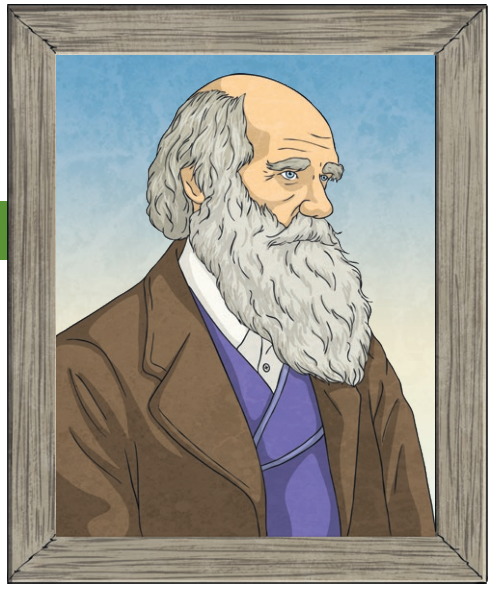
Charles Darwin

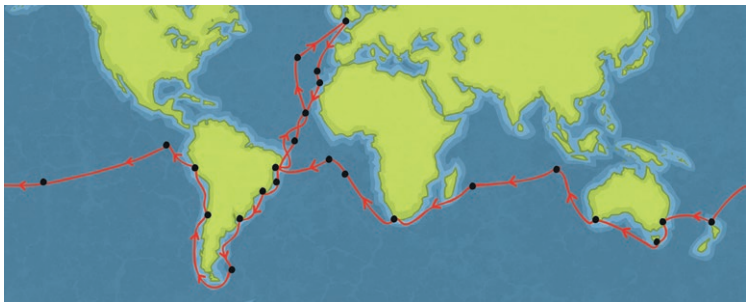
Charles Robert Darwin was a famous scientist who was interested in nature. He was best known for his work on the theory of **evolution** and his idea of natural selection.



Early Life

Charles was born on the 12th of February 1809 in Shrewsbury, Shropshire. His father was a doctor and his mother was the daughter of a famous pottery maker.

Following in the footsteps of his father, Charles began studying to become a doctor at the University of Edinburgh. However, he had a change of heart and moved to Cambridge to train for a career within the church. He was especially interested in natural history and he was offered the chance to travel the world as a guest **naturalist** on board the HMS Beagle.



The Galápagos Islands

Charles began to realise that the Galápagos Islands' birds were once the same species and, after spending millions of years apart, they had begun to change over time to suit the environment that they lived in. The animals that were better suited to their surroundings lived long enough to have babies and these babies inherited the same useful **traits**. He called this process 'evolution by natural selection'. Charles noticed examples of natural selection throughout the world.

HMS Beagle

In February 1832, Charles set off on his famous five-year journey. His job during the voyage was to collect information about the different animals, plants and **geology** of the countries he visited. Charles visited many countries with differing landscapes that were home to a wide variety of animal and plant species. The HMS Beagle travelled to the remote Galápagos Islands in the middle of the Pacific Ocean.

'On the Origin of Species'

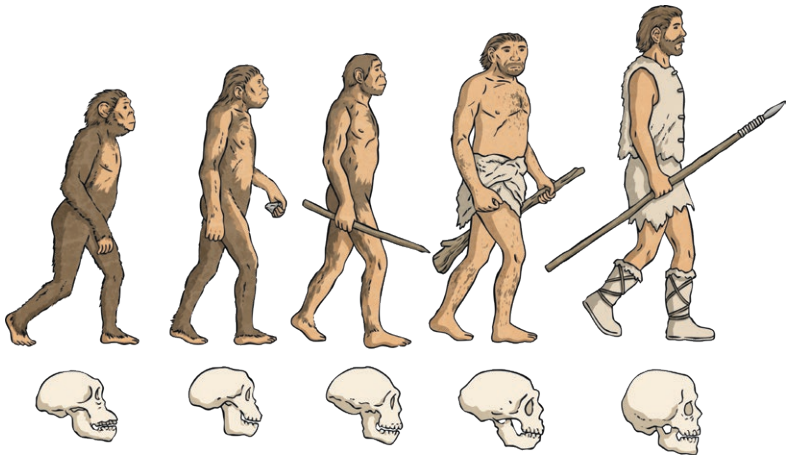
In 1859, after putting together all of his research, Charles published his book 'On the Origin of Species by Natural Selection'. It became an international bestseller.

Charles was also one of the first people to suggest that humans may have evolved from another species that lived over 6 million years ago. Scientists now mostly agree that humans share a common **ancestor** with apes, such as chimpanzees and gorillas. Charles's ideas were different and ground-breaking. He was keen to present his findings but was nervous about how people would react.

The idea that species evolve though time did not match the Christian belief that God created all living things at once.

Did You Know...?

Modern scientific studies have proven that Charles's theory of evolution was correct. Even though over 100 years have passed, many people still read Charles's books and discuss his ideas.



Glossary

ancestor: An early type of animal or plant from which a later, usually different, type has evolved.

evolution: The idea that all living things are descended from creatures which have slowly changed over millions of years.

geology: The study of the earth and how it has changed over time.

naturalist: An expert in natural history.

trait: A quality that makes one living thing different from another.

Questions

1. Where was Charles born? Tick one.
   - ○ Edinburgh
   - ○ Shrewsbury
   - ○ Galápagos Islands
   - ○ Cambridge

2. Number the events from 1-4 to show the order that they happened in.
   - ☐ Charles wrote his book, 'On The Origin of the Species'.
   - ☐ Charles studied at university.
   - ☐ Charles visited the Galápagos Islands.
   - ☐ Modern scientists proved Charles's theory of evolution.

3. Look at the section called **On the Origin of Species.**
   Find and copy a word which means the same as 'worldwide'.

   _____

4. Fill in the missing word.

   Modern scientific studies have proven that Charles's theory of _____ was correct.

5. How long did Charles's voyage on the HMS Beagle last?

   _____

6. **However, he had a change of heart and moved to Cambridge...**
   What does the phrase 'had a change of heart' mean?

   _____

   _____

   _____

7. Explain why you think the author has included the section called Early Life.

   _____

   _____

   _____

8. Summarise what you have learnt about Charles Darwin.

   _____

   _____

   _____

Answers

1. Where was Charles born? Tick one.
   - ○ Edinburgh
   - ⊘ **Shrewsbury**
   - ○ Galápagos Islands
   - ○ Cambridge

2. Number the events from 1-4 to show the order that they happened in.
   - [3] Charles wrote his book, 'On The Origin of the Species'.
   - [1] Charles studied at university.
   - [2] Charles visited the Galápagos Islands.
   - [4] Modern scientists proved Charles's theory of evolution.

3. Look at the section called **On the Origin of Species.**
   Find and copy a word which means the same as 'worldwide'.

   international

4. Fill in the missing word.

   Modern scientific studies have proven that Charles's theory of **evolution** was correct.

5. How long did Charles's voyage on the HMS Beagle last?

   Charles's voyage on the HMS Beagle lasted for almost five years.

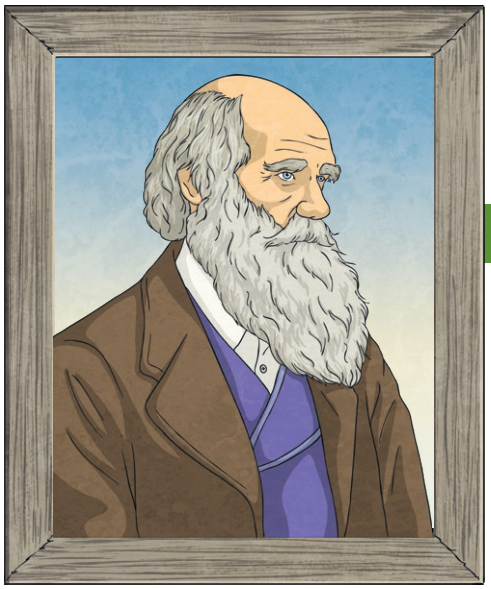
6. **However, he had a change of heart and moved to Cambridge...**
   What does the phrase 'had a change of heart' mean?
   Pupils' own responses, such as: 'Change of heart' means that a person changes their mind about something.

7. Explain why you think the author has included the section called Early Life.
   Pupils' own responses, such as: The author probably included this section so that the reader could find out some background information on Charles's life before he embarked on his famous journey to the Galápagos Islands.

8. Summarise what you have learnt about Charles Darwin.

   Pupils' own responses, such as: Charles Darwin was a famous scientist who wrote 'On the Origin of Species'. He came up with his idea of evolution after travelling the world and seeing species that had changed to suit their surroundings.

Charles Darwin



Charles Robert Darwin was a famous naturalist (an expert in studying nature). He was best known for his work on the theory of **evolution** and his idea of natural selection.

Early Life

Charles was born on the 12th of February 1809 in Shrewsbury, Shropshire into a wealthy family. His father was a doctor and his mother was the daughter of a famous pottery producer. Charles's grandparents were both heavily involved in a movement called the Enlightenment which encouraged the idea that people should think for themselves without being ruled by authority or religion.

Following in the footsteps of his father, Charles began to study medicine at the University of Edinburgh. However, he soon realised that this was not the career for him and moved to Cambridge to train for a job within the church. He was especially interested in natural history and he was offered the chance to travel the world as a guest **naturalist**.

HMS Beagle

In 1832, Charles embarked on an exploratory world voyage on board the HMS Beagle which lasted for almost five years. It was his job to make notes about the animals, plants and **geology** of the countries that he visited.

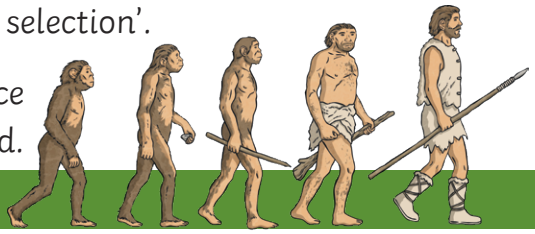
Charles explored a wide variety of countries and he encountered numerous new species on his travels.

The Galápagos Islands

Charles travelled to the Galápagos Islands: a group of 19 islands and many smaller islets in the middle of the Pacific Ocean. When he was there, he noticed species which were similar but with small differences. For example, he noticed that the birds that he saw on some of the islands were slightly different, even though they lived only a few miles apart. Charles began to realise that these birds were once the same species. After spending a long time apart from others, the birds had begun to evolve (adapt and change over time) to suit their surroundings.

He believed that this was because those animals which were better suited to their surroundings lived longer and produced more offspring. These offspring had the same **traits** as their parents and the species would gradually change over a long time. He called this process 'evolution by natural selection'.

Following this voyage, Charles started to notice examples of natural selection throughout the world.



'On the Origin of Species'

Charles was worried that his idea of evolution by natural selection would be controversial and ground-breaking. The Christian religion teaches people that God created everything but Charles's theory of evolution challenged that idea. Therefore, Charles decided that he needed to gather more evidence before he introduced his ideas to the world.

In November 1859, Charles published all of his research in his book 'On the Origin of Species by Natural Selection'. 'On the Origin of Species' (as it is commonly known) was an international bestseller. He updated the book many times and, later, introduced the phrase 'survival of the fittest' as a replacement for 'natural selection' in the book.

Charles went on to write another book, 'The Descent of Man', where he suggested that humans may have evolved from another species. Even though Darwin had no fossil evidence at the time to prove this idea, modern scientists generally agree that humans share a common **ancestor** with apes, such as chimpanzees and gorillas.

Charles's Legacy

Recent scientific studies have proven that Charles's theory of evolution was accurate. Even though over 100 years have passed since Charles first published his books, his ideas are still talked about today. His theory of evolution was hugely important and changed the way that scientists view the world.

Glossary

ancestor: An early type of animal or plant from which a later, usually different, type has evolved.
evolution: The idea that all living things are descended from creatures which have slowly changed over millions of years.
geology: The study of the earth and how it has changed over time.
naturalist: An expert in natural history.
traits: A quality that makes one living thing different from another.

Questions

1. In what year did Charles embark on his voyage aboard HMS Beagle? Tick one.
   - ○ 1832
   - ○ 1809
   - ○ 1823
   - ○ 1859

2. Number the events from 1-4 to show the order that they happened in.
   - ☐ Charles published 'On The Origin of the Species'.
   - ☐ Charles embarked on a world voyage on board HMS Beagle.
   - ☐ Charles visited the Galápagos Islands.
   - ☐ Charles began studying medicine.

3. Look at the section called **On the Origin of Species.**
   Find and copy a word which means the same as 'innovative'.

   _____

4. Fill in the missing words.

   Modern scientists _____ agree that humans share a

   common _____ with apes.

5. How many islands make up the Galápagos Islands?

   _____

6. **These offspring had the same traits as their parents and the species would gradually change over a long time.**
   Write a word which means the opposite of 'gradually'.

   _____

7. Discuss why you think that Charles may have chosen to study medicine at university.

   _____

   _____

   _____

8. Discuss why you think that Charles's voyage on the HMS Beagle took almost five years.

   _____

   _____

   _____

9. Summarise what you have learnt about Charles Darwin's theory of evolution.

Answers

1. In what year did Charles embark on his voyage aboard HMS Beagle? Tick one.
   - ☑ **1832**
   - ○ 1809
   - ○ 1823
   - ○ 1859

2. Number the events from 1-4 to show the order that they happened in.
   - [4] Charles published 'On The Origin of the Species'.
   - [2] Charles embarked on a world voyage on board HMS Beagle.
   - [3] Charles visited the Galápagos Islands.
   - [1] Charles began studying medicine.

3. Look at the section called **On the Origin of Species.**
   Find and copy a word which means the same as 'innovative'.
   ground-breaking

4. Fill in the missing words.
   Modern scientists **generally** agree that humans share a
   common **ancestor** with apes.

5. How many islands make up the Galápagos Islands?
   The Galápagos Islands are made up of 19 islands (and many other smaller islets).

6. **These offspring had the same traits as their parents and the species would gradually change over a long time.**
   Write a word which means the opposite of 'gradually'.
   Possible responses may include: quickly; rapidly; suddenly.

7. Discuss why you think that Charles may have chosen to study medicine at university.
   Pupils' own responses, such as: The text says 'following in his father's footsteps' so Charles may have chosen to study medicine because he felt he needed to choose the same career as his father.

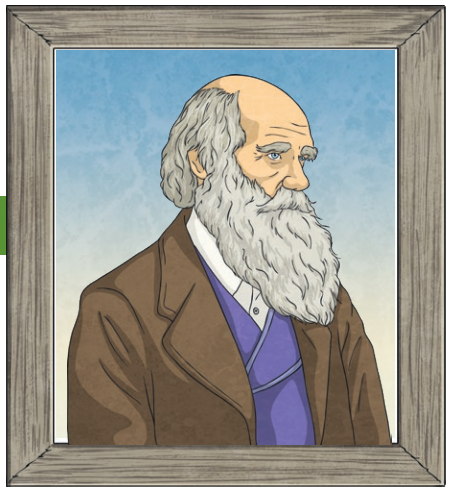
8. Discuss why you think that Charles's voyage on the HMS Beagle took almost five years.
   Pupils' own responses, such as: Charles' voyage would have taken almost five years because they were travelling to various destinations: many of which were far away. The ships in Charles's time also travelled at a much slower speed than today.

9. Summarise what you have learnt about Charles Darwin's theory of evolution.

Pupils' own responses, such as: Charles Darwin discovered that species adapted and changed over time to suit their surroundings. He called this 'evolution'. Modern scientists have proven this theory to be correct.

Charles Darwin

Charles Robert Darwin was a famous naturalist (an expert in studying nature), geologist and biologist. He was best known for his pioneering work on the theory of evolution by natural selection.



Early Life and Education

Charles was born on the 12th of February 1809 in Shrewsbury, Shropshire into a wealthy family. His father was a well-known doctor and his mother was the daughter of a famous pottery producer. Both of Charles's grandfathers had been important thinkers in a movement called the Enlightenment: the idea that people could think and reason for themselves without being told what to do by authority or religion.

Growing up, Charles was raised by his three elder sisters. He then went on to follow in his father's footsteps by embarking on a course to study medicine at the University of Edinburgh. Nevertheless, he soon realised that this was not the profession for him and he began to take interest in many of the new ideas that were popular at the time. He moved to Cambridge to train to be a clergyman and it was there that Charles began to dedicate time to his real passions: biology and natural history.

HMS Beagle

In February 1832, Charles embarked on an exploratory world voyage on board the HMS Beagle as guest naturalist which lasted for almost five years. On board, he was responsible for collecting and making notes about the animals, plants and geology of the countries that they visited.

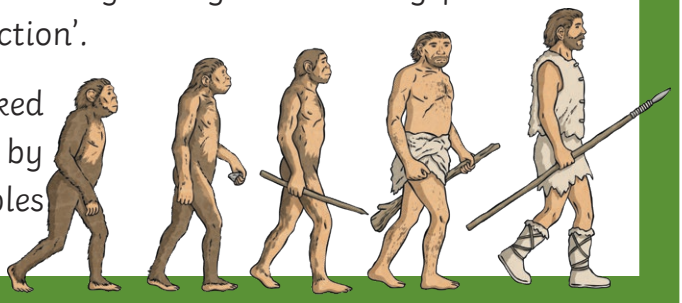
Charles explored a vast array of countries with a wide variety of exotic species and new habitats where he collected fossils and specimens along the way.

The Galápagos Islands and the Theory of Evolution

Charles's travels took him to the remote Galápagos Islands – a group of 19 islands and many smaller islets in the middle of the Pacific Ocean. There, he noticed species which were similar but with noticeable differences. For example, he noticed that the mockingbirds and finches on some of the islands in the Galápagos Islands were slightly different, even though they lived only a few miles apart. Darwin began to realise that these birds

had all descended from the same species and, after spending time in isolation a long way from others, had begun to evolve (adapt and change over time) to suit their habitats.

This, he believed, was because those animals that were better suited to their surroundings lived for longer and reproduced more. Their offspring then carried the traits of the parents and the species would steadily change over a long period. He called this process 'evolution by natural selection'.



This voyage to the Galápagos Islands marked the beginning of Charles's theory of evolution by natural selection. He started to notice examples of natural selection throughout the world.

'On the Origin of Species'

The idea of evolution by natural selection caused a moral dilemma for Charles: he was raised as a Christian and the creationist ideas of the church (the idea that God created everything) contradicted those of evolution. What is more, other naturalists believed that each species stayed as it was since coming into being. Charles decided that to be able to introduce his new ideas to the world, he needed more evidence and so he began his research.

In November 1859, Charles published 'On the Origin of Species by Natural Selection'. The publication was ground-breaking and probably caused Charles a great deal of anxiety because he knew that it would be controversial. Nevertheless, his book was an international bestseller. He later introduced the term 'survival of the fittest' as a replacement for 'natural selection' in the book.

In his later book, 'The Descent of Man', Charles suggested that humans may have evolved from another species over 6 million years ago. This claim was made without the fossil evidence, which has since been unearthed. Because of this, scientists generally agree that humans share a common ancestor with apes, such as chimpanzees and gorillas.

Charles's Legacy

Charles Darwin's theory of evolution was hugely influential and paved the way for a change in the way that scientists view the world. The discovery of DNA has provided scientific evidence for Charles's theory of evolution. Over 100 years have elapsed since Charles published his material and his theory is still being widely discussed today.

Questions

1. What job did Charles Darwin's father have? Tick one.
   - ○ author
   - ○ clergyman
   - ○ doctor
   - ○ sailor

2. Draw **four** lines and complete each sentence.

When visiting the Galápagos Islands,...	Charles's theory of evolution has been scientifically proven.
After leaving Edinburgh,...	Charles suggested that humans may have evolved from a species over 6 million years ago.
In his book 'The Descent of Man',...	Charles moved to Cambridge to train to be a clergyman.
Following the discovery of DNA,...	Charles noticed species which were similar but with noticeable differences.

3. List **two** of Charles Darwin's publications.

- _____
- _____

4. Look at the section called **On the Origin of Species.**
   Find and copy a word which shows that Charles's theory of evolution did not agree with the ideas of the Christian church.

   _____

5. What term did Charles later introduce as a replacement for 'natural selection'?

   _____

6. Explain why the birds Charles observed on the Galápagos Islands were slightly different even though they lived only a few miles apart.

   _____

   _____

   _____

7. **Charles decided that to be able to introduce his new ideas to the world, he needed more evidence and so began his research.**

   Discuss why you think Charles felt he needed to do this.

8. Explain how you think Charles may have felt before embarking on the voyage on board HMS Beagle.

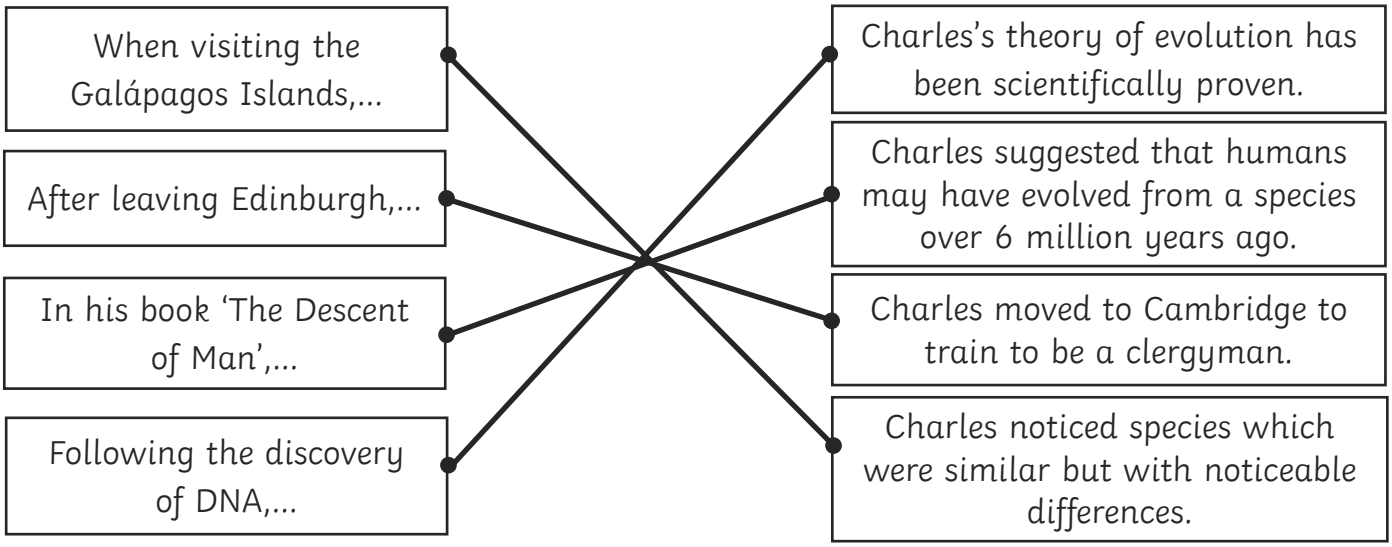
9. Discuss why you think Charles Darwin may have thought that humans evolved from another species.

10. Summarise what you have learnt about Charles Darwin's theory of evolution using 30 words or fewer.

Answers

1. What job did Charles Darwin's father have? Tick one.
   - ○ author
   - ○ clergyman
   - ✓ **doctor**
   - ○ sailor

2. Draw **four** lines and complete each sentence.



3. List **two** of Charles Darwin's publications.

- **On the Origin of Species (by Natural Selection)**
- **The Descent of Man**

4. Look at the section called **On the Origin of Species.**
   Find and copy a word which shows that Charles's theory of evolution did not agree with the ideas of the Christian church.
   contradicted

5. What term did Charles later introduce as a replacement for 'natural selection'?
   survival of the fittest

6. Explain why the birds Charles observed on the Galápagos Islands were slightly different even though they lived only a few miles apart.
   The birds Charles observed were slightly different even though they lived only a few miles apart because they all descended from the same species. However, over time, they had begun to evolve to suit their habitats.

7. **Charles decided that to be able to introduce his new ideas to the world, he needed more evidence and so began his research.**
   Discuss why you think Charles felt he needed to do this.
   Pupils' own responses, such as: Charles knew that his new ideas would be controversial because they contradicted the ideas of the church. He would have wanted people to believe his theory and understand his ideas.

8. Explain how you think Charles may have felt before embarking on the voyage aboard HMS Beagle.
   Pupils' own responses, such as: Before embarking on the voyage, Charles may have felt apprehensive as he may not have known what to expect. He may also have felt excited about what he might discover and honoured to have been invited.

9. Discuss why you think Charles Darwin may have thought that humans evolved from another species.
   Pupils' own responses, such as: Charles may have thought that humans evolved from another species because he had identified many other species that had evolved by natural selection. He may also have seen similarities between humans and other mammals, such as apes.

10. Summarise what you have learnt about Charles Darwin's theory of evolution using 30 words or fewer.
    Pupils' own responses, such as: The theory of evolution was created by Charles Darwin. He discovered that species adapted and changed over time to suit their surroundings. Scientists have proven this theory to be correct.