**Darwin's theory of evolution**



Charles Darwin (1809 - 1882)

Charles Darwin was an English naturalist who studied variation in plants and animals during a five-year voyage around the world in the 19th century. He explained his ideas on evolution in a book called, 'On the Origin of Species', published in 1859.

Darwin's ideas caused a lot of controversy, and this continues today, because they can be seen as **conflicting with religious views** about the creation of the world and the creatures in it.

The basic idea behind the theory of evolution is that all the different species have evolved from simple life forms. These simple life forms first developed more than 3 billion years ago (the Earth is about 4.5 billion years old). The timeline below shows some of the key events in the evolution of life on Earth, from the first *bacteria* to the first modern humans.

## Natural selection

The theory of evolution states that evolution happens by natural selection. The key points are that:

* individuals in a species show a wide range of variation
* this variation is because of differences in their *genes*
* individuals with characteristics most suited to the environment are more likely to survive and reproduce
* the genes that allow these individuals to be successful are passed to their offspring.

Individuals that are poorly adapted to their environment are less likely to survive and reproduce. This means that their genes are less likely to be passed to the next generation. Given enough time, a species will gradually evolve.

You need to remember that **variation** can be caused by both genes and the environment. But it is only variation caused by genes that can be passed on to the next generation.

## Conditions on Earth

Life on Earth today exists because of the conditions that were present when life was evolving. If, in the past, conditions had been different eg hotter, colder, or the Earth more or less massive, then evolution by natural selection could have produced some very different results. Our bodies would have changed to suit the Earth's conditions.

Darwin’s views caused real controversy because his ideas conflicted with Christian views. Many Victorians were disgusted about the claims that humans were linked to apes.