Introduction
This activity encourages students to put Darwin’s ideas in context, by considering some of the other changes in scientific thinking that were happening at the time. They construct a time-line of significant developments.

The activity
Students should use their textbook or other resources to consider the time scale of these changes in scientific thinking. They should produce a simple time line and notice how one scientist or theorist influences others. A visual “banner style” of presentation, with events/ideas shown in order with illustrations would be worth considering as many of the ideas are associated with attractive visual images.

1. Some of the important dates
1738 Linnaeus published his system of classification of species.
1795 Hutton proposed the idea that the Earth was shaped by gradual forces
1796 Cuvier published his theory that fossils were from species that had become extinct
1809 Lamarck’s theory of evolution published — Darwin born.
1830 Lyell proposed his geological theory of uniformitarianism.
1831 Darwin set out on the voyage of the Beagle
1858 Wallace wrote to Darwin setting out his theory of natural selection.
   Darwin's and Wallace's ideas were presented to the Linnaean Society of London.
1859 Darwin published the Origin of Species
1865 Mendel’s experiments on heredity published

2. Do you think Darwin and Wallace could have developed their theory if they had lived 150 years earlier? Give some reasons for your answer.
   Almost certainly not because:
   Others were already thinking about evolution, though they failed to propose a reasonable mechanism
   Scientific explanations for all natural phenomena were becoming more widely accepted after Newton’s successes
   Many fossils of extinct species were coming to light at the time
   Extinction was known about
   A much greater age for the Earth than that derived form the Bible was proposed by some geologists
   Animal breeding was advancing
   Malthus’s ideas on excess reproduction and the limits to population growth were widely known
   Many more opportunities for travel meant that they saw far more diversity and far more different environments

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Scientists and other thinkers don’t come up with ideas/theories in isolation. They are influenced by other ideas from people who came before them or are publishing ideas at the same time. Sometimes one idea builds on another to develop a theory. In other cases, disagreement over the best theory (ie the one which fits the evidence best) leads to a new idea. In the following activity, can you see examples of this from the history of evolutionary ideas?

**The Activity**

In this activity, you will consider how long it took for scientists to develop theories about evolution, and the influences on Darwin and Wallace, including the scientific community.

1. Make a rough time-line for the theory of evolution. Include dates for the important stages in the development of the theory, and the most significant people. Explain briefly why these people’s ideas were crucial to the theory. You will find the statements below helpful but will also need to do some research, using your textbook and other sources. Your time-line could be an illustrated poster, or electronic, for example a document or image with hyperlinks.

   **Around the late 1800s and early 1900s, the age of the earth was very unclear but estimates ranged from 3 million years old to 2300 million years old.**

   **Now we believe the earth to be nearly 4.5 billion years old.**

   **Wallace and Darwin working around 1860 thought that natural selection would take a very long time – perhaps millions of years to show evolutionary change.**

   **Charles Lyell between 1828 and 1835 showed how rock and fossil evidence formed a continuous pattern through long geological time.**

   **Georges Cuvier in the early 1800s produced fossil bone evidence but thought that fossils were caused by “catastrophes” ie extinction.**

   **Fossil animals found in older rocks are simpler and smaller than those in younger rocks. This has been known since the early 1800s and before.**

   **In 1809, Lamarck proposed that species change through time but he could not say how long it would take.**

   **Natural selection as proposed by Darwin in 1859, needs a way for variations to be inherited in living things.**

   **By 1900, Mendel’s work on genetics was used to show how variation was inherited and from this an understanding of genes developed (see page 147 of your textbook for more on this).**

   **In 1798 Thomas Malthus argued that human populations always increase more quickly than the food supply.**
In the late 1700s and early 1800s farmers in Britain were learning how to use selective breeding to produce farm animals with the characteristics they wanted.

2. Do you think Darwin and Wallace could have developed their theory if they had lived 150 years earlier? Give some reasons for your answer.

3. Display or show your timeline to the rest of your group or class. Use post-its to add one positive and one critical comment to three other student’s posters.