Science

Evolution and Inheritance

Evidence for Evolution

Aim

- I can examine the evidence demonstrating how plants have evolved.

Success Criteria

- I can examine fossil evidence.
- I can explain how a living thing has evolved over time.

Inheritance, Adaptation, Evolution

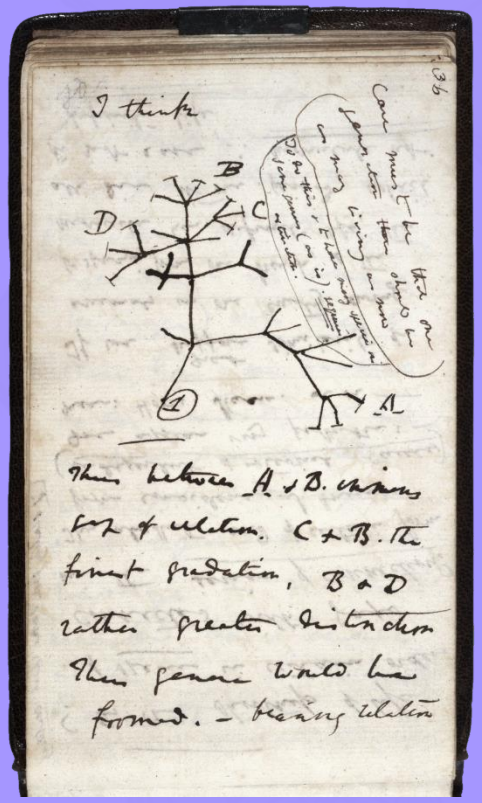
Adaptive Trait	A genetic characteristic passed from parent give to their offspring.
Inheritance	Visible characteristics passed from parent to offspring.
Evolution	The process of an organism becoming better able to live in its habitat or habitats. This happens through genetic mutations. Usually genetic mutations caused by replication of damaged DNA or errors in replications.
Natural Selection	Visible characteristics caused by adaptations.
Inherited Trait	Adaptation over time.
Adaptation	The key mechanism of evolution. It determines which traits become more or less common and therefore are reproduced.

Fossils Review

Can you recall the fossilisation process?

Darwin and Fossils
Tree of Life

Darwin believed that there was a single point of origin for all living things and that we then evolved into the living things that we are today through a process of adaptation.



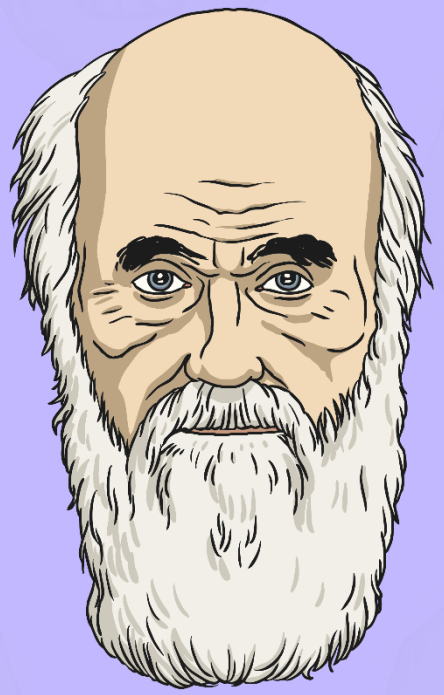
This was the original diagram by Darwin that shows how all living things were related.

Darwin and Fossils

Darwin used fossils as evidence to support his theory of evolution.

Based on his observations and his own fossil finds, he realised that many of the varieties and species of living things simply would not have fossilised or would have been destroyed.

Because of the issues related to fossilisation, he did not think it would be possible to find all the 'transitional forms' (i.e. common ancestors) between two living species.



Examining Fossil Evidence

Since Darwin's time, we have continued to find fossils that have proven his theory, including some of the transitional forms. This is now supplemented by the findings of geneticists who can examine the DNA of living things to detect similarities and differences.

When looking at fossils alone, however, it is not always possible to detect if the traits began as inherited or adaptive traits. In order to understand this we need more information about the environment and other related living things.

When examining fossil evidence it is necessary to look for both the similarities and differences in terms of traits.

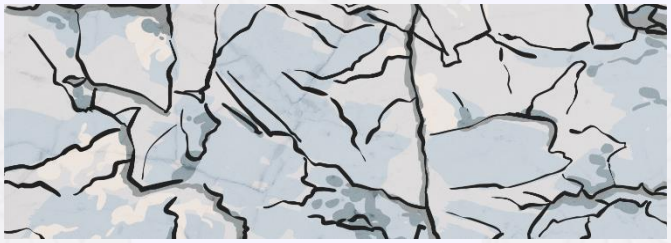
For the purpose of this lesson, you will examine fossil records and examine the visible traits.

Fossil Records

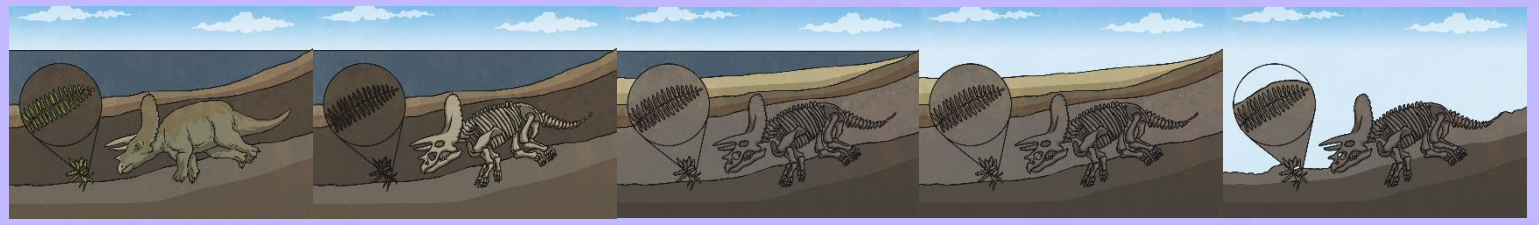
Darwin was correct when he said that we would not find complete fossil records for all living things due to the process of fossilisation.

We know that the majority of fossils are found in sedimentary rocks. The lava that forms igneous rock would not enable fossilisation to take place. Fossils in metamorphic rocks that used to be sedimentary rocks are rare, as the magma heats the rock and will distort the fossils embedded within it.

Also there were periods where greater fossilisation of living things occurred than at other times.



Fossil Records



Many varieties and species of living things have no fossil record and therefore scientists have to work with the fossils they do have.

The most complete fossil records are of animals with endo or exoskeletons as the calcium in the bones does not decay as quickly as other matter that makes up living things.

For this reason, many living things, such as soft bodied animals and most types of plants, have very incomplete records and fossil finds are very rare.

Not all animals with endo and exoskeletons have complete fossil records.

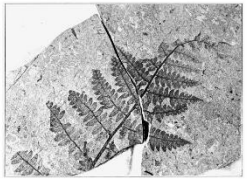
Fossil Evidence of Evolution

Examine the similarities and differences between the fossil evidence and its living relative. Write a paragraph below explaining how the flatfish has evolved based on these fossil records.

Flatfish	
Fossil	Living Relative
	

Fossil Evidence for Evolution

Examine the similarities and differences between the fossil evidence and its living relative. Write a paragraph below explaining how the fern leaf has evolved based on these fossil records.

Fern Leaves		
Fossil		Living Relative
		

Just like a Whale

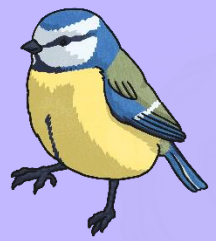
Whole Class

Darwin observes a bear diving into the water and made the observation that it was 'just like a whale'. It has now been proven that bears and whales do indeed have a common ancestor but he would not have known this at the time!

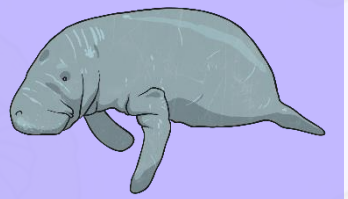
Sort animals who have the common ancestor into pairs.

Click to reveal the answers.

Black bear



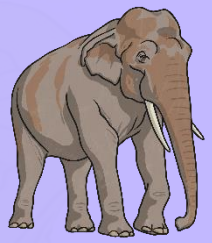
Bird



Manatee

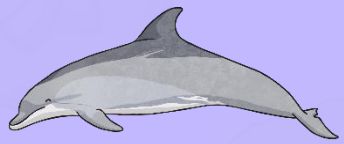
Whale

Hippopotamus



Elephant

Tyrannosaurus Rex



Dolphin

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