

Year 6 Subject Knowledge Organiser – Evolution and Inheritance

What I should already know

Which things are living and which are not?
Identifying animals (e.g. amphibians, reptiles, birds, fish, mammals, invertebrates) and plants using classification keys
Animals that are carnivores, herbivores and omnivores.
Animals have **offspring** which grow into adults.
The basic needs of animals for **survival** (water, food, air)
Some animals have skeletons for support, protection and movement.
Food chains, food webs and the role of predators and prey.

What I will have learnt by the end of the unit

I can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.

I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.

I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

Key Concepts

Biology

Chemistry

Physics

Scientific enquiry

Science for the future

Vocabulary

What I will have learnt at the end of the key stage

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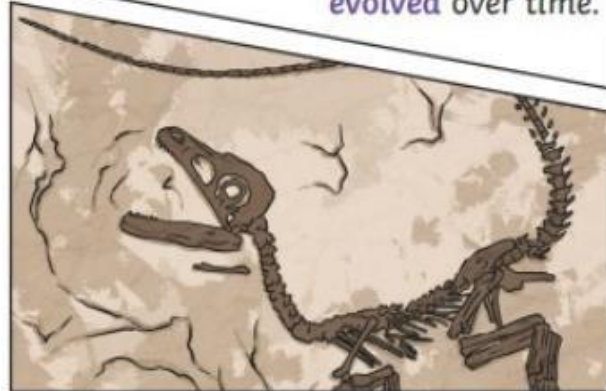
I will recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.

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Key skills I will learn/use

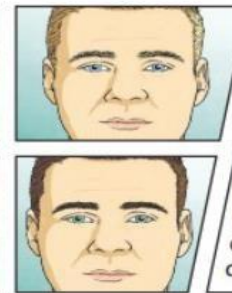
Notice- I will be able to ask relevant questions and using different types of scientific enquiries to answer them
Observe- I will be able to set up simple practical enquiries, comparative and fair tests
Record- I will be able to gather, record, classify and present data in a variety of ways to help in answering questions.
I will be able to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
Report- I will be able to report findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
I will be able to using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
Identify- I will be able to identify differences, similarities or changes related to simple scientific ideas and processes
Evidence- I will be able to use straightforward scientific evidence to answer questions or to support their findings.

Fossils are the preserved remains, or partial remains, of ancient animals and plants. **Fossils** let scientists know how plants and animals used to look millions of years ago. This is proof that living things have **evolved** over time.



Adaptive Traits

Characteristics that are influenced by the **environment** the living things live in. These **adaptations** can develop as a result of many things, such as food and climate.

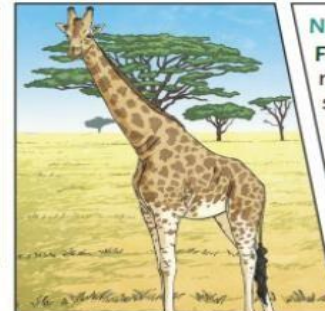


Inherited Traits

Eye colour is an example of an **inherited trait**, but so are things like hair colour, the shape of your earlobes and whether or not you can smell certain flowers.

Variation

In the same way that there is **variation** between parents and their **offspring**, you can see **variation** within any species, even plants.



Natural Selection

Fossils of giraffes from millions of years ago show that they used to have shorter necks. They have gradually **evolved** through **natural selection** to have longer necks so that they can reach the top leaves on taller trees.

Opportunities for teaching diversity, equality (including protected characteristics and expanding cultural capital)

Get to meet a scientist! Explore people who use science in their jobs.

I'm a Scientist, Get me out of here! – A super-curricular science outreach education & engagement activity (imascientist.org.uk) Science for Everyone (science4everyone.org)

Skills I may use for other subjects

Literacy- I can use my literacy knowledge to write about my findings.

Mathematics- I can use my knowledge carry out simple tests and record my findings using diagrams and graphs.

Living Things		Habitat		Adaptive Traits
polar bear		arctic		Its white fur enables it to camouflage in the snow.
camel		desert		It has wide feet to make it easier to walk in the sand.
cactus		desert		It stores water in its stem.
toucan		rainforest		Its narrow tongue allows it to eat small fruit and insects.

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Key Vocabulary

adaptation	a change in structure or function that improves the chance of survival for an animal or plant within a given environment .
characteristics	the qualities or features that belong to them and make them recognisable.
evolution	a process of change that takes place over many generations , during which species of animals, plants, or insects slowly change some of their physical characteristics .
species	a class of plants or animals whose members have the same main characteristics and are able to breed with each other.
mutation	characteristics that are not inherited from the parents or ancestors and appear as new characteristics .
inherit	If you inherit a characteristic you are born with it, because your parents or ancestors also had it.
natural selection	a process by which species of animals and plants that are best adapted to their environment survive and reproduce , while those that are less well adapted die out

extinct	no longer has any living members, either in the world or in a particular place.
ancestor	an early type of animal or plant from which a later, usually dissimilar, type has evolved.
extinct	no longer has any living members, either in the world or in a particular place.
offspring	a person's children or an animal's young.
reproduction	when an animal or plant produces one or more individuals similar to itself.
variation	a change or slight difference.
biodiversity	a wide variety of plant and animal species living in their natural environment .
maladaptation	the failure to adapt properly to a new situation or environment .
traits	A distinguishing characteristic or quality.

Key Knowledge

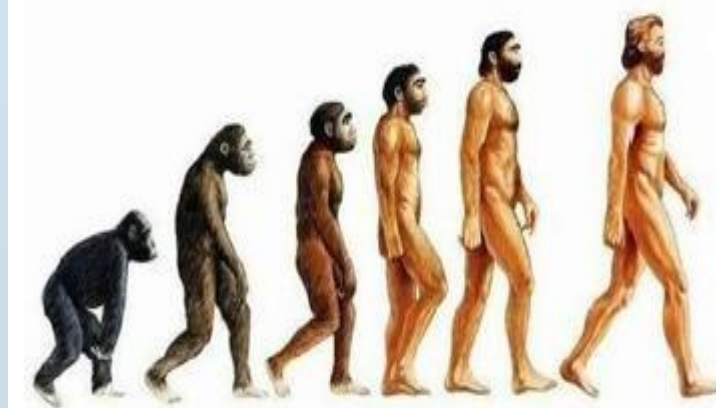
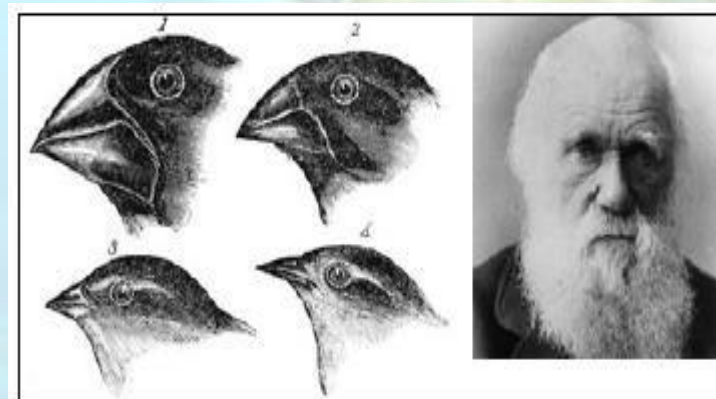
Evolution means change over time. It is the reason we have so many species on Earth. It happens when there is competition to survive (natural selection) and through differences within a species caused by inheritance and mutations.

Inheritance is when something is passed on to the next generation. Offspring are not identical to their parents and some characteristics are inherited (passed on from parents to off-spring). Other differences are new in offspring—these are called mutations.

Adaptation is the action of a living things changing to suit the environment. If a species is well adapted it will survive and pass on successful genes to offspring. However, being highly adapted to one specific environment can be detrimental to a species' survival if there are sudden changes to that environment.

Focus Scientist - Charles Darwin

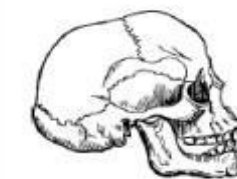
Charles Darwin (1809-1882) was an English scientist best known for his theory of evolution. He was a geologist who travelled across the world in 1831 on the HMS Beagle. He studied many animals and plants on his travels and came up with the idea of natural selection (the strongest survive and evolve). His book 'On the Origin of Species' was very controversial at the time because it went against the creation story in the Bible. His studied finches and tortoises living across the Galapagos islands.



FOSSILS



Fossils are the remains of living things which inhabited the world millions of years ago. They are formed in sedimentary rock (sand, mud and pebbles squashed under layer, after layer over time) and plants/animals get trapped in these layers, revealing their shape.



HUMAN SKULL



CHIMPANZEE SKULL

When palaeontologists compare fossils to animals from today, they can see similarities and identify relationships between them. Since evolution of a species happens over such long periods of time, evidence is usually taken from fossils.