

# Science Knowledge Organiser

## Evolution and Inheritance

Strand: Biology

This unit introduces the key concepts of evolution and inheritance by building upon previous topics, including animal characteristics and fossils. You will learn about inherited traits and apply your knowledge to various animals and plants, before being introduced to the work of Mary Anning and Charles Darwin.

### Lesson Sequence

- Learning focus: Understand how offspring vary and are not identical to their parents
- Learning focus: Learn about animal adaptations
- Learning focus: Learn about plant adaptations
- Learning focus: To explore what we can learn from fossils
- Learning focus: To explore the theory of evolution by natural selection
- Learning focus: To explore human evolution

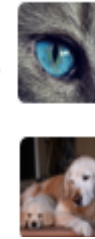
### What will I know by the end of the unit?

- To know that living things have changed over time
- To know that fossils provide information about living things that inhabited the Earth millions of years ago
- To know how different types of fossils are formed.
- To know that characteristics are passed from parents to their offspring
- To know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
- To know that variation in offspring over time can make animals more or less able to survive in particular environment (for example, by exploring how giraffes' necks got longer, or the development of insulating fur on the arctic fox).
- To know how animals and plants are adapted to suit their environment in different ways
- Know how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels.
- To know about some of the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.
- To know that adaptation may lead to evolution.
- Know about the work of palaeontologists such as Mary Anning.
- To know about how Charles Darwin and Alfred Wallace developed their ideas on evolution.



### Characteristics and Variation

A characteristic describes how something looks or how it behaves. Characteristics can be passed on from parents to their offspring, meaning that they can be inherited. They can include hair colour, eye colour and height. However, environmental factors are important too.



### Adaptations

Plants and animals have numerous adaptations which help them to survive in their habitats.

- Camels have humps to store food; two rows of eyelashes and small slits for nostrils
- Epiphytes are plants which can grow on the surface of another plant
- Some plants contain toxic minerals to protect themselves from predators
- Other plants can store water, trap insects and smother other plants

### Charles Darwin, the Galapagos Islands and Human Evolution

Charles Darwin was a famous naturalist who studied finches and tortoises on the Galapagos Islands. He suggested that some species may share a common ancestor and evolve to suit their habitats. He called this process natural selection.



### Fossils

Mary Anning was a palaeontologist who found and collected many fossils along the Jurassic Coast in Dorset. She was the first person to uncover a full ichthyosaurus skeleton.

### Working Scientifically



Asking Questions



Making Predictions



Setting Up Tests



Observing and Measuring



Recording Data



Interpreting and Communicating Results



Evaluating

	inherit	when features are passed on from parents to offspring
	adaptation	changes or special features of a living thing to help it live in a habitat
	epiphytes	plants that grow on the surface of other plants
	fossil	the remains or impression of a prehistoric plant or animal embedded in rock
	Mary Anning	A famous palaeontologist who discovered fossils on the Jurassic Coast
	palaeontologist	a scientist that studies the remains of plants and animals found as fossils
	ichthyosaurus	a large marine reptile that lived 201-194 million years ago
	Charles Darwin	an English naturalist, best known for his theory of evolution
	evolved	how living things gradually change over time
	natural selection	survival and reproduction of the fittest
	ancestor	a person/living thing an organism is descended from
	Homo sapiens	the scientific name for the human species