

Sithney C.P. School Knowledge Organiser

Science. Biology: Evolution and Inheritance



What you 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.

Examples of habitats (including microhabitats) and the organisms that can be found there.

Living things depend on each other to survive.

Recognise that environments can change and that this can sometimes pose dangers to living things

Key learning:

Recognise that living things change over time.

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

Difference within a species can be caused by inheritance and mutations. Inheritance is when characteristics are passed on from generation to the next. Mutations in characteristics are not inherited.

Adaptation is when animals and plants have evolved so that they have adapted to survive in their environments.

Some environments provide challenges yet some animals and plants have adapted to survive there. Sometimes adaptations can be disadvantageous.

Key Vocabulary:

Adaptation: a change in structure or function that improves the chance of survival for an animal or plant within an environment

Ancestor: an early type of animal or plant from which a later, usually dissimilar, type has evolved.

Breeding: the process of producing plants or animals by reproduction

Characteristics: the qualities or features that belong to them and make them recognisable

Cladogram: a branching diagram showing the relationship between a number of species.

Environment: all the circumstances, people, things, and events around them that influence their life

Evolution: the process by which different kinds of living organism are believed to have developed from earlier forms during the history of the earth.

Fossil: the hard remains of a prehistoric animal or plant that are found inside a rock

Inherit: If you inherit a characteristic you are born with it, because your parents or ancestors also had it.

Mutation: characteristics that are not inherited from the parents or ancestors and appear as new characteristics.

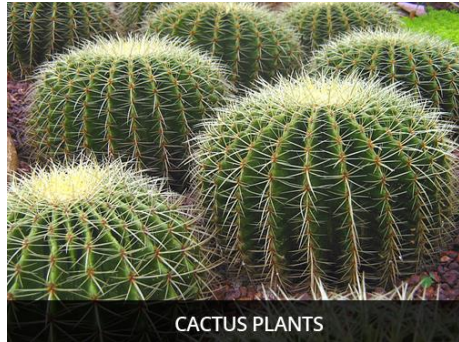
Natural Selection: a process by which species of animals and plants that are best adapted to their environment survive and reproduce, while those that are less well adapted die out

Theory: a formal idea or set of ideas that is intended to explain something.

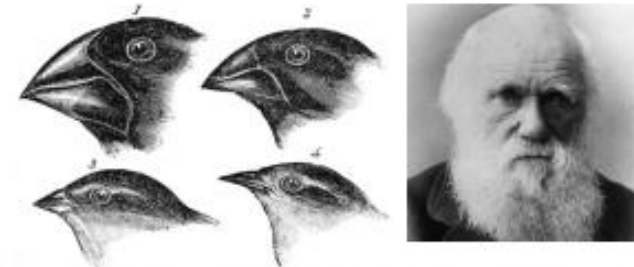
Cacti Adaptation:

Cacti can have many small, thin roots near the top of the soil. These roots take in water quickly after a rain. The same cactus may have one long, thick root called a taproot. The taproot grows deep in the soil. It can reach water when the soil on top is dry.

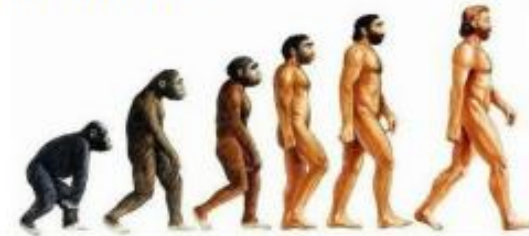
Cacti store water in thick stems. The stems are covered with tough skin, and the skin is covered with wax. The thick waxy skin slows down loss of water. The leaves of cacti are sharp spines (thorns, stickers). Many animals want the water inside the cactus, but the sharp spines and thick skin protect the cactus



The peppered moth case is an example of natural selection. In this case, **changes in the environment caused changes in the characteristics that were most beneficial for survival.** The individuals that were well adapted to the new conditions survived and were more likely to reproduce.



Charles Darwin, an evolutionary scientist, studied different animal and plant **species**, which allowed him to see how **adaptations** could come about. His work on the finches was some of his most famous.



Offspring inherit traits from their parents.

Example of Crossbreeding



cocker spaniel



poodle



cockapoo