

# Sycamore Class Knowledge Organiser Autumn 2 Evolution and migration

## Vocabulary Dozen

**Evolution:** Adaptations that take place in a species over a long period of time in response to the environment.

**Inheritance:** This is when characteristics are passed on to offspring from their parents.

**Adaptation:** An adaptation is a trait (characteristic) changing to increase a living thing's chances of surviving and reproducing.

**Fossil:** The remains of Imprint of a prehistoric plant or animal, embedded in rock and preserved.

**Natural selection:** The process where organisms that are better adapted to their environment tend to survive and produce more offspring.

**Genetic traits:** Genetic features that help a living thing to survive.

**Inherited traits:** These are traits you get from your parents. Within a family, you will often see similar traits. E.g. curly hair, shape of features

**Extinction:** When an animal or plant species dies out and there are no more left.

**Biomes:** Areas of the planet with a similar climate and landscape, where similar animals and plants

**Deforestation:** the clearing, or cutting down, of forests.

**Climate change:** a change in the typical weather for a region – such as high and low temperatures and amount of rainfall – over a long period of time

### Inheritance and Mutation

**Evolution is the name given for changes to a species over time.**

Normal gene  
Mutated gene

-Living things produce offspring of the same kind.

-Some of a parent's characteristics are passed down to the offspring – this is called inheritance.

-This is why we often share similar features with our parents, and some conditions are shared (see image).

-Inheritance is genetic, not environmental. E.g. If two blonde-haired parents dye their hair black, this does not mean they will have a black-haired child.

-Some features are new to the offspring. These are called mutations. This is why we are not exact copies of our parents.

-These changes in offspring over time allow evolution to take place.

### Adaptation

**Evolution & natural selection have enabled living things to adapt to their environments.**

-Sometimes, changes that offspring have from their parents are advantageous – they allow the offspring to cope better in their environment.

-However, often the changes are not advantageous (called maladaptations). When this is the case, the offspring will find it more difficult to thrive.

-Natural selection can ensure that, over time, the advantageous characteristics survive in the species.

-For example, many polar animals have adapted to possess layers of blubber and/or fur (for warmth) and white outer coats (for camouflage).

-The dodo, with no predators on its island, had adapted in a number of ways that made it unable to survive when humans arrived (maladaptations).

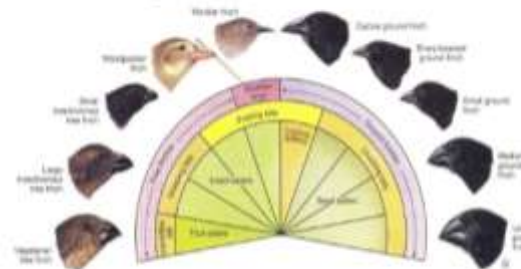
What is natural selection?

Natural selection is a process by which a species changes over time in response to changes in the environment, or competition between organisms, in order for the species to survive.

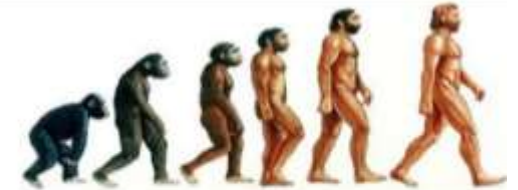
The members of the species with the most desirable characteristics are able to produce the best-adapted offspring. If a species is unable to adapt then it is at risk of becoming extinct.

### Charles Darwin's theory of evolution

The theory of evolution by natural selection is the process by which organisms change over a long period of time as a result of changes in response to the environment.



Animals change over time and adapt to the surroundings in which they live. Darwin observed that there were many different forms of finch that had different beak sizes and shape. Once he considered the food source for each finch, he noted the reason for these adaptations.



Living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. In the same way that there is variation between parents and their offspring, there is variation within any species, even plants.



Variation in dog species






Variation in Hosta plant species

Desert: any large region that gets very little rain each year

## What Is a Biome?

A biome is a natural area of plants and animals. The world is divided into many different biomes and they all vary depending on their climate.

Some examples of biomes are set out below:






aquatic	desert	forest	grassland	tundra
				

<u>Causes of Deforestation</u>	
1	To clear space for farming: growing crops (e.g. soya beans & palm oil) and space cattle to generate cheap beef.
2	Chopping down trees for wood.
3	To build roads to mine for metals, gold & diamonds.
4	To dig for oil.
5	To flood areas to make dams & generate electricity.

<u>Impact of Deforestation</u>	
1	An area the size of 20 football pitches is destroyed every 60 seconds.
2	1/2 of the tropical rainforests we had are gone.
3	28,000 species of animals are expected to become extinct in the next 25 years.
4	Local people's homes are destroyed.
5	Levels of carbon dioxide in the air are increasing and oxygen is decreasing.

### What is a desert?

- A desert is a place that gets very little rainfall. Most deserts get less than 250 millimetres of rain per year.
- For comparison, the UK receives an average of around 1,000 millimetres of rain.
- We normally think of hot places when we think of deserts, but deserts can also be cold places. For example, large parts of Antarctica are considered to be desert.
- As deserts do not have much water, only certain plants and animals can live there. These tend to be plants and animals that have specially adapted for the desert climate.

<u>Notable Deserts</u>		
<b>Sahara Desert</b> Northern Africa		-The Sahara Desert is the largest hot desert on Earth at 9.4 million square kilometres (the cold desert of Antarctica is larger). It spans across 11 different African countries. The temperature in the Sahara can exceed 50°C!
<b>Antarctic Desert</b> Antarctica		-Most of Antarctica (about an area twice the size of the Sahara Desert) is classed as a desert, because it does not rain or snow a lot there. When it does snow, it doesn't melt and builds up over many years to make thick sheets of ice.
<b>Atacama Desert</b> South America		-The Atacama Desert is positioned on a narrow strip of land in between the Pacific Ocean and the Andes Mountains. It is often considered to be the driest place on Earth. In most places, there is less than 1mm of rain per year and in some parts it has not rained for 500 years!
<b>The Outback</b> Australia		-The Australian Outback is not actually one desert, but 10 smaller deserts divided by tropical savanna. It makes up most of the hot, dry interior of the Australian continent.
<b>Gobi Desert</b> Eastern Asia		-The Gobi Desert is the 2 <sup>nd</sup> largest desert in Asia. The desert is caused by being in the rain shadow of mountains that surround it. In summer it is very hot (up to 45°C) and the winter it is extremely cold (down to -40°C).

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