

# Science Knowledge Organiser Y5/6 – Evolution and Inheritance



Key Vocabulary	
<b>Adaptation</b>	The process of change so that an organism or species can become better suited to their environment
<b>Ancestor</b>	A person or creature from whom one is descended or who lived in the past
<b>Characteristics</b>	The qualities of features that belong to something and make them recognisable
<b>Environment</b>	The surroundings or conditions in which a person, animal, or plant lives
<b>Evolution</b>	A process of change that takes place over many generations, during which species slowly change some of their physical characteristics
<b>Extinct</b>	No longer has any living members, either in the world or in a particular place
<b>Fossil</b>	The hard remains of a pre-historic animal or plant that are found inside a rock
<b>Inherit</b>	If you inherit a characteristic, you are born with it, because your parents or ancestors also had it
<b>Invertebrate</b>	All species of animals without a backbone or internal skeleton
<b>Mutation</b>	The changing of the structure of a gene, resulting in a variant form
<b>Offspring</b>	A person's children or an animal's young
<b>Reproduction</b>	When an animal or plant produces one or more individuals similar to itself
<b>Species</b>	A class of plants or animals whose members have the same main characteristics and are able to breed with each other
<b>Theory</b>	A formal idea or set of ideas that is intended to explain something
<b>Variation</b>	A change or slight difference
<b>Vertebrate</b>	All species of animals with a spinal cord (backbone)

## Animals with backbones



Fish



Birds



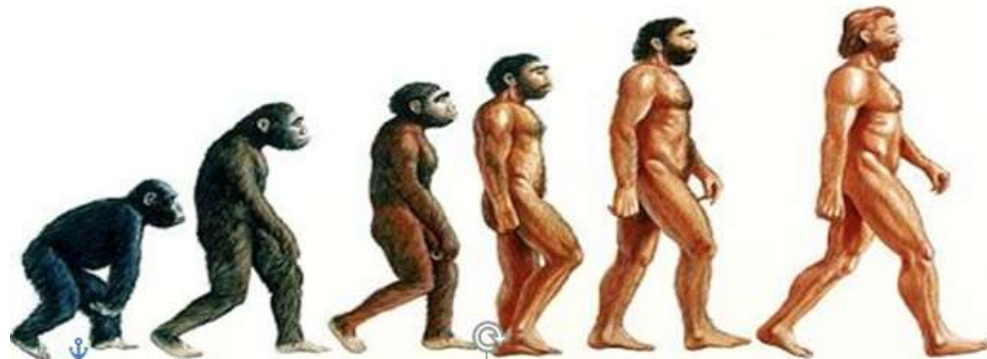
Reptile



Amphibians



Mammals



**Animals** can be divided into **vertebrates** and **invertebrates**. Vertebrates can be divided into five small groups – fish, amphibians, reptiles, birds and mammals. Each group has **common characteristics**. Invertebrates can be divided into six groups - insects, annelids, arachnids, molluscs, crustaceans and echnioderms. Invertebrates are animals without a backbone or bony skeleton. They range in size from microscopic mites and almost invisible flies to giant squid with soccer-ball-size eyes. This is by far the largest group in the animal kingdom: **97% of all animals are invertebrates**.

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**Evolution** is 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**. This is because **offspring** are not identical to their parents. It occurs when there is competition to **survive**. This is called **natural selection**. Difference within a species (for example between parents and offspring) can be caused by **inheritance** and **mutations**. Inheritance is when characteristics are passed on from one generation to the next. Mutations in characteristics are not inherited from the parents and appear as new characteristics.

The Process of Evolution
1. More organisms are born than can survive.
2. These individuals all have slight variations between them.
3. Some of these variations are helpful and improve an organism's chance of survival
4. Those that survive pass their characteristics onto their offspring.
5. Over time these helpful variations are passed on to the next generation.
6. This process takes thousands of years and can't be seen from one generation to the next.



**Adaptation** is when **animals** and **plants** have **evolved** so that they have adapted to **survive** in their **environments**. For example, polar bears have a thick layer of blubber under their fur to survive the cold, harsh environment of the Arctic while giraffes have long necks to reach the leaves on trees.

Charles Darwin, an evolutionary scientist, set off on a 5 year voyage on the HMS Beagle to the Galapagos Islands in 1831. He noticed that finches on the island were perfectly adapted to their environment. In 1859, Darwin published his controversial Theory of Evolution.



- Key Knowledge**
- To explain the scientific concept of inheritance
  - To demonstrate understanding of the scientific meaning of adaptation
  - To identify the key ideas in the theory of evolution
  - To identify evidence for evolution from fossil records
  - To understand how human beings have evolved
  - To explain how adaptations can result in both advantages and disadvantages
  - To explain how human intervention affects evolution