Gunthorpe Primary School – Knowledge Organiser

Science Focus: Evolution & Inheritance | **Year 6:** Autumn Term 1

Key Knowledge (What?)

Evolution

What is evolution?	The way living things change over time.
Do things evolve?	We know that living things used to look a lot different to how they do now - we know this because fossils have been found that show creatures that look a lot different to how they do today. Fossils show us that living things have changed over time.
How do things evolve?	A famous scientist, **Charles Darwin** observed that although individuals in a species shared similarities, they were not exact copies of each other. He noticed that there were small differences or variations between them He also noticed that everything in the natural world was in competition. The winners were those that had characteristics which made them better adapted for survival (for example, they were stronger, faster, cleverer or more attractive than others in their species). These living things were more likely to reproduce and pass on their useful characteristics to their offspring. Individuals that were poorly adapted were less likely to survive and their characteristics were not as likely to be inherited. Over time, the characteristics that help survival become more common and a species gradually changes. Given enough time, these small changes can add up to the extent that a new species altogether can evolve.

Key Knowledge (What?)

Adaption

What is adaption?	Adaption is when things evolve to overcome challenges in their environment (for example by adapting their behaviour)
Examples of adaption	**Migration** - Birds have adapted to move around the world to find weather and food sources to suit them Birds that didn't do this may have run out of food and died **Sticking together in packs** - Animals that learned to live in packs were more likely to be safer and more successful when hunting, leading them to be more likely to survive

Key Vocabulary

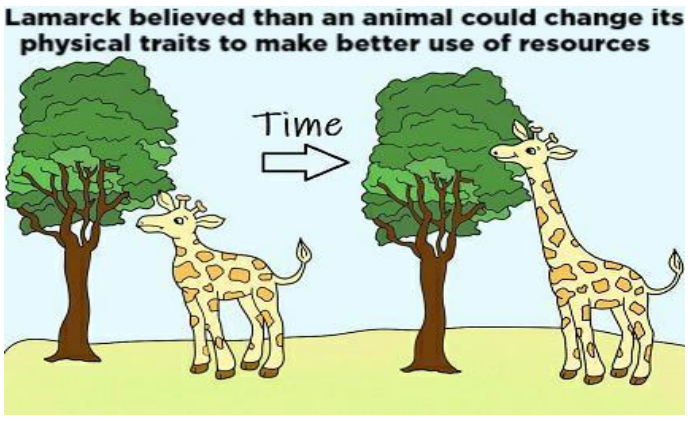
Spelling	Definition
Fossil	Naturally preserved remains or traces of plants or animals that lived in the geological past.
Suited	Right or appropriate for a particular purpose.
Environment	Conditions by which we are surrounded.
Vary	To make a small change.
Characteristics	A part of the body which allows us to move.
Offspring	Children or young.
Adapted	Change or modify to make suitable for.
Inherited	Derived genetically from ones parents or ancestors.
Species	A group of living organisms consisting of similar individuals.
Evolution	The change in characteristics over several generations.
Genes	Basic, physical and functional unit of hereditary.
DNA	Genetic code for organisms.
Reproduce	To produce again / give birth.
Sexual reproduction	Production of offspring between two individuals of the same species.
A sexual reproduction	Production of offspring by an individual organism without the need for a partner.

Key Knowledge (What?)

Variation

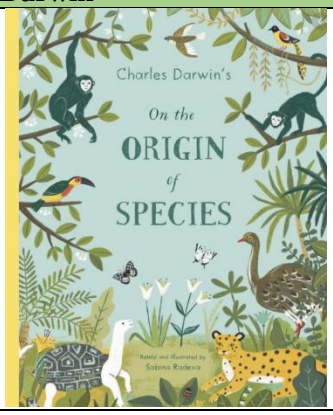
What's the important thing to know?	Living things produce offspring of the same kind (For example, owls produce baby owls and humans produce baby humans… BUT… normally offspring vary and are not identical to their parents).
So what?	Natural variation like this can lead to offspring being more likely or less likely to survive in their environment. If the variant makes them more likely to survive, they are more likely to be alive to pass this variant to their offspring As a result, this variant is more likely to become more common in thi s species.

Diagram / Image



What you should already know…		What comes next?
In Year 2 you learned:	**In Year 3 you learned:**	**In Years 7,8 & 9 you will learn:**

That animals, including humans, have offspring which grow into adults.	To describe in simple terms how fossils are formed when things that have lived are trapped within rock.	* Heredity as the process by which genetic information is transmitted from one generation to the next. * Simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model. * Differences between species. * The variation between individuals within a species being continuous or discontinuous, to include measurement and graphical representation of variation. * The variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection. * Changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction. * The importance of maintaining biodiversity and the use of gene banks to preserve hereditary material.
	In Year 5 you learned: To describe the changes as humans develop to old age.	

Important scientists:	
Charles Darwin	**Jean-Baptiste de Lamarck**
 	
Charles Darwin (1809-1882) was an English naturalist who showed how animals can change over generations to form a new species, a process called evolution. He trained as a doctor before setting off on a round-the-world voyage on HMS Beagle in 1831. On this trip he famously visited the Galapagos Islands in the Pacific Ocean. Here he observed lots of different species of animals, which gave him the idea which he later developed into his theory of evolution by natural selection. This theory was published in his book 'On the Origin of Species in 1859. He lived in Kent with his wife and children for most of his adult life.	Jean-Baptiste Pierre Antoine de Monet, Chevalier de la Marck, usually known as *Lamarck* (1744-1829) was a French soldier, naturalist and academic. He was one of the first people to suggest that organisms changed in accordance with natural laws. This is known as evolution. He said that individuals do not only pass on the things they received from their parents, but also some things they experienced during their lifetime. As an example, he cited giraffes. Giraffes, which have long necks, must have evolved from ancestors with much shorter necks. His idea was that adults needed to stretch their neck to reach leaves from high branches. Therefore, he thought, the children inherited longer necks. This idea is called *the inheritance of acquired characteristics*.