

**Willerby Carr Lane Primary School - Science**

**Topic: Evolution and Inheritance**

**Year: 6**

**Strand: Biology**

**What should I already know?**

- describe in simple terms how fossils are formed when things that have lived are trapped within rock (year 3)
- describe the life process of reproduction in some plants and animals (year 5)

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

How do we know humans have changed over time?

Australopithecus

- They lived between about 3.8 and 3 million years ago.
- Their fossils are mostly found in Africa.
- Their brain size was similar to a chimpanzee, much smaller than a human.
- They had short canine teeth.
- They were 4/4.5 feet tall, the same size as an emperor penguin.

Homo Habilis

- They are the first species of humans.
- They had bigger brains than the Australopithecus but still had ape like features.
- 'Homo' means human like features.
- 'Homo Habilis' means handy man. They were called this because they had the ability to think.
- They lived between 2.4 and 1.4 million years ago.
- They were the first creatures to make stone tools out of volcanic rock.

Homo Erectus

- They lived about 1.2 million years ago.
- 'Homo Erectus' means upright man.
- They were the first humans to only ever walk on 2 feet.
- They were about 5 feet 10 inches taller, similar to the size of humans now.
- They were the first to create hand axes.
- Their brains were almost the same size as ours.

Homo Neanderthals

- They lived about 200,000 to 35,000 years ago.
- The size of their brains suggest that they were very intelligent.
- Lots of research suggests that they could talk, but no-one has ever known for definite.
- They used flint to make tools with.
- They lived during the Ice Ages when they hunted deer, ox, reindeer and mammoth.

Homo Sapiens

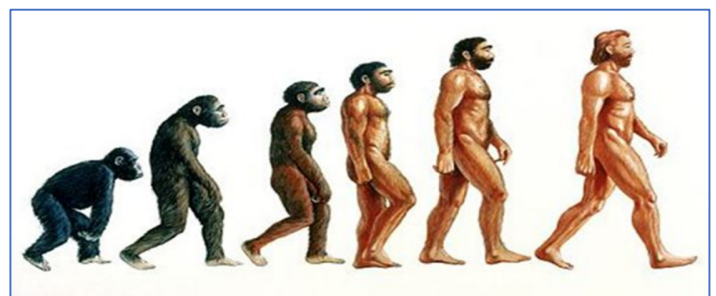
- 'Homo Sapiens' means wise man.
- Homo Sapiens evolved about 200,000 years ago and still live today.
- You are a Homo Sapien.
- Homo Sapiens have a large brain and this makes them incredibly intelligent.
- Homo Sapiens have learnt a lot for their ancestors the Homo Erectus.
- Homo Sapiens have developed other forms of communication other than just verbal.

How are offspring similar but not identical to their parents?

- In science, inheritance refers to the genes that are passed on from parents to offspring. When we refer to inherited characteristics we tend to focus on physical characteristics as these are easy to spot but inherited characteristics include abilities such as taste and smell.
- The majority of living things are the result of sexual reproduction so they have two parents. You inherit the characteristics from both parents but the way they combine makes the offspring unique.
- The inherited characteristics can combine in different ways, which is the reason why siblings inherit the same characteristics but are not identical to each other.

How are animals and plants adapted in a way that may lead to evolution?

- Over many generations, a species will adapt to its environment because the animals with the most successful characteristics are more likely to survive and pass on these characteristics to their offspring
- Know how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels.



Vocabulary	
adaptation	the process of change so that an organism or species can become better suited to their environment
Australopithecus	a fossil bipedal primate with both ape-like and human characteristics ( c. 4 million to 1 million years old) in africa.
breeding	the mating and production of offspring by animals
characteristics	a feature or quality belonging typically to a person, place, or thing and serving to identify them.
Charles Darwin	Charles Darwin published a book on his theory of natural selection in 1859.
dominant characteristic	being or produced by a form of a gene that prevents or hides the effect of another form
evolution	the process by which living things can gradually change over time.
generations	a generation is all of the people born and living at about the same time, regarded collectively.
genes	a unit of heredity which is transferred from a parent to offspring and is held to determine some characteristic of the offspring.
heredity	the passing on of physical or mental characteristics genetically from one generation to another.

Homo Erectus	meaning 'upright man' - a species of archaic humans that lived roughly 1.8 million years ago.
Homo Habilis	homo habilis is a species of homo (humans), which lived between roughly 2.1 and 1.5 million years ago,
Homo Neanderthal	an extinct species who lived about 40,000 years ago.
Homo sapien	the scientific name for the human species
inherited characteristics	something you receive from your parents, grandparents, or other family members is inherited. some things are inherited genetically, like blue eyes, freckles or a personality trait such as rolling your tongue.
natural selection	the process whereby organisms better adapted to their environment tend to survive and produce more offspring. the theory of its action was first fully expounded by Charles Darwin, and it is now regarded as be the main process that brings about evolution.
offspring	a person's child or children/ an animal's young.
reproduction	the process by which a living organism creates a likeness of itself.

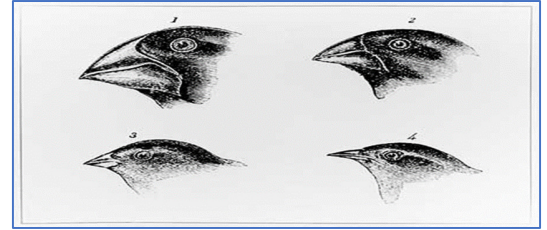
### Investigate!

- Evolution of humans – reading fossils.
- Inherited characteristics and variation.
- Darwin's finches – adaptation investigation
- What happens when a Labrador is crossed with a poodle?
- How did giraffes get long necks?
- How are some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels?

### Common misconceptions

Some children may think:

- adaptation occurs during an animal's lifetime: giraffes' necks stretch during their lifetime to reach higher leaves and animals living in cold environments grow thick fur during their life
- offspring most resemble their parents of the same sex, so that sons look like fathers
- all characteristics, including those that are due to actions during the parent's life such as dyed hair or footballing skills, can be inherited
- cavemen and dinosaurs were alive at the same time.



Thick white fur to help keep the bear warm and for camouflage

Thick layer of fat to help insulate for warmth

Small ears to reduce heat loss

Large paws to stop the bear sinking in the snow

Sharp teeth to eat prey easily

Nostrils are lined with hair and can shut to stop sand getting into the nose

Thick lips, so the camel can eat prickly desert plants

Large feet to reduce the pressure the camel exerts on the sand

Busby eyelashes to stop sand getting in their eyes

Hump(s) containing fat which the camel can use for energy, but the fat doesn't insulate its body

Sharp teeth to rip up prey

Thick blubber (fat) for insulation in cold oceans

Streamlined shape and powerful tail to move the mammal very quickly through the water

Strong muscular tail to push the animal through the water

Orcas are well camouflaged. When looking from the bottom of the water up, their white underbellies look like the surface of the water. When looking down from the top of the water, their black top sides blend in with the color of the depths.

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