

Evolution and Inheritance

Learning Objective:

To find out about how the work of scientists helped develop our understanding of the process of evolution.



These are some of the ideas that ancient Greek scientists and philosophers had about the growth, development and variation of plants and animals.

The first humans were delivered from the water on to the land in the mouths of fish.

All animals are descended from sea creatures.

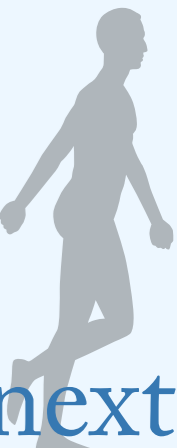
All things were ranked in order of how 'high' or important they were:

humans
animals
plants
minerals

One type of animal can descend from another type of animal.

Animals are 'imperfect' and will one day evolve enough to reach their 'perfect' form.

Think about what you already know about evolution and inheritance. Can you work out which of these are now believed to be **incorrect**?



Did you get it right?

Great thinkers have always tried to explain life on Earth, but they have not always got it right!

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Scientists are constantly refining, changing and developing the ideas of other scientists. Sometimes, ideas are *refuted* when evidence is found that contradicts the idea. Sometimes, evidence is found that supports an idea.



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The lifetime's work of biologist Carl Linnaeus shaped our understanding of the process of evolution.

He recognised that living things shared certain characteristics, such as having four limbs or giving birth to live offspring.

He developed a system for categorising species, which is still used today.



Carl Linnaeus
1707-1778

Let's take a closer look
at Linnaeus' system...



These animals all have differences which make them unique. However, they also have some characteristics in common, such as 'dry noses', relatively large brains, the ability to communicate using lots of different facial expressions and having excellent vision. These characteristics are not shared with other primates.



spider monkey



gibbon



orangutan



human

Today's scientific classification system (which is very similar to Linnaeus' system) groups these animals in the suborder of animals called 'Haplorrhini'. Let's have a look at the 'Haplorrhini' branch of the system...



Haplorrhini

Suborder

There are other stages here (not shown) that continue breaking up the very large group of Haplorrhini species into smaller groups according to their shared characteristics.

Cebidae

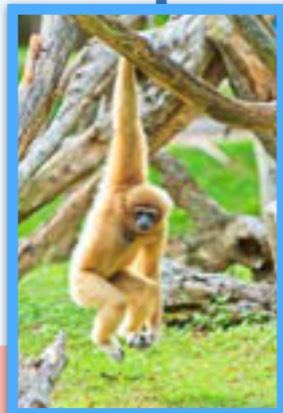
Hylobatidae

Hominidae

Family



monkey



gibbon



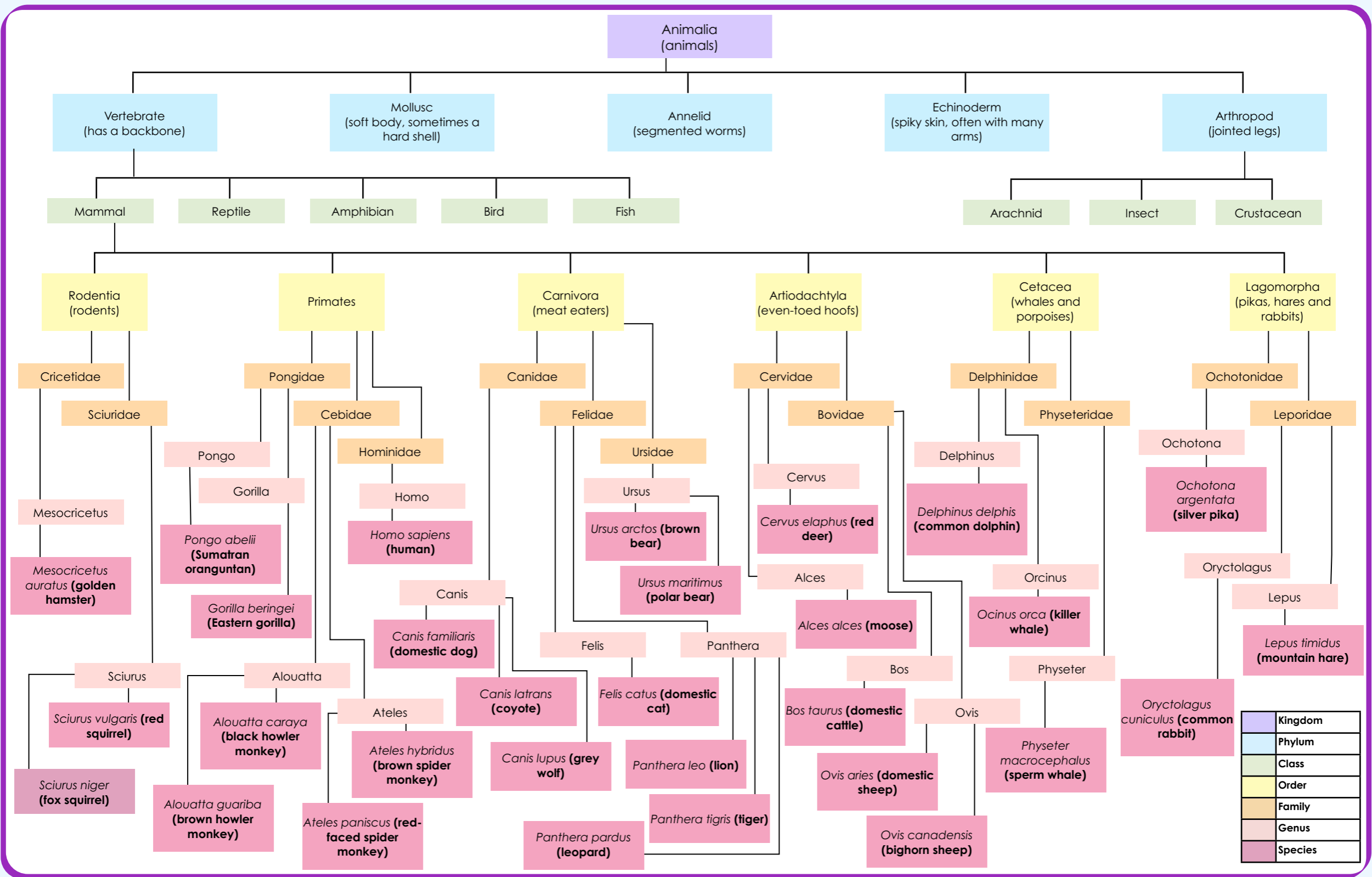
orangutan



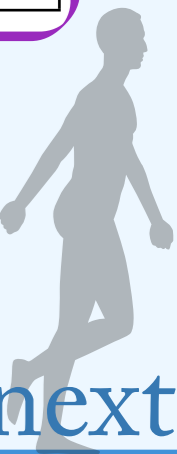
human

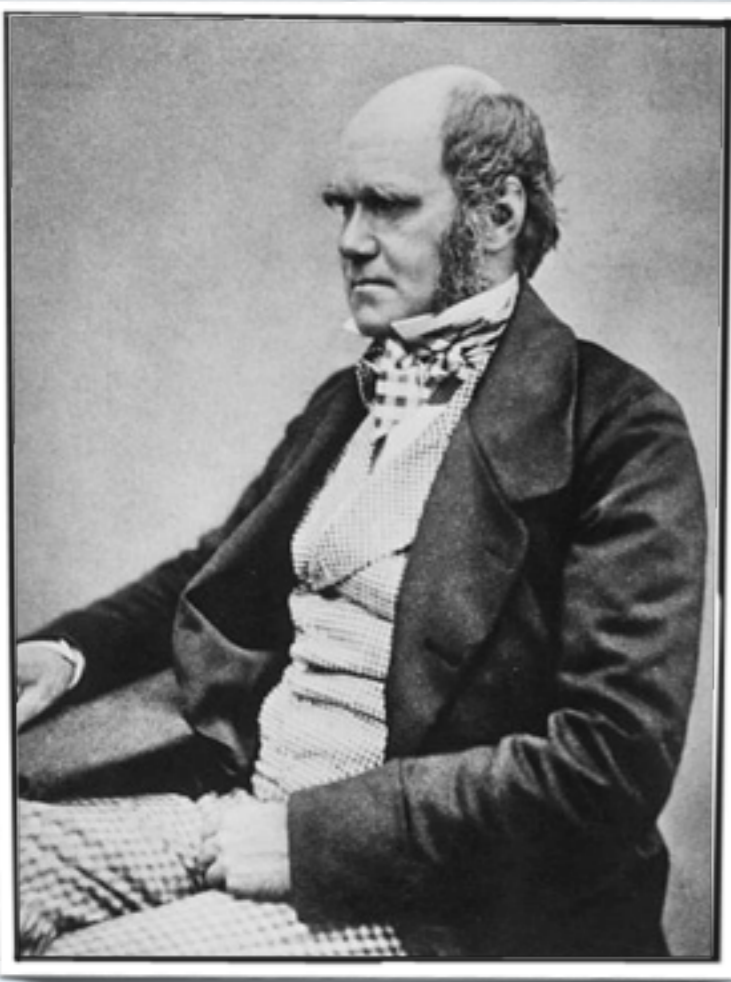
Again, there are other stages in this classification system that are not shown here. There are lots of other species in these families.

Species



The modern classification system, based on Carl Linnaeus' work, is now used to classify and categorise all living things. This is just one tiny part of it!



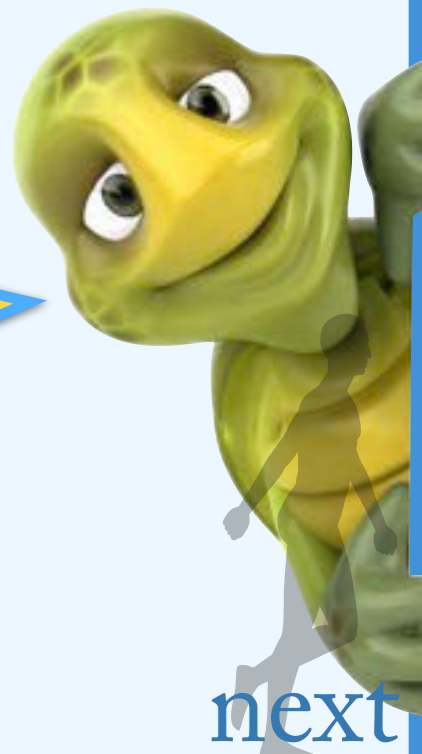


"Charles Darwin seated crop" by Charles_Darwin_seated.jpg: Henry Maull (1829–1914) and John Fox (1832–1907) (Maull & Fox) [1]derivative work: Beao - Charles_Darwin_seated.jpg. Licensed under Public domain via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:Charles_Darwin_seated_crop.jpg#mediaviewer/File:Charles_Darwin_seated_crop.jpg

Charles Darwin
1809–1882

Charles Darwin's work revolutionised evolutionary thought. His life's work on the way life on Earth has evolved has shaped and influenced the work of scientists ever since its publication in the mid-nineteenth century. *On The Origin Of Species* described how his experiences studying species in the Galapagos Islands helped him to explain how **natural selection** works.

Can you remember what Charles Darwin said about natural selection?





Did you remember
any of this?

Living things reproduce and become more numerous

Offspring differ from their parents (variation)

Some of those differences are advantageous, giving the offspring a greater chance of surviving and reproducing

More offspring will be born with that variation

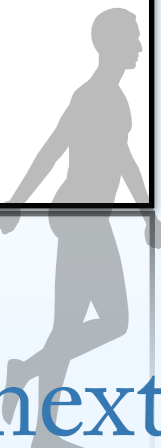
That variation may spread through a population and change it

Sometimes, part of a population will develop different variations, eventually forming a new species

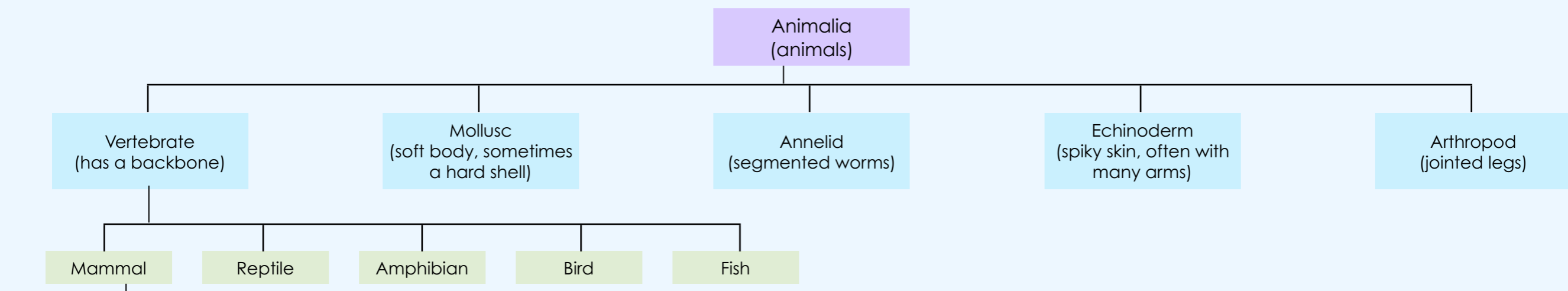


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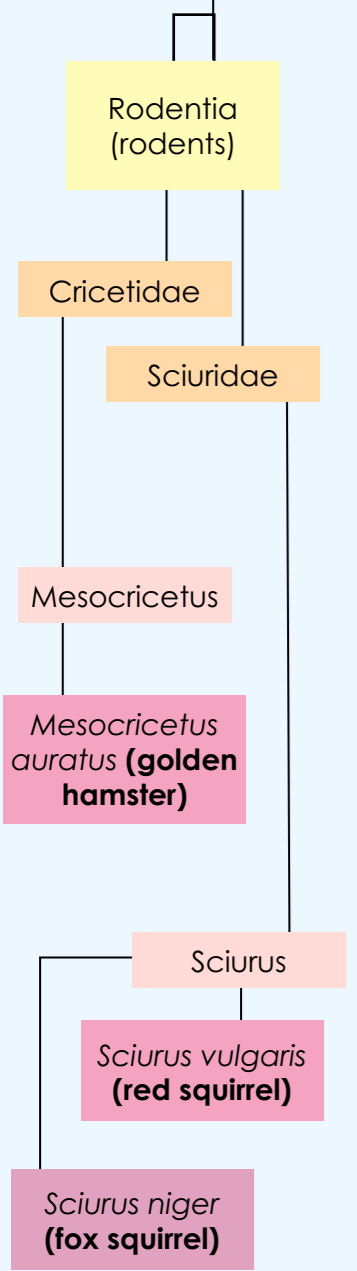
eventually forming a new species



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Each stage in the modern classification system shows where, as Darwin explained, a part of a population developed new variations and eventually became a new species.



Phew! What a lot of information! If you have any questions about what we have learned so far, why not make a note of them? You could try and find answers to them during today's learning activity!



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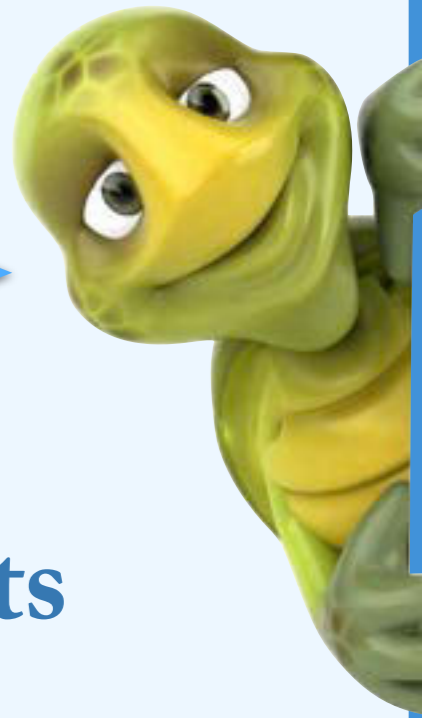
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Today we will be learning more about how scientists have helped develop our understanding of the process of evolution.



Plenary

Can you link two or more of these words in a statement to show what you have learned about evolution?



evolution

variation

plants

natural selection

parent

offspring

growth

development

animals

advantageous

population

reproduce

disadvantageous

survive

classification

species



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