

11h Evolution and natural selection

C B1A.20 GCSE B4.2, B4.3, B4.4, B4.5

Progression questions

- What evidence is there for human evolution?
- How did Darwin explain evolution by natural selection?
- What evidence supports Darwin's theory?



Evidence from fossil skulls was used to make this model of a *Homo erectus* head.

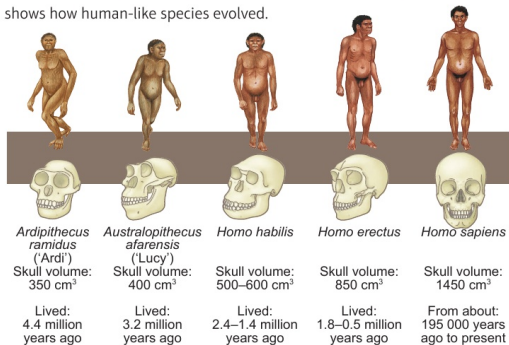


The stone chopper on the top was made about 2 million years ago. The stone knife on the bottom was made about 13 000 years ago.

- a Use the photos in C to describe how stone tools changed over time.
- b Suggest a reason why the stone tools changed.

Evolution is how things change over time. We can look at **fossils** to see how organisms changed over millions of years.

Diagram B shows skulls from some human-like species and from our own species, *Homo sapiens*. It also shows what scientists think these species looked like. This is based on evidence from their fossil bones. The evidence shows how human-like species evolved.



B comparison of four ancient human-like species with our own species

- 1 State what evolution means.
- 2 Look at diagram B.
 - a Which human-like species lived 4.4 million years ago?
 - b Describe how skull volume evolved in human-like species over the last 4.4 million years.

Other evidence for human evolution comes from the stone tools that different human-like species made. The age of stone tools is worked out from the sediment they are found in.

Charles Darwin (1809–1882) developed the theory of **natural selection** to explain how evolution happens. Natural selection is how differences in an organism's characteristics affect its survival in certain environmental conditions. For example, dark skin in humans protects against cancer where light intensity from the Sun is high. Pale skin makes more vitamin D where light intensity is low. Vitamin D keeps us healthy.