

## Evidence for evolution

### Aims:

- Define evolution.
- Outline the evidence for evolution provided by the fossil record, selective breeding of domesticated animals and homologous structures.

### Questions about the video, “What is the evidence for evolution?”

1. Give a textbook definition of Evolution

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2. Biologists claim that each branch of the evolutionary tree can be traced back to a single shared ancestor. What is the shared ancestor of whales and dolphins thought to be?

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Evidence for evolution often uses comparison of features. Family members are assumed to share similar features.

3. Describe three features of whales and dolphins which are also shared by land mammals.

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One particularly striking similarity is the composition of bones in the limbs of whales dolphins and land mammals.

4. Describe the structure of bones in the **pentadactyl limb** found in all vertebrates.

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5. Why is this called a homologous feature ?

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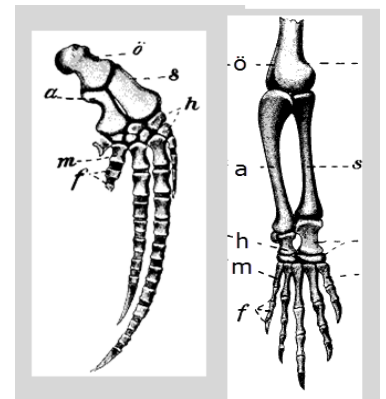


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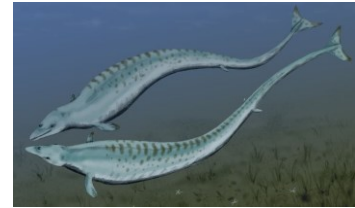


6. Why does this suggest that all vertebrates share a common ancestor?

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Sometimes examples of species which are intermediate steps in a gradual process of change between two animals can be found in the fossil record. These species may have become extinct, but even if they haven't the fossils can show how the animals looked many years ago. This can provide further evidence of the accumulation of gradual changes in the heritable characteristics of a species.



*1Image by ArthurWeasley  
~commonswiki*

7. Describe the features of Basilosaurid whales which provide evidence to link modern land mammals to modern whales and dolphins.

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8. Describe how a long line of fossils showing gradual changes in body anatomy from ancient 'walking whales' to modern day whales supports the theory of evolution, as a 'cumulative change in the heritable characteristics of a species'.

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DNA comparisons can also provide evidence about how closely related two species are. An accumulation of changes in observable heritable features must link to changes in the DNA.

Evidence for changes in characteristics in modern animals also provides strong evidence for the mechanism of evolution. There are many breeds of domesticated animals from cattle to dogs which illustrate this nicely.

9. Describe what happens in the selective breeding of farm animals, giving one example.

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10. Explain how this example supports the theory of evolution.

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