

Classification of living organisms

Revision notes · The Linnaean system, binomial names, the three-domain system and evolutionary trees.

For AQA GCSE Biology 8461 and Combined Science: Trilogy 8464. **Triple only** is not in Combined Science. **Higher tier** is only on the Higher paper.

Classification of living organisms Spec 4.6.4

The Linnaean system and binomial names Spec 4.6.4

Traditionally, living things have been classified into groups depending on their structure and characteristics, in a system developed by **Carl Linnaeus**.

Linnaeus classified living things into: **kingdom, phylum, class, order, family, genus and species**. Organisms are named by the **binomial system** of genus and species.

Example: the binomial name of humans

Level	Name
Genus	<i>Homo</i>
Species	<i>sapiens</i>
Binomial name	<i>Homo sapiens</i>

In a binomial name, the genus is written first with a capital letter, and the species second with a lower-case letter. Binomial names are written in italics or underlined.

Exam tip: A memory aid for the order: **King Philip Came Over For Good Soup**. In questions you are given information, so you need to show you understand how the system works.

Developments in classification Spec 4.6.4

As evidence of internal structures became more developed due to improvements in **microscopes**, and the understanding of **biochemical processes** progressed, new models of classification were proposed.

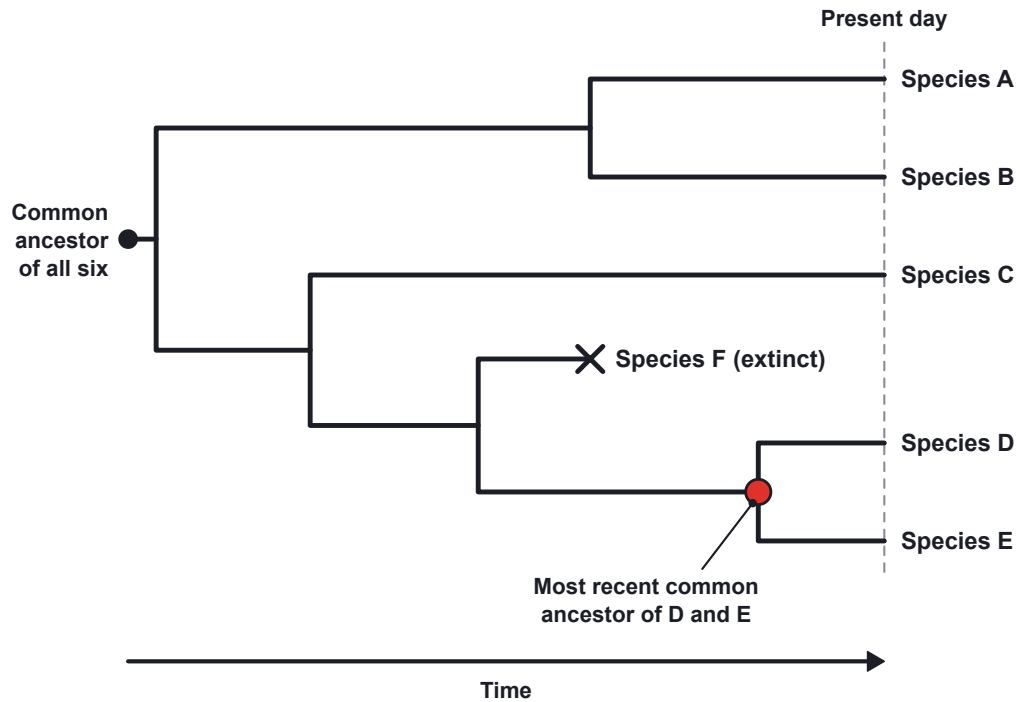
Due to evidence available from **chemical analysis**, there is now a **three-domain system** developed by Carl Woese. In this system, organisms are divided into:

The three-domain system

Domain	Description
Archaea	Primitive bacteria, usually living in extreme environments
Bacteria	True bacteria
Eukaryota	Includes protists, fungi, plants and animals

Evolutionary trees

Evolutionary trees are a method used by scientists to show how they believe organisms are related. They use current classification data for living organisms and fossil data for extinct organisms. The more recently two branches split from a common ancestor, the more closely related the organisms are.



D and E share the **most recent common ancestor**, so they are the most closely related species on this tree.

Exam tip: To read a tree, find the point where two branches split. The nearer that point is to the present, the more closely related the two species are.

Quick check

1. List the Linnaean groups from largest to smallest.
2. Which two groups make up a binomial name?
3. Name the three domains in Woese's system.
4. What data are used to build evolutionary trees?

Quick check answers

Classification of living organisms

1. Kingdom, phylum, class, order, family, genus, species.
2. Genus and species.
3. Archaea, bacteria and eukaryota.
4. Current classification data for living organisms and fossil data for extinct organisms.