

OCR (B) Biology GCSE

Topic B6.3: How does our understanding of biology help us classify the diversity of organisms on Earth?

Flashcards



What is classification?



What is classification?

The organisation of organisms into groups



What is taxonomy?



What is taxonomy?

The classification of organisms into taxa: kingdom, phylum, class, order, family, genus, species.



Name the five kingdoms



Name the five kingdoms

Animals, plants, fungi, protists,
prokaryotes



What happens to the number of organisms in each taxon as you move down the hierarchy?



What happens to the number of organisms in each taxon as you move down the hierarchy?

The number of organisms in each group decreases



Traditionally, organisms were grouped based on similarities and differences in their anatomy and behaviour. What is the problem with this?



Traditionally, organisms were grouped based on similarities and differences in their anatomy and behaviour. What is the problem with this?

- Organisms that are not closely related may look alike and behave similarly if they live in the same environment e.g. sharks and dolphins
- Some closely related species may look very different if they live in different habitats e.g. queen ants, worker ants



What advancements in science have aided the classification of organisms?



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- Microscopes
- Biochemistry
- DNA analysis



How has the development of
microscopes impacted methods of
classification?



How has the development of microscopes impacted methods of classification?

Microscopes have enabled the close observation of cell structure and the identification of organelles, providing more information to aid classification.



How have advancements in biochemistry impacted methods of classification?



How have advancements in biochemistry impacted methods of classification?

This has enabled classification to take place on a molecular level rather than by observing anatomy alone e.g. comparing protein structure in different organisms.



How has DNA analysis impacted
methods of classification?



How has DNA analysis impacted methods of classification?

- Genome sequencing is used to compare organisms by looking at specific genes or their whole genome
- The more similar the sequences, the more closely related the species and the more recent their common ancestor
- How recently speciation has occurred can be estimated



How can the similarity of DNA sequences be compared?

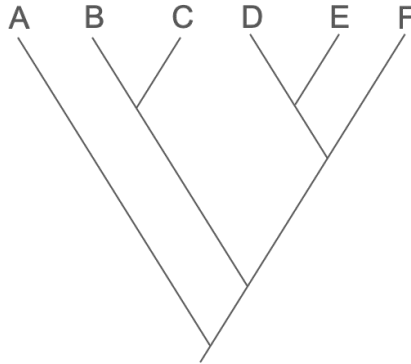


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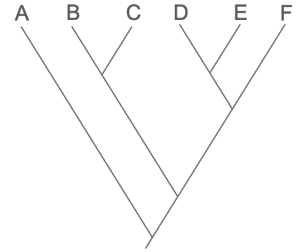
By comparing the number of genes or the number of alleles for each gene



In this evolutionary tree, which species is most closely related to species E?



In this evolutionary tree, which species is most closely related to species E?



Species D

