OCR (A) Biology A-level

4.2.2 - Classification and evolution

Flashcards

Define classification.

Define classification.

The process of naming and organising organisms into groups based on their characteristics.

Name the eight groups in the classification hierarchy, from largest to smallest.

Name the eight groups an organism can be classified into, from largest to smallest.

Domain → kingdom → phylum → class → order → family → genus → species

What are the two components to a binomial name?

What are the two components to a binomial name?

Generic name= the genus the organism belongs to. Two closely related species will share the same genus.

Specific name= the species the organism belongs to.

What is the advantage of the binomial naming system?

What is the advantage of the binomial naming system?

It is universal; an organism's binomial name is the same everywhere in the world.

Name the five kingdoms and three domains.

Name the five kingdoms and three domains.

Kingdoms= Prokaryote, Protoctista, Fungi, Plantae, Animalia

Domains= Bacteria, Archaea, Eukaryota

How are organisms classified into a kingdom?

How are organisms classified into a kingdom?

Based on similarities in observable characteristics.

How was the domain system of classification developed?

How was the domain system of classification developed?

By analysing molecular differences between organisms to determine their evolutionary relationships (phylogeny).

What is the difference between classification and phylogeny?

What is the difference between classification and phylogeny?

Classification is simply sorting organisms into groups. Phylogeny investigates the evolutionary relationships between organisms.

Explain how natural selection results in evolution.

Explain how natural selection results in evolution.

- Random mutations result in new alleles.
- Some alleles provide an advantage against selection pressures, making an individual more likely to survive and reproduce.
- Their offspring receive the new allele, and are said to have ‘evolved’ a new characteristic.

How did Darwin and Wallace contribute to the theory of evolution?

How did Darwin and Wallace contribute to the theory of evolution?

Observed that birds have many different beak shapes. Concluded that birds with beak shapes most suited to the food they eat are more likely to survive and therefore pass this beak shape onto their offspring.

Give other evidence for the theory of evolution.

Give other evidence for the theory of evolution.

- Fossils= allows us to compare extinct organisms to today's organisms.
- Genomic DNA= sequencing of genomes have shown how closely related we are to primates.
- Molecular= proteins are composed of the same 20 amino acids in all organisms.

What causes variation?

What causes variation?

- Genetic= mutations, random fertilisation, etc.
- Environmental= climate, diet, culture, etc.

Differentiate between intraspecific and interspecific variation.

Differentiate between intraspecific and interspecific variation.

- Intraspecific= variation within the same species.
- Interspecific= variation between different species.

Differentiate between continuous and discontinuous variation.

Differentiate between continuous and discontinuous variation.

- Continuous= variation exists as gradual changes over a range e.g. height, root length.
- Discontinuous= variation exists as distinct categories e.g. blood group, bacteria shape.

Why might we calculate a Spearman's rank correlation coefficient?

Why might we calculate a Spearman's rank correlation coefficient?

To measure correlation between two variables, i.e. the extent to which changing one variable affects the other variable.

Explain how Spearman's rank results are interpreted.

Explain how Spearman's rank results are interpreted.

Closer to 1= more positive correlation.

Closer to -1= more negative correlation.

Around 0= no correlation.

What are three types of adaptation? Give examples of each.

What are three types of adaptation? Give examples of each.

- Anatomical (changes to body structure) e.g. oily fur.
- Physiological (changes to bodily processes) e.g. venom production.
- Behavioural (changes to actions) e.g. hibernation.

Why might organisms from different taxonomic groups show similar features?

Why might organisms from different taxonomic groups show similar features?

Marsupial moles and placental moles live in different continents, but share similar anatomical features because they adapted to similar environments.

Give some implications of evolution for humans.

Give some implications of evolution for humans.

- Bacterial antibiotic resistance means infections are harder to treat.
- Pesticide resistance means entire crops could be destroyed.