

GENETICS AND VARIATION

Key Concepts

- Genetics is the study of how traits are passed from parents to offspring.
- Variation means differences between individuals of the same species.
- Traits can be inherited (e.g., eye colour) or environmental (e.g., a scar).



Key Facts to Remember

- DNA, found in the nucleus of cells, contains the genetic instructions for all living organisms.
- Genes, which are sections of DNA, determine inherited traits such as eye colour or height.
- Variation is essential for survival as it allows species to adapt to changing environments.
- Environmental variation includes traits influenced by surroundings, like tan skin from sun exposure.
- Inherited variation comes from the combination of genes from both parents.
- Mutations are changes in DNA that can result in new traits; some mutations can be beneficial, harmful, or neutral.
- Selective breeding involves choosing specific organisms to reproduce, enhancing desired traits (e.g., faster racehorses or disease-resistant crops).
- Natural selection is the process where individuals better adapted to their environment are more likely to survive and reproduce.

Quick Questions

1. What is the role of DNA in inheritance?
2. Name two types of variation and give an example of each.
3. Why is variation important for species survival?
4. What are genes, and where are they located?
5. How can mutations affect traits?
6. What is the difference between selective breeding and natural selection?
7. How do inherited traits differ from environmental traits?
8. What is one example of a mutation that could benefit an organism?

Fun Fact

Humans share about 60% of their DNA with bananas, showing how interconnected all life on Earth is!