92022



Level 1 Chemistry and Biology 2025

92022 Demonstrate understanding of genetic variation in relation to an identified characteristic

Credits: Five

SAMPLE ASSESSMENT

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of genetic variation in relation to an identified characteristic.	Explain genetic variation in relation to an identified characteristic.	Evaluate genetic variation in relation to an identified characteristic.

This is an example of one question of a multi-question assessment task.

Allele for HIV resistance

The human immunodeficiency virus (HIV) is a virus that infects the white blood cells of the human immune system.

Individuals who have a normal CCR5 gene are susceptible to HIV infection.

Mutations can occur in this gene, which results in a mutant CCR5 allele.

Individuals who are homozygous for the mutant CCR5 allele are completely resistant to HIV, while individuals who are heterozygous are still susceptible to HIV infection.

QUESTION ONE

(a) Explain how a mutation in the CCR5 gene is able to provide resistance to HIV.

In your answer include the terms: gene, allele, phenotype, and DNA.

(b) Discuss how the CCR5 gene mutation can be passed on to the next generation, leading to genetic variation in the population.

In your answer you should consider:

- how sexual reproduction, including meiosis, contributes to genetic variation
- the advantages of genetic variation in a population.