Achievement Standard

Subject Reference	Chemistry and Biology 1.3				
Title	Demonstrate understanding of genetic variation in relation to an identified characteristic				
Level	1	**Credits**	5	**Assessment**	External
Subfield	Science				
Domain	Science - Core				
Status	Approved	**Status date**	September 2023		
Planned review date	December 2028	**Date version published**	December 2023		

Purpose Statement

Students are able to demonstrate understanding of genetic variation in relation to an identified characteristic.

Achievement Criteria

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

Explanatory Notes

1 *Demonstrate understanding of genetic variation in relation to an identified characteristic* involves:
- describing the source and the nature of genetic variation using an identified characteristic
- describing a purpose for identifying genetic relationships through the use of a gene tracking methodology.

Explain genetic variation in relation to an identified characteristic involves:
- explaining how and why the genetic variation occurs using an identified characteristic
- explaining how the purpose for identifying genetic relationships through the use of a gene tracking methodology is met.

Evaluate genetic variation in relation to an identified characteristic involves:
- evaluating findings when genetic variation has been identified and tracked for the purpose of identifying genetic relationships.

2 For the purpose of this achievement standard, an *identified characteristic* refers to a trait with differences or similarities in phenotype or morphology.

3 For the purpose of this achievement standard, a *gene tracking methodology* identifies the presence or absence of a gene, genetic marker, or DNA sequence within an individual or population.

Examples of a gene tracking methodology include:
- phylogenetic trees or pedigree charts
- genetic markers
- specific DNA sequences
- Punnett squares.

4 For the purpose of this achievement standard, a *source* is the origin or factor that significantly contributes to genetic variation, for an individual or population.

Examples of a source of genetic variation for an individual include:
- mutation
- sexual reproduction

Examples of a source of genetic variation for a population include:
- small population size
- differing rates of survival
- migration
- non-random mating.

5 For the purpose of this achievement standard, *nature* is the effect or outcome, caused by a change in genetic variation over time, in an individual or population.

Examples of the nature of genetic variation include:
- beneficial, due to increased resistance to disease for an individual or population
- prevalence of albinism in populations of wild animals.

6 Refer to the NCEA glossary for Māori, Pacific, and further subject-specific terms and concepts.

7 This achievement standard is derived from the Science Learning Area at Level 6 of *The New Zealand Curriculum*: Learning Media, Ministry of Education, 2007.

Replacement Information

This achievement standard, AS92020, AS92021, and AS92023 replaced AS90925-AS90934.

Quality Assurance

1 Schools and institutions must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.

2 Schools and institutions with consent to assess must engage with the moderation system that applies to those achievement standards.

Consent and Moderation Requirements (CMR) reference 0233