

## Achievement Standard

**Subject Reference** Biology 2.5

**Title** Demonstrate understanding of genetic variation and change

**Level** 2      **Credits** 4      **Assessment** External

**Subfield** Science

**Domain** Biology

**Status** Registered      **Status date** 17 November 2011

**Planned review date** 31 December 2019      **Date version published** 20 November 2014

This achievement standard involves demonstrating understanding of genetic variation and change.

### Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> <li>Demonstrate understanding of genetic variation and change.</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate in-depth understanding of genetic variation and change.</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate comprehensive understanding of genetic variation and change.</li> </ul>

### Explanatory Notes

- This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, Level 7. It is aligned with the following achievement objective in the Living World strand:  
Ecology and Evolution
  - Explain how the interaction between ecological factors and natural selection leads to genetic changes within populations and is related to the material in the *Teaching and Learning Guide for Biology*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.

This standard is also derived from Te Marautanga o Aotearoa. For details of Te Marautanga o Aotearoa achievement objectives to which this standard relates, see the [Papa Whakaako](#) for the relevant learning area.

- Demonstrate understanding* involves defining, using annotated diagrams or models to describe, and describing characteristics of, or providing an account of, genetic variation and change.

*Demonstrate in-depth understanding* involves providing reasons as to how or why genetic variation and change occurs.

*Demonstrate comprehensive understanding* involves linking biological ideas about genetic variation and change. The discussion of ideas may involve justifying, relating, evaluating, comparing and contrasting, or analysing.

- 3 *Genetic variation and change* involves the following concepts:
    - sources of variation within a gene pool
    - factors that cause changes to the allele frequency in a gene pool.
  - 4 Biological ideas and processes relating to sources of variation within a gene pool are selected from:
    - mutation as a source of new alleles
    - independent assortment, segregation and crossing over during meiosis
    - monohybrid inheritance to show the effect of co-dominance, incomplete dominance, lethal alleles, and multiple alleles
    - dihybrid inheritance with complete dominance
    - the effect of crossing over and linked genes on dihybrid inheritance.
  - 5 Biological ideas and processes relating to factors affecting allele frequencies in a gene pool are selected from:
    - natural selection
    - migration
    - genetic drift.
  - 6 Assessment Specifications for this achievement standard can be accessed through the Biology Resources page found at <http://www.nzqa.govt.nz/qualifications-standards/qualifications/ncea/subjects/>.
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### Replacement Information

This achievement standard replaced AS90459 and unit standard 6308.

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### Quality Assurance

- 1 Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.
- 2 Organisations with consent to assess and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Consent and Moderation Requirements (CMR) reference

0233