

## Achievement Standard

|                            |   |                               |                  |
|----------------------------|---|-------------------------------|------------------|
| <b>Subject Reference</b>   | Biology 1.3   |                               |                  |
| <b>Title</b>               | Demonstrate understanding of biological ideas relating to micro-organisms |                               |                  |
| <b>Level</b>               | 1   | <b>Credits</b>                | 4                |
|                            |   | <b>Assessment</b>             | External         |
| <b>Subfield</b>            | Science   |                               |                  |
| <b>Domain</b>              | Biology   |                               |                  |
| <b>Status</b>              | Registered  | <b>Status date</b>            | 30 November 2010 |
| <b>Planned review date</b> | 31 December 2014  | <b>Date version published</b> | 30 November 2010 |

This achievement standard involves demonstrating understanding of biological ideas relating to micro-organisms.

***Mutual exclusion exists between this standard and AS90950.***

### Achievement Criteria

| Achievement  | Achievement with Merit  | Achievement with Excellence  |
|--|---|--|
| <ul style="list-style-type: none"> <li>Demonstrate understanding of biological ideas relating to micro-organisms.</li> </ul> | <ul style="list-style-type: none"> <li>Demonstrate in-depth understanding of biological ideas relating to micro-organisms.</li> </ul> | <ul style="list-style-type: none"> <li>Demonstrate comprehensive understanding of biological ideas relating to micro-organisms.</li> </ul> |

### Explanatory Notes

- This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, Level 6. It is aligned with the Life Processes achievement objective in the Living World strand, and is related to the material in the *Teaching and Learning Guide for Biology*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.
- Demonstrate understanding* involves defining, using annotated diagrams, and giving characteristics of, or an account of, micro-organisms.
- Demonstrate in-depth understanding* involves explaining the biological ideas relating to micro-organisms.

- 4 *Demonstrate comprehensive understanding* involves linking biological ideas relating to micro-organisms. It may involve explaining, elaborating, applying, justifying, relating, evaluating, comparing and contrasting, or analysing.
  - 5 *Micro-organisms* will be selected from: bacteria, fungi, and viruses.
  - 6 *Biological ideas* relating to micro-organisms will be selected from:
    - the structure of micro-organisms
    - culturing of micro-organisms
    - life processes of micro-organisms
    - environmental factors that affect the life processes of micro-organisms.
  - 7 Life processes of micro-organisms will be selected from: the nutrition, growth, respiration, reproduction, and excretion of bacteria and fungi; and the reproduction of viruses.
  - 8 Environmental factors will be selected from: temperature, oxygen availability, nutrients, moisture, chemicals (including pH, toxins, antibiotics, disinfectants), and competition.
  - 9 The effects of environmental factors on the life processes of micro-organisms could include the following contexts: nutrient cycling and role in ecosystems, food production and preservation, sewage treatment, food poisoning, disease in plants, microbial attack on everyday materials (helpful and harmful), antibiotics, and resistance to antibiotics and genetic mutation in epidemiology.
  - 10 The student must be familiar with the following terms: inoculate, extracellular digestion, enzyme, parasite, pathogen, toxin, decomposer, aerobic, anaerobic, hyphae, binary fission, spores, sporangium, antibiotic and vaccine.
  - 11 Assessment Specifications for this achievement standard can be accessed through the Biology Resources page found at [www.nzqa.govt.nz/ncea/resources](http://www.nzqa.govt.nz/ncea/resources).
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### Replacement Information

This achievement standard and achievement standard 90950 replaced unit standard 6298.

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### Quality Assurance

- 1 Providers and Industry Training Organisations must be accredited by NZQA before they can register credits from assessment against achievement standards.
- 2 Accredited providers and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Accreditation and Moderation Action Plan (AMAP) reference

0233