

Achievement Standard

Subject Reference	Biology 2.8		
Title	Investigate biological material at the microscopic level		
Level	2	Credits	3
		Assessment	Internal
Subfield	Science		
Domain	Biology		
Status	Registered	Status date	17 November 2011
Planned review date	31 December 2020	Date version published	20 November 2014

This achievement standard involves investigating biological material at the microscopic level.

Achievement Criteria

Achievement	Achievement with Merit
<ul style="list-style-type: none"> Investigate biological material at the microscopic level. 	<ul style="list-style-type: none"> Investigate in-depth biological material at the microscopic level.

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 Nature of Science strand:
Communicating in Science
 - Use accepted science knowledge, vocabulary, symbols and conventions when evaluating accounts of the natural world and consider the wider implications of the methods of communication and/or representation employed
 and the following achievement objective in the Living World strand:
Life Processes
 - Explore the diverse ways animals and plants carry out the life processes 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.

- Carry out an investigation* involves:
 - preparing biological material for viewing under a light microscope

- viewing biological material using a light microscope to enable detail of cell structures and components to be determined
- recording observations of biological material in biological drawings
- identifying observed specialised features and relating them to the function of the cells or tissues.

Investigate in-depth involves:

- giving reasons for how or why observed specialised features enable the cells to effectively carry out their specific function(s).

- 3 *Biological material for viewing* includes two different plant tissues and one unicellular organism.
- 4 To allow an accurate drawing to be produced, preparation of material may include: staining, use of cavity slides, use of cellulose, epidermal tear, cutting sections.
- 5 A biological drawing follows the accepted conventions to record observations consistent with the biological material being viewed. Consistency of observations with the biological material used must include recognisable shape and proportions and inclusion of typical organelles present in a cell, appropriate to the magnification. At the Achieved grade, the biological drawing may contain some errors in applying conventions or minor inaccuracies in representation. At the Merit grade the biological drawing may contain some minor errors as long as they do not affect the accuracy of the representation of the biological material being viewed.
- 6 Specialised features may include: arrangement of cells or cell types within a tissue, shape of a cell, presence or absence of a specific organelle, quantity or distribution of organelles within a cell. Notes about the specialised features may accompany the biological drawing (eg a fully annotated diagram).
- 7 Relating observed specialised features to the function of the cell or tissue must include: identifying the feature or organelle, stating its function, and giving reasons for why or how it contributes to the function of the cell or tissue.
- 8 Conditions of Assessment related to this achievement standard can be found at <http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards>.

Replacement Information

This achievement standard replaced unit standard 8928.

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