Title	**Perform a polymerase chain reaction (PCR)**		
Level	**6**	**Credits**	**3**

Purpose	People credited with this unit standard are able to: discuss principles of the polymerase chain reaction (PCR); carry out a PCR; analyse a PCR amplification product; and interpret results.

Classification	Science > Molecular Biology

Available grade	Achieved

Guidance Information

1 All work must be carried out in accordance with the quality management system, documented protocol system or Standard Operating Procedures (SOP) acceptable in a commercial or research laboratory.

2 Health and Safety practices must conform to Australian/New Zealand Standard AS/NZS 2243 – *Safety in Laboratories* Parts 1, 2, 3, 7 and 10 available at http://www.standards.co.nz and http://infostore.saiglobal.com/store.

3 Legislation applicable to this unit standard includes:
Health and Safety at Work Act 2015;
Hazardous Substances and New Organisms Act 1996.

4 Glossary
Laboratory procedures refer to documented systems or processes of operation which may be found in a SOP manual, quality management system, or in protocol system documentation. These procedures are external and/or internal laboratory requirements governing laboratory work.

5 Polymerase Chain Reaction (PCR) is covered by a patent awarded to Hoffman La Roche.

6 Recommended for entry: Unit 8050, *Perform electrophoresis*.

Outcomes and performance criteria

Outcome 1

Discuss principles of the PCR.

Performance criteria

1.1 PCR is discussed in terms of sequence of events and requirements.

Range requirements include – temperature, denaturation, annealing, primer extension, primers, deoxy nucleotide triphosphates (dNTP), thermostable deoxyribonucleic acid (DNA) polymerase, design of primers.

1.2 PCR is discussed in terms of its scientific applications.

Range medical, forensic, conservation, evolutionary biology.

Outcome 2

Carry out a PCR.

Performance criteria

2.1 Work practices are implemented that prevent contamination of reagents with foreign DNA in accordance with laboratory procedures.

2.2 Enzyme is handled to ensure activation in accordance with laboratory procedures.

2.3 Reaction mixtures are prepared in accordance with laboratory procedures.

Range negative control, positive control, experimental samples.

Outcome 3

Analyse a PCR amplification product.

Performance criteria

3.1 Analysis includes estimation of the quantity of the reaction product relevant to PCR cycles.

3.2 Product is electrophoresed with size standards in accordance with laboratory procedures and is consistent with expected results.

Outcome 4

Interpret results.

Performance criteria

4.1 Results are recorded in accordance with laboratory procedures.

4.2 Interpretation is consistent and is a verification of the results.

Planned review date	31 December 2023

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	22 December 1996	31 December 2014
Review	2	23 November 1999	31 December 2014
Review	3	17 September 2010	N/A
Rollover	4	27 January 2015	N/A
Review	5	27 September 2018	N/A

Consent and Moderation Requirements (CMR) reference	0113

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact NZQA National Qualifications Services nqs@nzqa.govt.nz if you wish to suggest changes to the content of this unit standard.