



**Australian Government**

# **Assessment Requirements for MSL975014**

## **Perform molecular biology tests and procedures**

**Release: 1**

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## **Modification History**

Release 1. Supersedes and is equivalent to MSL975014A Perform molecular biology tests and procedures

## **Performance Evidence**

Evidence of competence in this unit must satisfy all of the requirements of the elements and performance criteria, and include demonstration of:

- applying at least five (5) molecular biology tests and procedures (including polymerase chain reaction (PCR), ligation and restriction enzyme digestion with appropriate controls) to provide valid, reliable results
- isolating, purifying, verifying and manipulating biomolecules and their products using small volumes and multiple-step procedures
- interpreting and applying test methods consistently and accurately
- safely operating test equipment in accordance with workplace procedures and manufacturer specifications
- preventing and minimising DNA/RNA contamination
- identifying atypical results as out-of-normal range or an artefact
- tracing and sourcing obvious causes of artefacts
- communicating identified problems to a supervisor
- maintaining security, integrity, traceability and identity of samples, sub-samples and work records
- conducting work practices in an ethical and professional manner and in accordance with relevant legislation, regulation and codes of practice
- recording and reporting results in accordance with workplace procedures
- following workplace safety procedures.

## Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- common biotechnology terms
- molecular biology principles and concepts underpinning tests and procedures relevant to job role, including:
  - DNA and RNA structure and function
  - protein structure and function
  - the relationship between chemical and physical properties of nucleic acids and proteins and the techniques used for sampling, preparation and testing
  - replication
  - transcription, translation and gene regulation
  - relationship between structure, organisation and function of biomolecules to the storage of information in cells, chromatin, circular and linear chromosomes, RNA, genes and plasmids
  - molecular genetics (molecular nature, organisation and function of genes)
  - molecular mechanisms of DNA mutation and variation
  - DNA transfer in prokaryotes (transformation, conjugation and transduction)
  - restriction enzyme and ligase structure, nomenclature, function, specificity and stability, and cohesive versus blunt ends
- ethical issues associated with biotechnology, such as:
  - use of animals for research
  - genetic modification of organisms and food
  - use of gene therapy, cloning and stem cells
  - in vitro fertilisation
  - forensic testing of populations
  - importance of commercial confidentiality, protection of intellectual property (IP) and patents
  - genetic screening of humans
  - sex determination and parentage testing of embryos/humans
- importance and appropriate use of validation methods, controls and certified reference materials
- workplace and/or legal traceability requirements
- relevant hazards, work health and safety (WHS) and environment requirements.

## Assessment Conditions

- Judgment of competence must be based on holistic assessment of the evidence. Assessment methods must confirm consistency of performance over time, rather than a single assessment event.
- This unit of competency is to be assessed in the workplace or a simulated workplace environment. A simulated workplace environment must reflect realistic operational workplace conditions that cover all aspects of workplace performance, including the environment, task skills, task management skills, contingency management skills and job role environment skills.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept in each case).
- This unit of competency may be assessed with:
  - MSL974008 Capture and manage scientific images
  - MSL975001 Perform microbiological tests
  - MSL975008 Apply electrophoretic techniques
  - MSL975009 Apply routine chromatographic techniques
  - MSL975013 Perform tissue and cell culture techniques
  - MSL975020 Apply routine spectrometric techniques
- Holistic assessment methods include:
  - review of results obtained by the candidate over a period of time to ensure accuracy and consistency
  - review of test records and workplace documentation completed by the candidate
  - feedback from peers and supervisors about the candidate's ability to provide accurate and consistent results within required timelines
  - observation of candidate isolating, purifying, verifying and manipulating biomolecules
  - oral or written questioning covering workplace procedures and technical aspects of molecular biology tests and procedures performed as part of job role.
- Access is required to instruments, equipment, materials, workplace documentation, procedures and specifications associated with this unit, including, but not limited to:
  - a molecular biology laboratory equipped with appropriate test equipment, analytical instruments, standards and reagents
  - workplace procedures, standard methods, manuals and supplier documentation, test results and documentation.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competence and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience.
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR

- having consulted with a laboratory about performing the competency being assessed within the last twelve months.

## **Links**

MSA Training Package Implementation Guides - <http://mskills.org.au/training-packages/info/>