Australian Government

Assessment Requirements for MSL975013 Perform tissue and cell culture techniques

Release: 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

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Modification History

Release 1. Supersedes and is equivalent to MSL975013A Perform tissue and cell culture techniques

Performance Evidence

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

- safely preparing, maintaining and preserving cells and cell lines that are fit for purpose on at least three (3) different occasions
- performing pre-use checks
- preparing, diluting, sterilising and storing reagents and culture media that are fit for purpose
- choosing and justifying appropriate media and substrate material based on cost, cleaning, sterilising and maintenance of cell growth
- optimising equipment set-up, media and growth techniques
- preparing primary cultures
- passaging cell cultures by subculturing
- growing and harvesting cell lines and tissue to specifications without contaminating the original sample or the environment
- counting cells, identifying a wide range of cell types and contaminants and recognising normal and abnormal cells
- monitoring growth of cells, tissue and cell lines
- detecting and investigating contamination and taking preventative and corrective actions
- storing cells so that they remain viable
- preserving cell lines, including by freezing and cryopreservation (e.g. dry ice and liquid nitrogen)
- maintaining accurate, traceable records of cell lines and tissues and logs of procedures and work completed
- demonstrating chain of custody for all cells, cell lines and tissues
- working safely and satisfying all legal and regulatory requirements, including the use and care of safety cabinets.

Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- terminology, including cell lines, growth media, primary culture, passaging, passage number, subculture, anchorage dependent cells, suspension culture, monolayer, confluent, cell line, cell strain, contact inhibition, diploid and viability
- cell biology, including structure, physiology, function, physiological cell growth requirements, nutrient requirements, respiration, temperature and growth cycle
- purposes of cell lines
- normal and abnormal cell morphology
- critical components of the cell environment and their effects on cell growth, including pH, temperature, buffering, osmotic pressure, osmolarity, viscosity and foaming
- types of tissue used as source material, including embryonic, adult or malignant tissue
- techniques for characterising a cell line
- selection criteria for media, materials and equipment, including:
  - costs
  - ease of cleaning or sterilisation
  - maintenance of cell growth
- the differences between finite and continuous cell lines
- characteristics of cell culture media and substrates
- nature of substrates (e.g. solid, semi-solid, gel or sponge, glass, disposable plastics and three-dimensional matrices)
- techniques for pre-treating substrates (e.g. feeder layers, chemical treatments, such as poly D-lysine, collagen, gelatine and fibronectin)
- role of ingredients in media (e.g. salts, carbohydrates, amino acids, vitamins, hormones, growth factors, serum and antibiotics)
- contaminants, including endotoxins, bacteria, yeast, fungi and Mycoplasma
- typical requirements, problems and procedures associated with the production of specific cell lines
- 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:
  - MSL933001 Maintain the laboratory/field workplace fit for purpose
- Holistic assessment methods include:
  - review of records of cell lines and tissues produced by the candidate
  - feedback from peers and supervisors to confirm that workplace procedures are consistently followed and that results meet workplace requirements
  - observation of the candidate establishing and maintaining viable cell lines over time
  - oral and/or written questioning covering workplace procedures and technical aspects of preparing, maintaining and preserving cells and cell lines for applications relevant to job role.
- Access is required to instruments, equipment, materials, workplace documentation, procedures and specifications associated with this unit, including, but not limited to:
  - laboratory equipped with appropriate tissue culture equipment and facilities, test equipment, instruments, standards and reagents
  - workplace procedures and standard methods, test results and records.
- 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/