

NDMRB-RA-087

Risk Assessment: Tissue Culture of Mammalian cells

Scope

The main aim of risk assessment is to prevent injury, protect property and avoid harm to individuals and the environment. For animal cell culture the level of risk is dependent upon the cell line to be used and is based on whether the cell line is likely to cause harm to humans. GMO work needs a separate Risk Assessment to be carried out. All GOM work must be risk assessed BEFORE any work commences

Containment is the most obvious means of reducing risk. Other less obvious measures include restricting the movement of staff and equipment into and out of laboratories. Good laboratory practice and good bench techniques such as ensuring work areas are uncluttered, reagents are correctly labelled and stored, are also important for reducing risk and making the laboratory a safe environment in which to work. The risk of exposure to aerosols or splashes can be limited by avoiding rapid pipetting, scraping and pouring. In addition, it is recommended that people working in laboratories where primary human material is used are vaccinated against Hepatitis B. Staff training and the use of written standard operating procedures and risk assessments will also reduce the potential for harm. Biological safety courses are offered by the University and it is recommended that anyone intending to work with biological material should attend these courses when available. The University safety pages include a biorisk management section and this should be consulted by anyone wishing to work with biological material.

Name of assessor:	Andrea Keepence-Keyte	Date of Assessment:	June 2014	Review Date:	Every 3 years
--------------------------	-----------------------	----------------------------	-----------	---------------------	---------------

Risk Matrix:

Risk Matrix		Likelihood			
		High	Medium	Low	Negligible
Consequence	Severe	High	High	Medium	Effectively Zero
	Moderate	High	Medium	Medium/low	Effectively Zero
	Insignificant	Medium/Low	Low	Low	Effectively Zero
	Negligible	Effectively Zero	Effectively Zero	Effectively Zero	Effectively Zero

Risk Assessment:

Hazard (Cause and consequence)	Affected Groups	Existing controls	Risk	Further Action
Antibiotic Exposure : antibiotics are used in the everyday culture (penicillin, streptomycin) and selective culture (G418, chloramphenicol, puromycin, doxycyclin, etc) of primary, secondary or immortalised, and genetically modified cell lines. They are added to the culture medium on a regular basis.	Staff and Students	Gloves, safety glasses, lab coat, use of pre-manufactured liquid stocks, biosafety cabinet, training/supervision	Low	Check that all staff who will be using antibiotics are not allergic before any work commences
Aspiration Using Plastic Pipette : use of vacuum line, traps and tubing with sterile glass Pasteur pipette to remove excess liquid or liquid waste from sterile flasks/wells. Sharp injury on hands/face if the plastic pipette breaks. Contact with, or exposure to biological factors.	Staff and Students	Training, gloves, lab coat, safety glasses, No needles to be used with vacuum system. Use of biosafety cabinet	Low	None
Cytotoxic / Chemotherapeutic Drug Exposure : treatment of cell lines with antineoplastic drugs such as tamoxifen, taxol, commonly used in chemotherapy; or drugs that arrest cells on various phases of the cell cycle, like nocodazole and etoposide; or	Staff and Students	Gloves, safety glasses, lab coat, biosafety cabinet, Use of pre-diluted working solutions and pre-manufactured liquid stocks. Training/supervision	Medium	None

drugs that inhibit key proteins of the cell cycle like: ICRF, HDAC inhibitors (SBHA, ABHA, Na Bu, Trichostatin); or drugs that activate progression through cell cycle like caffeine. Ingestion could result in death; chronic exposure can cause leukaemia, organ toxicity.				
Freezing of Cells : Cells when stored are initially kept at -80°C for overnight then placed in liquid nitrogen for short or long term storage.	Staff and Students	Use of thermal gloves, lab coat, safety glasses for handling around -80°C freezer and liquid nitrogen, supervision/training.	Low	None
Use of Genetically Modified Cell Lines : cell lines are genetically modified using plasmid based systems.	Staff and Students	Lab coat, gloves, safety glasses, biological safety cabinet, use of ethanol disinfectant	Low	GMO work needs a separate Risk Assessment to be carried out. All GOM work must be risk assessed BEFORE any work commences

Signed By Author:

Approved by (sign and print):

Reviewed by:

Review date: