Flinders UNIVERSITY

Task/Protocol/Process/Project Risk Assessment

Risk Assessment No	xxxxxx (insert your number here)
Document References	xxxxxx (insert details if applicable)

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Before commencing, please see the reference page (page 3) for a description of the risk assessment process and the risk assessment matrix.

Area	College of xxxx			**Location (room #)**	(insert relevant room or lab number here)		
Title / Description	Working with virus xxxx						
Assessed by Name(s)	xxxxxx	**Assessed by Position(s)**	xxxxxx	**Assessment Date**		**Review Date** (5 years or earlier if circumstances / information change)	

ADDITIONAL INFORMATION:

1. Does this project require any of the following documentation? If STATUS is 'Yes' please provide approval/permit reference details/number and date for each document.

		STATUS	Approval/permit reference details/number	Date
☑	IBC/OGTR approval	Approval pending		
☑	Animal ethics approval	Approval pending		
☐	Human ethics approval	-Select-		
☑	Import/Quarantine permit	Not submitted	May be required to import some strains of mice at later date	
☐	Material Transfer Agreement (MTA)	-Select-		
☐	Other permits/certifications/licences	Details:		
☐	Other mandatory documentation	Details:		

2. Have Safe Work Procedures been developed for this project/task/protocol? Yes ☒ No ☐ If YES, please enter **document reference** details at the top of the page.

Review the risk measured, and the controls, then please select one of the following:

A The assessment reveals that the potential risk to health and safety from the use of the plant/equipment/procedure is not currently significant. ☐

B The assessment reveals that the potential risk to health and safety from the use of the plant/equipment/procedure is significant. However controls are in place that reduce risk as low as is reasonably practicable. ☒

Identified Hazards					Risk Assessment		Risk Rating	Required Controls (consider control hierarchy)	Residual risk			Implementation
	No.	Hazard Type	Hazard Description prompts	Comment/Specific Details	Consequence	Likelihood	(see matrix)		Consequence	Likelihood	Risk Measure (see matrix)	Date Controls Implemented
[+][-][↑][↓]	1	Physical	Electrical exposure	Electric shock from biosafety cabinet, incubator or -80 freezer	Fatality	Unlikely	High	Equipment serviced by Biomedical Engineering. Electrical safety testing by Testel system performed. SOPs for each piece of equipment in facility WHS folder.	Fatality	Highly Unlikely	Medium	
[+][-][↑][↓]	2	Physical	Thermal-hot/cold burns-water,surfaces,fragments	Heat burns from items that have recently been autoclaved. Cold burns from -80 freezer.	Minor Injury	Possible	Medium	Wear heat protective gloves when handling items being removed from autoclave. Wear cold protective gloves when handling items in -80 freezer.	Negligible	Highly Unlikely	Low	
[+][-][↑][↓]	3	Physical	Slipping/tripping/falling due to surfaces	Slipping on floor when entering/exiting constant temperature rooms including cold storage.	Minor Injury	Possible	Medium	Suitable closed shoes to be worn. Notify another person of intention to enter constant temperature room.	Minor Injury	Highly Unlikely	Medium	
[+][-][↑][↓]	4	Physical	Maintenance or housekeeping issues	Cross contamination of equipment with virus or other harmful contaminants	Major Injury	Possible	High	Only authorised researchers are permitted to handle virus. All surfaces decontaminated with xxxx disinfectant at end of each work session or following spill. Equipment fully decontaminated prior to servicing or before removal from facility.	Minor Injury	Highly Unlikely	Medium	
[+][-][↑][↓]	5	Environment	Working alone	Personnel trip, slip, fall or are injured by equipment in their working environment	Minor Injury	Unlikely	Medium	When working alone in laboratory, or outside of business hours, notify another person of location and expected return time.	Minor Injury	Highly Unlikely	Medium	
[+][-][↑][↓]	6	Chemical	Hazardous substance-toxic/poison	Spill of xxxx disinfectant while diluting	First Aid	Unlikely	Low	Personnel to wear gloves, gown and safety glasses during preparation of disinfectant.	Negligible	Highly Unlikely	Low	
[+][-][↑][↓]	7	Radiation	UltraViolet-non-ionising radiation	Exposure to UV lamp in biosafety cabinet	First Aid	Highly Unlikely	Low	Personnel trained in use of biosafety cabinet. Shield in place during UV light operation.	Negligible	Highly Unlikely	Low	
[+][-][↑][↓]	8	Biological	Unintentional release / spillage of GMOs or hazardous microorganisms	Tubes of virus misplaced during transport between storage location to PC facility, or between PC facilities.	Major Injury	Possible	High	Personnel trained in transport requirements for virus. Please see transport instruction below (No. xxx). In the event that a tube is misplaced, inform Chief Investigator and IBC. Retrace steps to recover tube(s).	Major Injury	Highly Unlikely	Medium	

+ - ↑ ↓	**9**	Biological	Unintentional release / spillage of GMOs or hazardous microorganisms	Unintentional release of animals infected with virus x can cause injury to personnel or bystanders, the animals themselves or the release of virus into the environment or wild mouse populations.	Major Injury	Unlikely	Medium	The PC facility in which animals are contained is highly secure (e.g. door remains closed and animal barrier present). Animals will not be removed from the PC facility once introduced. In an unintentional release occurs, catch animals if possible. If animals escape PC facility, notify all personnel working in area, contact the Chief Investigator, IBC and security. Seal off the area and place mouse traps.	Major Injury	Highly Unlikely	Medium	
+ - ↑ ↓	**10**	Biological	Unintentional release / spillage of GMOs or hazardous microorganisms	Spill of virus x outside of biosafety cabinet	Major Injury	Possible	High	Only small volumes (< 50 mL) of culture in any one vessel to reduce maximum spill size. If spill occurs, evacuate area and allow aerosols to settle (at least 30 mins). Ensure that staff involved in spill clean-up are wearing appropriate PPE (gown, gloves, safety glasses, P2 mask). Treat the spill by covering with paper towel sufficient to cover the entire liquid volume, then apply xxxx disinfectant. Allow at least 30 minutes before wiping up with clean paper towel. Discard all contaminated materials in yellow biohazard bag for disposal via biohazard waste stream. Contaminated PPE and clothing will be removed and either be disposed of or disinfected prior to laundering.	Major Injury	Highly Unlikely	Medium	

	11	Biological	Transport of GMOs or hazardous microorganisms	Transport of viral aliqouts outside of PC facilities can lead to loss or theft of samples.	Major Injury	Unlikely	Medium	Only a small volume of virus is aliquoted, and each tube is labelled with an identifier. Tubes are sealed and then contained within a sealable, unbreakable box labelled with name and emergency contact number of researcher, virus information, biohazard label and 'GMO' designator (if applicable). The number of samples are counted and recorded before and after transport. Samples are not left unattended during transport.	-Select-	-Select-	
	12	Biological	Transport of GMOs or hazardous microorganisms	Transport of animals infected with virus x can lead to escape, loss or theft of infected animal.	Major Injury	Possible	High	All animals are contained within clipped IVCs during transport between facilities. The IVCs are then placed inside of the enclosed, lockable PC2 trolley for transport. Numbers of animals are recorded before and after transport. The PC2 trolley is labelled with emergency contact details, a biohazard symbol and the designator 'GMO' (where applicable). IVCs and the trolley will not be opened outside of a physical containment facility.	Major Injury	Highly Unlikely	Medium
	13	Biological	Disposal of GMOs or hazardous microorganisms	Improper decontamination or disposal of virus or animal carcasses leads to personnel exposure to virus or other contaminants present in biological material.	Major Injury	Possible	High	Liquid waste will be treated with xxxx disinfectant for a minimum of xxxx hours or autoclaved prior to disposal via sink drain. Solid waste will be disposed of via the biohazard waste stream for offsite incineration. Infected animal carcasses will be autoclaved prior to disposal via the biohazard waste stream for offsite incineration.	Negligible	Highly Unlikely	Low

+ - ↑ ↓	**14**	Biological	Storage of GMOs or hazardous microorganisms	Stored viral stocks are improperly labeled or stored, leading to personnel exposure.	Major Injury	Unlikely	Medium	Viral stocks will be stored in screw-capped cryotubes which will be labelled with individual identifiers adn placed into a box labelled with a biohazard symbol, the designator 'GMO' (where applicable) and contact persons name and emergency contact details. All boxes will be stored in a locked -80 freezer, and locks will be double checked before leaving the facility. Emergency contact details and a biohazard symbol will also be displayed on the outside of the freezer. An up-to-date electronic record of stored materials will be maintained on the facilities share-drive, and storage records will include the IBC reference number for the dealing.	-Select-	-Select-		
+ - ↑ ↓	**15**	Biological	Insect/animal bites or stings	Mishandling animals leads to bites or scratches and potential transmission of virus x	Major Injury	Unlikely	Medium	Gloves are worn at all times when handling animals. Animals will only be handled in a biosafety cabinet during viral injection. All personnel handling mice have been trained to competency by the Animal Welfare Officer.	Major Injury	Highly Unlikely	Medium	
+ - ↑ ↓	**16**	Biological	Handling GMOs or hazardous microorganisms or infectious material	Sharps used for injecting or dissecting animals injure operators and transmit virus x or other harmful contaminants.	Major Injury	Unlikely	Medium	All personnel working on the project have received sharps training. Needles are never re-capped or bent. Needles and scalpel blades are disposed of in a sharps container. If multiple people are working in close proximity, sharps are never exchanged and spatial awareness is maintained.	Major Injury	Highly Unlikely	Medium	

	17	Biological	Exposure to pathogenic microorganisms (e.g. bacteria, viruses, mould)	Virus x is shed in animal bedding or waste, and is transferred to personnel during handling/cage cleaning.	Major Injury	Possible	High	Bedding or cage waste is never removed from cages outside of a biosafety cabinet. All waste and cage materials are kept inside IVCs upon removal of animals. The IVC is then placed in an autoclavable biohazard bag and autoclaved prior to further cage washing. Autoclaved waste is disposed of via the biohazard waste stream.	-Select-	-Select-		
	18	Biological	Exposure to pathogenic microorganisms (e.g. bacteria, viruses, mould)	Contact with contaminated objects or infected animals causes transmission of virus x	Major Injury	Unlikely	Medium	Personnel are trained in disinfection techniques and animal handling. Biosafety cabinet is disinfected with xxxx and UV is used before leaving the facility or before subsequent use. Personnel will always wear gloves, gown, safety glasses and face mask when handling animals and animals will only be handled in the biosafety cabinet. Personnel will always wash their hands with hand soap or sanitiser when work is complete.	Major Injury	Highly Unlikely	Medium	
	19	Biological	Generation of aerosols	Use of bench top vortex, centrifuge or shaking incubator causes generation of aerosols.	Major Injury	Likely	High	Tubes and culture plates must remain sealed when outside of the biosafety cabinet. Opening of tubes or culture plates will only occur within a biosafety cabinet following shaking, vortexing or centrifuging. For centrifuging and vortexing, screw-capped tubes will be used at all times. Only centrifuges that posess a rotor lid will be used for centrifuging virus. After centrifugation, the rotor will be disinfected with xxxx.	-Select-	-Select-		

	20	Biological	Generation of aerosols	Pipetting	Major Injury	Likely	High	Pipettes will be 'drained' with the tip against the inner wall of the vessel to reduce splashing and aerosols. Pipette contents will not be forcibly expelled. Disposable pipette tips will be carefully ejected into a dispensing container containing disinfectant-wetted paper towel at the bottom of the vessel to reduce splash-back and release of aerosols. Mouth-pipetting will not be used under any circumstances.	Major Injury	Highly Unlikely	Medium	

To be completed by Supervisor

Review of control measures

I am satisfied that appropriate controls are in place and the risk level is as low as reasonably practicable - Yes [X] *No [ ] (*if no, you must do another Risk Assessment.)

Supervisor signature: Date:

*If you do not have an electronic signature the form will go through creating one when clicked, or alternatively print and sign the form. The form **locks** once signed.*

Purpose of this RA:

to bring together the assessment of all risks associated with the conduct of a protocol or process that uses plant, &/or hazardous chemicals &/or requires ethics, OGTR approval or other permits, and to identify the controls required to minimise those risks:

- Consider the use of any **hazardous chemicals** and **plant/equipment** in the procedures and the **environment** and **manner** in which it is conducted.
- Cross reference all relevant Hazardous Chemicals or Plant Risk Assessments, and include approval/permit references where applicable.

HOW TO ASSESS THE RISK

Step A - Consider the consequences		**Step B - Consider the likelihood**	
For each hazard, consider the consequences if something happens. Consider what could reasonably have happened, as well as what actually happened (if there was an accident/ incident). Look at the descriptions below and choose the most suitable consequence		How likely is it that something will happen as a result of the hazard? Look at the descriptions below and choose the most suitable Likelihood	
Consequence	**Description**	**Likelihood**	**Description**
Fatality	May cause death and/or severe irreversible disability, and/or permanent ill health	Very likely	Expected to occur in most circumstances
Major	Severe injury or illness	Likely	Will probably occur in most circumstances
Minor	Minor (usually reversible) injury or illness resulting in days off work	Possible	Might occur occasionally
First Aid	First aid level medical treatment	Unlikely	Could happen at some time
Negligible	No treatment required	Highly unlikely	May happen only in exceptional circumstances

Step C – Calculate the Risk Level

1. Take the Step A rating and select the correct line
2. Take the Step B rating and select the correct column
3. Circle the risk level where the two ratings cross in the matrix below

Risk level =

Risk Matrix

Consequence	**Likelihood**				
	Very likely	**Likely**	**Possible**	**Unlikely**	**Highly unlikely**
Fatality	Extreme	High	High	High	Medium
Major injury	High	High	High	Medium	Medium
Minor injury	High	Medium	Medium	Medium	Medium
First aid	Medium	Medium	Medium	Low	Low
Negligible	Medium	Medium	Low	Low	Low

Prioritising Hazards			
Risk Level	**Priority**	**Action**	**Timeframe for implementation of corrective action**
Extreme	**1**	The activity should cease immediately and short term safety controls implemented. Notify manager and assess activity.	Immediate
High	**2**	Implement short term safety measures immediately. Notify manager and assess activity.	Within 24 hours
Medium	**3**	Implement short term safety controls. Notify manager and assess activity.	Within 14 days
Low	**4**	Implement long term safety controls. Notify manager and assess activity.	Within 28 days (if possible) or demonstrate that it is not reasonably practicable to achieve further minimization of the risk

Control Hierarchy	
Elimination	*Remove hazard*
Substitution	*Use a less hazardous alternative*
Isolation	*Eg Restrict access, use in a closed container, fume cabinet*
Engineering	*Eg Trolleys to move loads, guards on machinery, Fume cupboard*
Administration	*Eg: Training, Safe Work Method Statement, signage*
PPE - Personal Protective Equipment	*Eg: Gloves, respirator, safety glasses*

See WHS Risk Management Policy for further details