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Chapter 1: Introduction:

1.1 Purpose

The Lowy Cancer Research Centre Animal Facility is shared by the UNSW Biological Resources (BRC), Biological Resources Imaging Laboratory (BRIL) and the Children’s Cancer Institute Australia (CCIA).

The use of animals is governed by the NSW Animal Research Act 1985 and the Australian code of practice for the care and use of animals for scientific purposes, 7th Edition 2004. Any use of animals for research or teaching purposes must be approved by the University of New South Wales Animal Care & Ethics Committee (ACEC).

All research activities carried out in the facility must abide by UNSW WHS, UNSW Research Code of Conduct, ACEC, and UNSW IBC policies as well as the Australian code for the responsible conduct of research. In addition, all work involving GMO and transgenic animals must follow the requirements of Gene Technology legislation and Australian Standard AS/NZS 2243:3.

BRC runs several facilities within the Kensington upper campus. The SPF (Specific Pathogen Free) status varies between facilities depending on the species housed and type research carried out within each facility. It should be noted that the disease management of different facilities for UNSW is run in a coordinated fashion to facilitate research between facilities.

The Lowy Animal facility is maintained as an SPF facility, designed to house small rodents (mice and rats) in individually ventilated cages (IVC). The facility is certified PC2 (Physical Containment level 2) by the OGTR (Office of the Gene Technology Regulator). Small animal imaging instruments are managed by BRIL, a unit of the Mark Wainwright Analytical Centre.

The purpose of this manual is to define common policies and operational standards within the facility. This is guided by the facility’s overall Disease Management Strategy and safe work practices in addition to the research requirements.

As each organisation operates under different WHS management systems, they shall keep separate documentation such as Induction records, Safe Work Procedures (SWP) and Risk Assessments (RA) in compliance with the agreed policies and operational standards described in this manual. All Health and Safety documentation is kept in the write up area and shall be made available to all work units within the facility.

1.2 Animal Research Ethics:

(source: http://research.unsw.edu.au/animal-research-ethics)

The NSW Animal Research Act (1985) requires that all research (funded or unfunded) and teaching that uses animals - whether alive or dead - must receive prior written approval from the UNSW Animal Care and Ethics Committee (ACEC).

Commencing a project without prior written approval may be subject to criminal prosecution. To ensure compliance, it is UNSW policy to allow access to research funds only when ACEC has granted approval for the funded project. As of January 2008 all applications are to be completed online through Animal Ethics Online and further information is available on this website or from the Ethics Secretariat (9385-4234) ethics.gmo@unsw.edu.au. As no UNSW teaching hospital has its own ACEC this service is currently provided by the UNSW ACEC.
The University of New South Wales has appointed a Director of Animal Care, whose role is to facilitate training and ensure all UNSW animal research activities comply with the *Australian Code of Practice for the Care and Use of Animals for Scientific Purpose*. This includes:

- Veterinary support
- Surgical and other animal based research procedures support
- Post-mortem examinations and assistance with preparation of Adverse/Unexpected Events report
- Assistance with the submission of Animal Ethics application
- Animal handling training through the Animal Ethics and Care course
- Animal-based procedures training

All adverse events must be reported to the Director of Animal Care and the Ethics Secretariat ethics.gmo@unsw.edu.au. (see appendix 11- Facility contacts)

1.3 Organisation and Management structure:

In order to address the challenges of a multi-stakeholder environment, UNSW and CCIA have agreed to have a single governance structure for the facility. (see appendix 1: Organisational structure)

The overall management of the facility is overseen by the Executive Committee. The committee is composed of:

- CCIA and UNSW Senior Chief investigators and/or Animal Care and Ethics Committee members
- CCIA and UNSW executive management
- Director of Animal Care
- Representative from the Analytical Centre

The committee will review the facility’s activity and advise on future animal research directions and needs for the Faculty of Medicine and CCIA. It will drive the implementation of new policies, and ensure the highest standards in animal based research are met within the facility. It is responsible for signing off on updates to the Animal Facility Operations manual. The committee has the final say on issues that cannot be resolved at operations meeting level.

The Animal Facility Manager reports to the executive committee. The Animal Facility Manger is responsible for:

- Health and Safety and Ethics compliance in the facility.
- Facility wide disease management program
- Operations manual updates.
- Chairing the Animal Facility Operations meeting.

The Lowy Basement facility activities are divided into Support and Operations, Animal Care and Research, and Scientific Services. The support and operations activities are jointly managed by CCIA and UNSW. The Support and Operations supervisors from each organisation are responsible for:

- Disease management coordination
- Cage wash and cage preparation
- Facility cleaning
- Supplies management
- Waste management
- Procedure room maintenance
The Animal Care and Research activities are managed separately by each organisation. The area manager is responsible for animal husbandry, the management of animal holding rooms and providing support to the researchers in the facility. They are responsible for facility inductions and coordination of training.

Scientific Services provide specialised infrastructure and expertise to researchers. The facility currently houses the Biological Resources Imaging laboratory, which provides state of the art *in-vivo* imaging for small research animals. Two intravital microscopes are housed in the facility. These are co-managed by BRIL and the Biomedical Imaging Facility (BMIF), with BMIF providing advanced support for microscopy techniques.

1.4 Communication and meeting structure:

The executive committee meets bi-annually. Extraordinary committee meetings may be held in case of major issues or changes in the regulation.

Operational issues are addressed fortnightly in the Animal Facility Operations meetings. The meetings are chaired by the Animal Facility Manager. Representatives from all work units in the facility shall attend the meetings. This may also include researchers or Health and Safety team representatives when necessary.

UNSW and CCIA animal care and research teams hold regular joint meetings with researchers to discuss activities and changes in the facility.

Joint animal care staff meetings are held to coordinate staff training and inductions.

Internal communication is handled by each area manager via email.

Any activity or change in activity impacting the whole facility should be discussed at the Animal Facility Operations meeting. Decisions must be signed off and documented in the meeting minutes. Prior to implementing any process that impacts users within the whole facility, appropriate consultation must be carried out with staff through the animal facility users group or the appropriate WHS Committee.

Animal Care managers may hold meetings with researchers to discuss the specifics of a particular project.

The facility is used by a large number of staff, all operating under different management. Each animal facility area manager shall keep a list of authorised staff, their contact details and their supervisor’s contact details.

Between meetings, it is critical that information reaches relevant stakeholders in a timely manner.

All area managers shall be copied in all joint operational related communications. Other staff members shall be copied in the communication as required.

Each area manager is responsible for disseminating relevant information to their users.

Research staff shall direct their queries to their respective area manager.

Equipment and building faults-related communication is addressed in Chapter 4 section 4.11.
Chapter 2: Access Policy

2.1: Introduction:

The Lowy Cancer Research Centre Animal Facility operates under PC2 (Physical Containment Level 2) regulation and is certified by the OGTR (Office of the Gene Technology Regulator). (see appendix 2: Lowy Basement Floor plan) Access into the facility is restricted to authorised staff only, via swipe card. 

Swipe card access is granted to staff/users only after

1. he/she has completed a facility induction given by an approved facility staff member
2. and relevant training courses have been completed and signed off by the relevant trainer.

To work unsupervised within the facility, staff shall be inducted by their relevant area manager or senior animal technician. (i.e. CCIA manager if housing animals in CCIA holding rooms, UNSW manager if housing animals in UNSW holding room).

Induction for Research Staff and Animal Care staff must be done separately as Animal Care staff require wider access to the facility, such as, clean prep, dirty prep and store area. Research Staff are not authorised in these areas.

The level of access granted to a given staff member will depend on their role and responsibilities within the facility.

CCIA and UNSW induction procedures have been standardised to ensure all facility users comply with the overall standards. (see induction check list in Appendix 3)

Managers and Senior Animal technicians have the highest level of access, this includes safe store room (B11A) and drug safe. S8 drugs used in the facility are managed according to UNSW guidelines.

Access to the imaging rooms (B07 & B07A, B08 & B08A, B09, B17 & B17A and B29) is restricted to approved facility staff and researchers. Swipe card access to these rooms is permitted if researchers require the use of BRIL instruments housed in these areas. Training on the specific instruments and an induction to the respective room(s) by BRIL staff is a prerequisite. Once training has been completed and the researcher is deemed competent, they will be granted access to the equipment booking system and relevant imaging suites.

Access may be restricted subsequently for an individual or group in the event of a change in role or at the discretion of the Animal Facility Manager if their activities are found to put at risk facility staff or researchers, animals, the animal facility or UNSW.

2.2 Induction and training:

All animal facility users must be inducted by their area Manager or a senior animal technician before they are granted access into the Lowy facility.

All users are required to attend a series of OHS training and Animal Ethics courses before they can be inducted and granted access and can start work in the facility.

Research staff access is restricted to common areas, animal holding rooms and procedure rooms.

The minimal requirements for site induction program include:

- Tour of the facility and relevant work areas and exclusion zones.
- Demonstration of entry and exit procedures (decontamination procedures, PPE,
- Storage locations of research supplies
- Computer and printer access
The table below summarises training and site induction procedure for UNSW and CCIA staff:

<table>
<thead>
<tr>
<th>Animal care staff</th>
<th>Research Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UNSW</strong></td>
<td><strong>CCIA</strong></td>
</tr>
<tr>
<td>Pre-requisite courses</td>
<td>Via myUNSW: OHS awareness PC2 training Animal Care and Ethics Gene tech OGTR</td>
</tr>
<tr>
<td>Site induction</td>
<td>See appendix 7</td>
</tr>
<tr>
<td>Restricted areas</td>
<td>CCIA animal holding rooms Imaging suites</td>
</tr>
<tr>
<td>Trainer</td>
<td>Area manager or Senior Animal technician</td>
</tr>
</tbody>
</table>

A copy of this manual and all relevant appendices is available in the facility for all staff.

2.3 Animal based work:

Animal based work can only be carried out by those appropriately trained in the necessary procedures.
Animal work procedures must be documented and a trainer must be nominated.
Trainers must be experienced in the technique. Competent research staff or animal care staff can be nominated as trainers. Trainers must be approved by the Ethics committee.
New staff, or staff learning new techniques must be supervised by the nominated trainer until they are deemed competent.
Training for each staff member is documented in a training register maintained by the Area Manager.
Breach of Australian Code of Practice or Animal Ethics requirements or behaviour likely to impact negatively on animal welfare shall be reported immediately to the Director of Animal care.

2.4 BRIL users

- All new users of the imaging facility are required to have completed a facility induction with their area manager.
- UNSW BRIL staff will provide thorough training and accreditation to users of the imaging instruments.
- Training and accreditation is required for each instrument individually.
- Instruments must only be used in an approved manner and for approved purposes.
- Users are not permitted to train other users
- An SWP or SWPs will be provided for each instrument.

2.5 Visitors and contractors

Visitors and contractors must be accompanied and supervised at all times while present in the facility.

Contractors or UNSW Facility Management personnel requiring frequent access to the facility may be given a site induction to allow them to work independently in the facility. This will be done at the discretion of the area managers.

Any works carried out in the facility must be arranged in advance. Required service equipment and materials must be decontaminated as appropriate prior to bringing them into the facility.

Researchers shall not take visitors into the facility without prior approval and induction by the relevant area manager or senior animal technician.

Anyone under the age of 18 is not allowed in the facility.
Chapter 3: Disease Management Strategy:

3.1 Methodology:

UNSW Biological Resources has adopted the Recommendations of the Federation of European Laboratory Animal Science Associations (FELASA) for the health monitoring of rodent and rabbit colonies in breeding and experimental units (June 2001). Animals will not be accepted from suppliers that do not meet the minimum standards according to these recommendations.

UNSW compiled a list summarising the health monitoring programs conducted by all mouse and rat suppliers used by BRC and CCIA. The document lists pathogens relevant to laboratory mice and rats, and details the information provided by the suppliers regarding the pathogens tested for, testing method, frequency etc. The list was then submitted to independent veterinarians and veterinary pathologists specialising in the management of laboratory animal facilities for feedback on the following criteria:

- Likelihood (prevalence of the pathogen in Australia)
- Consequences of an outbreak (insignificant/minor/moderate/severe)
- Is testing for this pathogen recommended for experimental colonies (Y/N)
- Is testing for this pathogen recommended for immunodeficient mice (Y/N)
- Persistence of pathogen in the environment outside of host (short/medium/long)
- Route of transmission
- Infectiousness (low/medium/high)
- Comments

A summary of the data is attached in appendix # 4

The information contained in this document is used as the foundation for the development of a strong disease management strategy in the Lowy Animal Facility, based on scientific evidence and expert advice.

The Lowy Animal facility disease management strategy includes consideration of the following:

- A list of rodent pathogens that are to be excluded from the facility under all circumstances
- A list of rodent pathogens classified as “acceptable risk”, for which entry into the facility is decided on a case by case basis
- Health status of animal holding rooms
- Requirements for immune competent animals vs. immune compromised animals
- Requirements for mice vs rats
- IVC vs conventional caging
- Work flows for staff, animals, equipment and consumables
- Health monitoring programs (sentinel programs where applicable).
- Inter facility movement (exclusion periods)

Updates on health status of the facility will be given at the operations meeting.

Based on this information, workflows in the facility are designed to facilitate research activities while maintaining the highest standard of animal welfare and compliance with regulatory requirements.
3.2 Animal Pathogens Exclusion list

After consultation and review of the pathogens list described above, the Animal Facility Executive Committee decided on a list of pathogens which should be excluded from the facility under all circumstances. The decision to add pathogens to the exclusion list is made based on the severity of consequences of an outbreak of the pathogen to animal welfare and research activity (see Appendix 4: Exclusion list). This exclusion list does not necessarily reflect whether a pathogen should be included in the health monitoring program, since for example Hantan virus is not present in Australia, hence there is no need to monitor for this pathogen as long as the facility does not import animals directly from overseas. The Executive Committee expects that suppliers will continue to monitor for all pathogens on the exclusion list.

3.3 Acceptable risk (case by case):

After consultation and review of the pathogens list described in section 3.1, the Animal Facility Management Committee classified some pathogens with less severe consequences to animal welfare and research activity as “acceptable risk”, meaning the risk the organism poses is manageable with the procedures in place (or in some cases, with additional procedures imposed). Management may decide on a case by case basis to accept animals carrying these pathogens where no other alternative is available. In this situation, a thorough risk assessment (detailing any additional procedures or workflows that might limit the risk) must be carried out, and protocols must be in place to contain the risk of infection to other animals.

For a risk assessment, each organism is rated according to the severity of complications an outbreak would cause (consequence of an outbreak) and the transmissibility of the organism as well as the capacity of the facility to contain the spread of the pathogen (indicating the likelihood of a spread of the pathogen within the facility).

Consequences of an outbreak:
5. Severe: Zoonotic and human pathogens carried by animals (i.e. pathogen poses a risk to the health of staff)
4. Major: Pathogens fatal to rodents
3. Moderate: Pathogens not fatal but can cause disease in rodents and affect their physiological functions
2. Minor: Opportunistic pathogens for rodents
1. Insignificant: organism causes no harm and does not interfere with research, but is an indicator of the microbiologic status of an animal or colony (e.g. commensal organisms)

Spread of infection of the pathogen within the facility:
A. Almost certain: expected to occur in most circumstances
B. Likely: will probably occur in most circumstances
C. Possible: could occur at some time
D. Unlikely: is not likely to occur in normal circumstances
E. Rare: may occur only in exceptional circumstances

Using these assigned categories with the matrix below, an overall risk rating can be derived for each organism. This overall risk rating is to be used to assess organisms on the “acceptable risk list” for permission to enter the facility on a case by case basis.
Table 1. Risk rating matrix

<table>
<thead>
<tr>
<th>CONSEQUENCE (Severity)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>M</td>
<td>H</td>
<td>H</td>
<td>VH</td>
<td>VH</td>
</tr>
<tr>
<td>B</td>
<td>M</td>
<td>M</td>
<td>H</td>
<td>H</td>
<td>VH</td>
</tr>
<tr>
<td>C</td>
<td>L</td>
<td>M</td>
<td>H</td>
<td>H</td>
<td>VH</td>
</tr>
<tr>
<td>D</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>M</td>
<td>H</td>
</tr>
<tr>
<td>E</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
</tbody>
</table>

Overall risk rating:
L: Low
M: Medium
H: High
VH: Very High

As example, a risk assessment for rats suspected to carry *Staphylococcus aureus* is given in Appendix 5.

3.4 Animal holding room health status:

As a result of section 3.3, animal holding rooms within the facility may have different health status. Workflows within the facility will assessed when required to maintain the highest standards of animal welfare within our SPF facility and prevent disease outbreaks. These workflows are described below, in section 3.7. Any change or variation from the accepted SPF status should be posted on each holding room door, as a way of informing all users and ensuring full transparency and compliance.

3.5 Risks associated with breaking the barrier (working outside of a hood/ change station):

The barrier is broken when animals are taken out of their IVC and handled outside a Class II cabinet. This can occur during imaging experiments, or when surgeries are done on the bench. In these instances, animals may be exposed to airborne pathogens, or pathogens carried by other animals which have been in contact with the same work surface (i.e. imaging instruments, work bench). To prevent such exposure, strict protocols are in place. Staff must wear appropriate PPE, and work surface must be decontaminated appropriately prior and post imaging or surgery.

3.6 Health monitoring:

Monitoring requirements will vary dramatically depending on the duration the animals will be housed in the facility. More rigorous health monitoring is required for breeding colonies and long-term studies of more than six months than for short-term studies in which animals are held for less than six months. It should be noted that good bio-security (e.g. workflows and procedures with regards to hygiene, decontamination, cleaning, pest control) is paramount in the prevention of disease outbreaks and is as important as health monitoring in maintaining a specific pathogen-free facility.
Table 1 Different categories for health monitoring.

<table>
<thead>
<tr>
<th></th>
<th>Immuno-competent animals</th>
<th>Immuno-compromised animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breeding</td>
<td>Retired breeders or excess animals may be used where appropriate. Dedicated dirty bedding and/or exhaust air sentinel animals may also be used. Sampling will be conducted at least quarterly.</td>
<td></td>
</tr>
<tr>
<td>Long-term</td>
<td>Excess animals (details to be formalised with Chief Investigator (CI) and Animal Facility (AF) management) may be used where appropriate. Dedicated dirty bedding and/or exhaust air sentinel animals may also be used. Sampling will be conducted at least quarterly.</td>
<td></td>
</tr>
<tr>
<td>Short-term</td>
<td>No sentinel program. Rely on suppliers’ health reports, bio-security and results of monitoring breeding/long-term studies instead. Basic in house monitoring for external parasites (i.e. fleas, mites) and internal parasites such as pinworm. Random sampling of vendor animals will be carried out as needed. Dedicated dirty bedding and/or exhaust air sentinel animals may also be used when necessary and appropriate.</td>
<td></td>
</tr>
</tbody>
</table>

3.6.1 Breeding colonies
Representative animals from each breeding colony may be used as part of the regular health monitoring, e.g. old breeders passed the breeding age or any excess animals not required for experimental purposes where appropriate. Dedicated immunocompetent dirty bedding and/or exhaust air sentinels will be used when necessary and appropriate. Sampling will be conducted at least quarterly.

3.6.2 Long-term studies plus/minus imaging
Representative animals from each long-term study may be used as part of the regular health monitoring. Prior to commencing the study, researchers and facility management are to ensure that a sufficient number of extra animals will be available for health monitoring if needed. Dedicated dirty bedding and/or exhaust air sentinels will be used when necessary and appropriate. Sampling will be conducted at least quarterly.

3.6.3 Short-term studies
Meaningful health monitoring of animals involved in short term studies is often problematic due to inherent limitations of sentinel programs. Also, sometimes the health monitoring results are only obtained after the study was completed and the animals have been removed. Instead it might be more suitable to rely on suppliers’ health reports, bio-security and the results of monitoring in breeding/long-term studies held in the same facility which will show any lapse in bio-security. However, basic in-house monitoring for external parasites (i.e. fleas, mites) and internal parasites such as pinworms should be conducted when needed. Random sampling of vendor animals will be carried out as necessary. Dedicated dirty bedding and/or exhaust air sentinel animals may also be used when necessary and appropriate.

(See Appendix 6 SWP register, SWP for dirty bedding sentinels)

3.6.4 Disease outbreak management
In the event of a disease outbreak in one of the holding rooms, containment will be a priority. All activities within the room and/or facility affected may be quarantined until a full assessment of the situation has been carried out. A risk assessment of the pathogen in the facility will be performed as described in section 3.3 before proceeding. The pathogen in question and risk assessment will determine necessary follow up. The room and/or facility will be quarantined until such determination is made. Research activities may be halted as necessary, in some instances animals may be euthanised.

Clear signage should be posted on holding room doors, and management should communicate with all facility users as soon as practically possible.
Animal care staff normally in charge of husbandry in the quarantined room will adopt appropriate procedures while handling animals within the room to prevent spread of the infection to other animals (or in the case of zoonoses, to human occupants).

In some cases, staff working with infected animals may be restricted from contact with other staff and be required to use precautions such as using designated changing rooms and to shower in/out of the facility.

Depending on the pathogen and the nature of the outbreak, animals in the affected room may be culled, and the room and equipment fumigated. The whole facility may be shutdown if indicated.

The introduction into the facility of a pathogen on the pathogen exclusion list means the existing protocols, or the execution of existing protocols, have failed. A full process audit will be required to determine how each outbreak has occurred. Protocols and workflows will be reviewed and modified to prevent such an outbreak from re-occurring. Monitoring programs may need to also be reviewed.

The workflows described below are designed to prevent such an outbreak from occurring. They should be adhered to by all staff.

3.7 Workflows:

Within the facility, all staff, animals, equipment (racks, cages, bottles, trolleys etc…) and consumables should move from the cleanest area to the dirty areas in a one way flow as appropriate.

3.7.1 People flow
Entry into the facility is done via the ante-room, NEVER through the exit corridor.
Exit from the facility through from the exit corridor NEVER through the entry corridor.

Staff, visitors and contractors shall only take essential items into the facility.
Personal items can be securely stored in the grey lockers provided.
Animal care staff members are given an individual locker on entry on duty.

**Entry procedure:**
All staff shall sign in the diary provided prior to entry: record name, time of entry, employer (i.e. CCIA, UNSW).

Check the viewing window to ensure no-one is standing behind the door before entering the ante-room.
All staff must put on appropriate PPE before entering the clean side of the animal facility.
(See Appendix 6 SWP register, PPE to match the risk matrix)

Some areas such as dirty cage wash may require additional PPE.

**Exit procedure:**
Proceed to the exit corridor through the animal room once work is complete.
On exit, disposable PPE shall be placed in bin provided. Used gowns shall be placed in the linen bags provided within the exit ante-room.

Upon exiting the exit ante-room, hands must be washed in hand wash basin provided (room BQ28 near the goods lift) before leaving the facility.

Sign out of the facility upon exit. Record name, time of exit, employer, etc.
**Animal Care Staff:**
Animal care staff shall start their work day on the clean side whenever possible. They shall enter and exit via the appropriate corridors, and wear appropriate PPE (see above).

**Support staff:**
Where possible, support staff shall start their working day on the clean side, entering the facility via the entry corridor and wearing appropriate PPE. They shall ensure all work is completed on the clean side before starting work on the dirty side.
If the support cleaning staff is required to work on clean side after the dirty side they are required to change into a new set of scrubs as well as fresh PPE. Showering between the clean and dirty side may be required as needed.

Scrubs are provided to all animal facility staff. A fresh pair shall be worn every day. Showers are available in the facility (outside PC2 boundary), should staff choose to shower before leaving work.

**Research staff:**
Authorised UNSW Research staff shall sign in on entry and wear appropriate PPE (see above). They are not permitted access to the preparation areas.

UNSW research staff shall only enter mice holding room 2 and 5 (B18 & B16) and use Animal Procedure room 2 (B10), unless prior arrangements have been made with the CCIA manager.
Only authorised staff is allowed to enter rat holding room B19.
CCIA research staff shall only enter animal holding room 3 or 4 (B20, B21) and use Animal Procedure room 3 or 4 (B14, B15), unless prior arrangements have been made with the UNSW manager.

In the event of collaborative research projects between CCIA and UNSW research staff, both area managers should be consulted to ensure proper induction into each area.

All staff shall sign out on exit.

PPE including scrubs and lab coats must not be worn outside of the animal facilities. (See Appendix 6 SWP register: SWP Workflows involving wearing personal protective clothing outside of designated facilities)

**IMPORTANT:**
A number of research staff may have animals housed in several UNSW animal facilities. As per induction notes, they shall adhere to the recommended work practices. The use of exclusion times can be avoided by ensuring full shower and change of clothes. It is recommended that for those going between facilities with different health status that separate shoes be maintained if possible.

**Inter-facility movement of animal care staff:**
The Wallace Wurth animal facility operates under the same pathogens exclusion list as the Lowy facility. Current staff movement is from Lowy to Wallace Worth assuming that Lowy is the cleaner of the two facilities.
When possible BRC animal care staff normally working in other facilities may need to follow a 12hrs exclusion period before re-entering Lowy. However, when necessary staff will be allowed to return to Lowy from other facilities after a shower and change of scrubs. In the
event of a change in disease status in any facility traffic patterns will be re-evaluated by the Animal Facility Operations team in consultation with the Animal Welfare Officer and any other necessary veterinary support.

3.7.2 Animal flows
Animals entering the Lowy animal facility must be SPF (see exclusion list Appendix 4) and purchased from an approved supplier.
Animals are delivered in shippers to the Lowy goods store.
Animal deliveries are collected by animal care staff, shipping boxes are evaluated to ensure they have not been damaged and that barriers are intact. Animal will be moved to the dry storage area where the exterior of the shippers will be sprayed with an appropriate disinfectant then left for 15 min before moving them into the ante-room to enter the facility and into their respective holding rooms. Mice should be handled first and rats last.

Transport carts may be used to facilitate movement of animals into the facility. The wheels of the cart will be sprayed with an appropriate disinfectant at the same time the shippers are sprayed. Wheels will be sprayed a second time prior to moving into the facility to ensure they are clean. Animals then can be unloaded and distributed to the appropriate rooms.

Animals MUST NOT enter the facility through dirty cage wash or pass through port.

Animal care staff shall transfer animals from their shipper to their dedicated IVC (individually ventilated cage) using a dedicated animal change station. They shall complete the animal information card and place it on the IVC. The IVC is then placed on the rack.

Animals in their IVC shall be transported to and from the procedure/imaging rooms on dedicated trolleys.

For animals requiring shipping to third party: refer to appendix 6-SWP register: SWP Transport of animals.
After euthanasia animal carcasses shall be placed in plastic biohazard bags and stored at minus 20° C for collection by biological waste contractor. (See Chapter 4, section 4.6 for waste management guidelines)

**Animal carcasses shall never be disposed as Domestic Waste.**

IMPORTANT: animals removed from the facility shall never be taken back into the facility.

3.7.3 Flow of equipment and consumables:
Consumables are stored in an appropriate area upon delivery.
A detailed description of workflows related to equipment and consumables is available in Appendix 6-SWP register: SWP Flow of Equipment and Consumables

3.8 Decontamination protocols:

An extensive list of items stocked within the facility and the appropriate decontamination method is attached in appendix 7.

Equipment entering the facility may require decontamination as appropriate before entering the ante-room.
Depending on the origin of the equipment, the risk to the animals held in the facility shall be assessed and appropriate decontamination methods will be used.
Steam sterilisation (autoclaving) is the most effective and the preferred method of decontamination. However, a lot of equipment and consumables used within the facility are not autoclavable. In those cases, sanitisation by Vaporised Hydrogen Peroxide (VHP or HPV) fumigation or chemical decontamination with an appropriate disinfectant may be used where necessary. HPV fumigation can be corrosive and isn't recommended by some equipment manufacturers as it may damage sensitive components (sensitive optical parts, lasers etc...) In that case, chemical decontamination is the only option.

Irradiation: see Decontamination matrix Appendix 7.

Low risk items:
New equipment and equipment used by service engineers are deemed low risk and shall be sprayed and wiped where appropriate with an appropriate disinfectant and moved inside the facility via the ante-room. Special attention shall be given to equipment wheels.

High risk items:
Equipment originating from other animal facilities is deemed high risk. Where possible, this category of equipment shall be sanitised by HPV fumigation. An appropriate risk evaluation will be conducted to determine the need for as well as the appropriate decontamination method.

3.9 Cell Lines

Cell lines and animal derived tissues pose the second greatest risk to an SPF animal facility, the first being animals themselves. Experiments involving the transplant or injection of cell lines and tissues should be discussed with the area managers and managed as appropriate.
Chapter 4: Operations

4.1 Description of the facility

The facility is under shared management, meaning CCIA and UNSW manage their respective research activities in their allocated areas. Support activities are jointly managed.

The general flow principal within the facility is to move from the cleanest area to the dirty areas in a one way flow. This applies to staff, animals, equipment (racks, cages, bottles, trolleys etc…) and consumables.

General areas:
Ante room / gowning up area (Room BQ29)
Clean corridor (BQ8, BQ11 & BQ24)
UNSW animal holding rooms (Room B18)
UNSW animal holding room (Room B19)
CCIA SPF mice holding rooms (Room 21)
CCIA SPF animal holding room (B20)
UNSW holding room (Room B16)
UNSW animal imaging suites (Room, B07-07A, B08-08A, B09, B17-17A)
UNSW procedure room (Room B10)
CCIA procedure rooms (Room B14 & B15)
Write up and secure store area (Room B11, B11A UNSW on the left, CCIA on the right)
Consumables store area (Room B13)

“Clean” Operational areas:
Clean prep area. (Room B22)
Dry store (Room B24)

”Dirty” Operational areas:
Dirty prep (B23-23A)
Exit corridor (BQ26)
Exit ante room (BQ 27)

Workflows are described above in Chapter 3: Disease Management Strategy.

4.1.1 Definition of CCIA areas
CCIA hold their animals in holding room 3 (room B20) and in holding room 4 (room B21). Surgeries and procedures are carried out in Animal Procedure room 3 (room B14) for non cytotoxic work and 4 (room B15) for cytotoxic work.

Access is restricted to authorised CCIA staff, except where prior arrangements have been made with the area manager.

4.1.2 Definition of BRC areas
BRC hold their animals in holding room 2 (room B18), holding room 5 (room B16) and room B19. Procedures and surgeries are carried out in Animal Procedure room 2 (room B10)

Access is restricted to authorised UNSW staff, except where prior arrangements have been made with the area manager.

4.1.3 Definition of BRIL areas
Imaging equipment is housed in room B07-07A, B08-08A, B09 and B17-17A.

Access is restricted to authorised staff only.
4.1.4 Definition of support areas
Support areas are defined as follows:

- Ante room / gowning up area (Room BQ29): storage cupboards are shared, UNSW on the right, CCIA on the left)
- Clean corridor (BQ8, BQ11 & BQ24)
- Write up and secure store area (Room B11, B11A UNSW on the left, CCIA on the right)
- Clean store area (Room B13 UNSW on the left, CCIA on the right)
- Clean prep area. (Room BQ25 and B22)
- Dry store (Room B24)
- Dirty prep (B23-23A)
- Exit corridor (BQ26)
- Exit ante room (BQ 27)

4.2 Operating hours: day/night cycle

Lights in the animal holding rooms and corridors are set up to run day/night cycles, with a sunrise and a sunset phase.

The sunset phase starts at 8pm.

The white light fades slowly over a 20min period. By 8.20pm all animal holding rooms are in total darkness.

By 8.20pm the corridors are lit by red light only.

The process is reversed in the sunrise phase. From 7.40 am, the red light slowly fades and the white light slowly intensifies. By 8am, the white light is operating normally.

Lights in animal procedure rooms, clean prep, dry store and dirty prep operated on motion sensors. They turn ON as soon as movement is detected in the room and turn OFF if no movement is detected after a period of 30 minutes.

Lights in the Imaging Suites can be turned ON or OFF manually. (See Appendix 6 SWP register: Lights Operations Guidelines)

For OHS reasons and to prevent significant disturbance to the animals, access is not permitted in the animal holding rooms after “sunset”.

4.3 After hours policy.

- Working hours are week days within 8am and 8pm.
- Weekend work and work done between 8pm and 8am are considered “after hours”.
- No animal work is to be conducted within the facility after 8.00pm or before 8.00am each day, UNLESS previously arranged with the area manager. All personnel entering the facility after hours must firstly make arrangements with their respective area manager.
- Staff must have permission from their C.I (Chief Investigator) to work out of hours and must notify security on extension 56666 of their intention to conduct work outside of normal working hours. They must leave a contact number with security and the estimated time they require to complete the work. Security shall be notified when the work has been completed and the animal facility has been exited.
- When entering the facility all personnel must sign in the animal facility diary and sign out when exiting the facility.
- Phones are available throughout the facility. A Phone is located in the write up area on the left-hand side of the room, and in the imaging suites should you need to contact security after hours. Calls cannot be made from the animal holding room phone as the room is in complete darkness.
• Any animals required for the after hours work must be placed in procedure room 2 prior to the animal holding room lighting switching off for the day and left in procedure room 2 until the following morning when they can be returned to animal holding room once the lighting has phased in for the day.

4.4 Staffing of areas

4.4.1 UNSW Biological Resources Unit:
The Biological Resources Facility provide Animal care staff to care for the animals located in holding room 2 (B18), room 5 (B16) and holding room B19 during the hours of 8am to 4pm.

4.4.2 Biological Resources Imaging Lab:
The Imaging Suites are managed by Dr Carl Power. Personnel wishing to utilise the Imaging facility must contact BRIL staff. Staff can be contacted Monday to Friday between the hours of 8.am and 4pm. (See appendix 11- Facility Contacts)

- In order to use the Imaging facility all animal ethics protocols describing the proposed imaging procedure must be current and approved by the UNSW ACEC.
- Training on the Imaging equipment is provided by BRIL staff. Training is mandatory prior to the utilisation of the equipment.

4.4.3: CCIA:
CCIA provide staff to care for animals located in holding room 3 (B20) and holding room 4 (B21), during the hours of 8am to 4pm

4.5 Management of support areas:

Support areas are defined in section 4.1.4. A team of UNSW and CCIA support staff provide support to all organisations in the facility. The scope of services provided by the team is documented in a Service Level Agreement. (see appendix 8)
This includes cage wash and cage preparation, facility cleaning and management of supplies. The team is jointly managed by UNSW and CCIA. Cleaning procedures are documented in SWP-Cleaning Procedures (see appendix 6 SWP register)
Modifications to the area (i.e. furniture re-arrangement, new furniture or appliances, structural modifications, new processes etc...) shall be done in consultation with the other organisations and approved via the Facility Operations meeting.

The management of all support areas is documented in safe work procedures (See appendix 6 SWP register- Management of support areas)

Equipment usage and maintenance:
The use of the following equipment is shared by UNSW and CCIA staff:
• Bedding disposal station
• Tunnel washer
• Bottle decap/washer
• Autoclaves
• Bedding dispensing station
• Water filling station
• Animal hoist

Safe work procedures and Risk Assessments for the use of each machine are documented by both organisations.
They shall include detailed information on how to safely operate each machine, PPE, maintenance and cleaning procedures.
Users must leave equipment in good condition for the next user.

**Operation of Pass Through port**
The pass-through port should be used ONLY to move goods from the clean to the dirty side of the cage wash area.

4.6 Waste management:

Waste generated within the facility shall be segregated and disposed of appropriately according to its category following UNSW hazardous waste disposal guidelines (see Appendix 9).
Incompatible waste shall not be mixed. Waste must never be left in the corridors and should be properly contained before leaving the area in which it is generated.

All waste must be properly contained and disposed of at regular intervals to prevent excess accumulation and ensure compliance with regulatory requirements.

The following categories of waste are generated within the facility:

**Domestic waste:**
The only Domestic waste bin in the facility is located in the lobby near the hand-wash basin. Domestic waste bins should be labelled as such. UNSW cleaners collect the bins as per cleaners’ schedule. No contaminated waste is allowed in those bins (no chemical, biological or cytotoxic waste).

**Chemical waste:**
Chemical waste shall be labelled, segregated and disposed of according to the UNSW OHS guidelines. See appendix 9

**PC2 waste:**
Solid PC2 waste is collected in yellow Clinismart bins provided and disposed of appropriately. (See Appendix 6 SWP register: Removal and Use of 64L Clinismart and Cytosmart bins SWP)

**Cytotoxic waste:**
Cytotoxic waste is collected in dedicated purple Cytosmart bins. When full, tightly closed bins are collected by the UNSW waste contractor and sent for incineration. This includes euthanased carcases of animals treated with cytotoxic drugs and their contaminated bedding.

**Animal Carcasses waste:**
Animal Carcasses must be stored at -20°C in a robust biohazard plastic bag until collection by the UNSW biological waste contractor.

Genetically Modified animal carcases or animals contaminated by GMOs or infectious microorganisms must be autoclave prior to collection.

Animal carcases contaminated with cytotoxic drugs shall be stored at -20°C in a plastic bag placed in a cytotoxic bin, before disposal as cytotoxic waste.

**Note:**
In no circumstances should animal carcases or tissues be disposed of as Domestic Waste.

**Sharps waste:**
The use of sharps (needle, scalpel etc...) shall be kept at a minimum. Needles shall never be re-capped to avoid injury.
All sharps shall be disposed of in dedicated sharps bins. Sharps containers must then be placed in yellow Clinismart bins provided.
In case of a needle stick injury, staff shall contact the first aid officer immediately.

Waste generated in animal holding rooms and procedure rooms is removed at least once a week.
Bedding waste in dirty prep is removed at least daily.

**Radioactive waste:**
All radioactive waste must be disposed of according to UNSW Radiation Safety standards as indicated in the project approval.

For 18F waste, which has a half-life of less than two hours, all waste is to be stored on-site for a period of up to 24 hours at which time it can be disposed of as for the appropriate waste category above. All waste will be checked prior to disposal to ensure it is non-radioactive. (See appendix 10: Lowy Cancer Research Centre Radiation Policy)

4.7 Management of Procedure rooms

CCIA and UNSW are responsible for the management of their respective animal procedure rooms.
This includes stocking, cleaning, waste management, equipment calibration, testing, service and maintenance.

The procedure rooms are swept and mopped at least weekly.

4.8 Management of Animal Holding rooms

CCIA and UNSW are responsible for the management of their respective animal holding rooms. This includes animal husbandry activities, maintenance, cleaning and stocking of the rooms.
The facility houses mice and rats. Animals are all kept in individually ventilated cages on ventiracks.
CCIA and UNSW use different styles of IVC, all achieving the same purpose.
Animal care and research staff shall organise their working day so that work involving rats is done last where possible. A full change of outer PPE is required if going from rats to mice.

Detailed processes are documented in Safe Work Procedures. (see appendix 6 SWP register)

4.9 Management of Imaging Suites

The imaging suites are managed by BRIL staff. Assistance from the Animal Facility support staff may be required in these areas. The scope of activities is documented in a Service Level Agreement (see appendix 8)

All users of the Imaging facility must be inducted into the facility. Users are only permitted to use the imaging instruments after appropriate training and accreditation. Training and accreditation is required for each instrument. Instruments must only be used in an approved manner and for approved purposes.

All animal imaging experiments must have prior approval by the UNSW Animal Ethics Committee. Individuals performing the imaging experiments must be listed on the application.
Most imaging procedures will require that the animals be removed from their cages and placed into the imaging instrument. This means that the protection provided by the cage is compromised and the animal is at a higher risk of acquiring infection from the environment, or if the mouse is infected, transmitting this infection to the environment. For this reason, only animals that meet the facility’s health status requirements will be allowed for use in imaging experiments.

All imaging instruments must be decontaminated according to the SWP provided both before and after completing imaging experiments.

Operation procedures are in place for animal care staff to reduce the risk of transmitting potential infections to other animals. These include checking and changing these cages in a specified order and thoroughly cleaning and decontaminating the changing station after these mice have been examined or changed.

Users of the BRIL who are not employees of UNSW or a UNSW-associated institute must be listed on a UNSW approved ethics application held by an employee of UNSW or a UNSW-associated institute. Ethics approval from another institution is insufficient for experiments carried out at UNSW.

These users must acquire research animals only from approved suppliers listed in Chapter 3, section 3.4.

Animals are to be shipped directly to UNSW and housed within the Lowy animal facility. Animals from other research facilities or from non-accredited suppliers that do not meet the minimum health standards will not be accepted into the facility.

Radioactivity:
Users of the PET scanner must comply with all UNSW radiation Safety requirements for conducting such research.

Projects must be approved by the radiation safety committee. Users must take the UNSW Radiation Safety course, or alternatively have their qualifications pre-approved by the UNSW Radiation safety officer. Users must comply with all requirements for ordering, registering, handling and storing radioisotopes used in the facility.

All waste must be disposed of in a manner appropriate to the isotope, the material and the quantity being used. For 18F, the isotope has a half-life of 110 minutes. All 18F waste will be held within B08 and shielded until it is non-radioactive.

Animals and their waste are to be held in B08 until they are designated non-radioactive. During this time access to the room will be restricted and the “in-use” sign will be turned on.

4.10 Viral procedure room

The viral procedure room is currently used as rat holding. Research staff planning to start viral work shall contact their area manager prior to commencing work. (i.e. before animals are ordered)

4.11 Engineering, Building and plant issues

The air supply and exhaust in the facility have been designed to achieve positive and negative pressures in the relevant areas. It is set up to achieve around 16 air changes per hour.
Temperature and humidity levels within the facility are set and monitored by the Building Management System. For optimal operation, temperatures shall be around 22°C +/- 1°C. Optimal humidity levels should range between 40% and 70%. Out of range temperatures and humidity levels for prolonged periods of time could greatly affect the welfare of animals housed in the facility.

Temperature and humidity max-min thermometers have been set up in all animal holding rooms. Minimum and Maximum temperature and humidity levels are recorded daily.

The air handling units on each ventilator also show current temperature, humidity levels and number of air changes.

Any building or plant issues should be reported immediately to Facilities Management (FM) via the allocated CFM (Client Facility Manager) or the FM assist helpdesk on extension 55111. This also applies to equipment labelled with a UNSW Facilities asset tag (i.e. Autoclaves, Fume cupboards, tunnel washer etc...)

Problems related to support equipment (i.e. Tunnel Washer, Autoclaves etc...) and building issues affecting all stakeholders should be reported immediately to one of the area managers by the first person who notices the problem.

All area managers should be made aware of issues affecting the facility as soon as practically possible but no longer than 2 hours after the event.

**Fault escalating process example:**
- The autoclaves stop working in the dirty prep area.
- Wash up staff notice the problem.
- CCIA area manager is notified immediately.
- CCIA area manager (or delegate) logs an immediate call with FM assist.
- CCIA area manager informs UNSW area manager within the next 2 hours.
- Both area managers inform their users where appropriate.

All area managers shall keep each other informed of minor issues as a matter of courtesy.

The Animal Facility Manager shall be informed of any major or recurring issues occurring in the Lowy Animal Facility.
Chapter 5: WH&S and PC2 certification

5.1 Workplace Health and Safety

5.1.1: Background information:
UNSW and CCIA operate under two different WHS management systems and have two
different WHS consultation committees.
The CCIA WHS manager sits on the Lowy WHS committee as an observer.
The Lowy WHS coordinator sits on the CCIA committee as an observer.
WHS documentation is different between the two organisations, however the overall
governing principals remain the same.
Staff should refer to their respective WHS management system.
WHS documents such as Risk Assessments and Safe work procedures must be approved
and signed off by the relevant supervisor (i.e. chief investigator, area manager etc...) Each organisation is responsible for the review and audit of their respective processes and
procedures.

5.1.2 WHS committee workplace inspections:
WHS workplace inspections take place once a year in each work area and are carried out by
selected members of the WHS committee.

5.1.3 Faculty of Medicine taskforce inspections:
The UNSW Faculty of Medicine (FoM) WHS taskforce is set up to ensure maximum
compliance of all FoM work areas.
Audits and inspections take place once a year and are carried out by the taskforce team. The taskforce team members have been selected by the Senior Associate Dean for their
expertise in Laboratory WHS regulation.

5.1.4 Emergency response:
All staff are trained on emergency procedures as part of their facility induction. Up to date
contacts are available in appendix 11.

Evacuations:
Evacuation alarms in the basement are silent, via red flashing lights throughout the facility. There are no pre-warning alarms, when the lights are flashing, all staff must evacuate
immediately via the closest emergency exit.
The assembly point is on the lawn outside the Chancellery building.

5.2 PC2 certification

The Lowy Cancer Research Animal Facility is an OGTR PC2 certified facility. The facility is fully contained. Entry into the facility is done via the ante-room. PC2 boundaries and ante-room areas are defined on the drawing in Appendix 1.

5.2.1 Behavioural requirements:
All staff and users of the facility must comply with the following behavioural requirements.

The principles of containment are to be strictly enforced for WHS and animal disease
management reasons. Anyone undertaking viral, radiation or hazardous chemical (including
Cytotoxic) work must remove and replace their gloves and any other potential contaminated
PPE before leaving the work area. Gloves will not be worn in corridors.
All staff, visitors and contractors shall comply with the following OGTR PC2 behavioural requirements:

- Entry into the facility is done via the ante-room.
- Doors must be closed at all times.
- No food or drinks (including chewing gum) are permitted in the facility.
- Staff shall wear appropriate PPE: (See appendix 6 SWP register: PPE to match the risk)
- Gloves must be removed before entering corridors.
- Long hair must be tied back.
- Personal items such as phones and other electronic devices are not permitted to be used within the facility.
- The use of corrugated cardboard boxes is not permitted within the facility. Supplies shall never be stored on the floor. Plastic pallets shall be used where appropriate.
- Foam eskies cannot be fully decontaminated therefore cannot enter the facility.
- When working with GMO (Genetically Modified Organisms), staff shall use a Class II Biosafety Cabinet to prevent release of aerosols in the environment.
- Handling of animals and experiments conducted on animals shall be carried out in a way that minimises the chance of escape of the animals.
- GMOs (cell lines or animals) shall be clearly labelled as such.
- All users shall use strict aseptic technique to prevent cross-contamination at all times, including using good micro-isolator technique during cage changing procedures or when opening cages.
- Spills must be cleaned up immediately according to spills SWP (See appendix 6 SWP register: Biological Spills SWP, Chemical spills SWP)
- GMOs must be rendered non-viable before disposal either by autoclaving or incineration.
- Genetically modified animals shall not be stored outside a certified OGTR PC2 facility.
- PC2 waste shall be managed as appropriate (See Appendix 9)
- PC2 material (animals or cell lines) must be double contained during transport.
- Containment and decontamination equipment shall be tested and/or certified according to the regulation and manufacturers specification:

<table>
<thead>
<tr>
<th>Equipment type</th>
<th>Internal testing/validation frequency</th>
<th>Third party validation and testing</th>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class II BSC</td>
<td>N/A</td>
<td>Annually</td>
<td>All certificates shall be kept for 5 years and made available to the regulator on request.</td>
</tr>
<tr>
<td>Eye wash station/safety showers</td>
<td>Weekly</td>
<td>N/A</td>
<td>All testing records shall be kept for 5 years and made available to the regulator on request.</td>
</tr>
<tr>
<td>Autoclave</td>
<td>Chemical indicator strips and tape with each cycle biological Indicators (i.e. spore test) monthly</td>
<td>Annually (Boiler service and Autoclave calibration)</td>
<td>Internal validations results shall be kept for 12 months. Third party validations certificates shall be kept for 5 years. All records shall be made available to the regulator on request</td>
</tr>
<tr>
<td>Door handles and phones</td>
<td>Weekly decontamination</td>
<td></td>
<td>Internal sign off sheet kept for 12 months</td>
</tr>
</tbody>
</table>
Eye wash stations and safety showers are provided throughout the facility in case of exposure to GMOs or chemicals.

- PPE shall be removed before leaving the facility.
- All staff, visitors and contractors shall wash their hands using the hand wash basin provided before leaving the facility.

Research staff

- Research staff must consult with their area manager before undertaking any viral, radiation or cytotoxic work within the facility.
- Where available MSDS for all chemicals must be supplied to the area manager before they are brought into the facility.
- All projects involving the use of gene-knockout mice or transgenic animals, or the infection of animals with GMOs must be approved by the UNSW Institutional Biosafety Committee. A copy of the approval documents must be provided to the area manager.
- The area manager must also be supplied with the copy of the risk assessment for all work undertaken within the facility.
- This is so the area manager can assess all risks to staff/users and implement the appropriate control measures.
- All MSDS and risk assessment forms will be maintained in a common area of the animal facility and be available to all users.

Area Managers

- Area managers are responsible for assessing and managing all risks posed by the work carried out within the facility.
- Area managers are to ensure all personnel entering the facility have undertaken the appropriate training and induction or are accompanied at all times by a trained member of staff.
- Area managers are responsible for PC2 requirements implementation and compliance of all staff, visitors and contractors to the above requirement.
- Area managers are to ensure appropriate waste management systems are in place
- Area managers are to liaise with the UNSW CFMs to ensure pest control strategies are in place to comply with OGTR regulations

If either area manager or animal care staff witness a staff member, visitor or contractor breaching the above requirements, they should approach them and ensure they understand and comply immediately, regardless of whether they belong to UNSW or CCIA. A hazard incident report form will be required for each instance and the incident will be reported to the appropriate manager for follow up.

5.2.2 Inspection schedule

The UNSW IBC (Institutional Biosafety Committee) shall inspect the facility annually.

Any queries shall be addressed to: WHS Coordinator - Biosafety & Gene Technology (See appendix 11: contacts list)

5.2.3 Unintentional release of GMOs

Procedures shall be in place to prevent unintentional release of GMOs in the environment. The regulator shall be contacted in the event of an animal escaping or GM cell line spill.
5.3 Allergies

5.3.1. Introduction
The development of an allergic response to animal allergens while working with laboratory animals is an occupational health concern. Employees who handle or conduct research with animals may be exposed to a variety of animal products, including animal urine, dander, and saliva. Allergens found in these products can trigger an allergic reaction in some individuals and, in severe cases, lead to dermatitis, asthma, and anaphylaxis. Prevention of animal allergy depends on the control of animal allergens reducing exposure to them within the work environment. The facility employs a range of measures to control and eliminate allergen exposure, including engineering, administrative controls, and personal protective equipment.

5.3.2. Control Measures
Work with animals should be restricted to areas within the animal facility whenever possible. However, use of specialized equipment, or protocol requirements, may require that animals be handled under sub-optimal conditions in open laboratory areas. When animals are brought into the general laboratory setting, precautions are used to help prevent sensitization of laboratory workers to laboratory animal allergens and to protect workers who may already have laboratory animal allergies or asthma.

5.3.2.1. Engineering Controls
Engineering controls are recognized as the most effective method for controlling occupational exposure to potential hazards. Engineering controls such as local exhaust and general dilution ventilation must be incorporated in the design phase of animal facilities. All animal rooms have a general dilution ventilation rate of at least 10 fresh air changes per hour while maintaining a relative humidity level at least 30%. These parameters help to reduce the concentration of airborne animal allergens. Containment suites, where appropriate, shall have negative air pressure relative to adjoining areas.

5.3.2.1.1. Primary Containment
a) Bench Work
Surgery, necropsy, and other animal manipulations should be performed within a biological safety cabinet (BSC), chemical fume hood (CFH), or other local exhaust ventilation system (LEV) such as a ventilated downdraft table. In areas, where local exhaust systems are not feasible, the use of both administrative controls and appropriate personal protective equipment (PPE) shall be worn. These animal activities should be limited to an animal facility.

b) Small Animal Husbandry
Cage changing should be performed in a BSC/ change station designed to provide personnel protection. If the appropriate primary barrier equipment or system is not available, appropriate PPE shall be worn. Use of an engineering control for primary containment is contingent upon the size of the animal. If performing animal transfers within a local exhaust system increases the risk of injury (e.g., bite, scratch) to personnel, an independent occupational risk assessment may be conducted to identify alternative solutions to remediate the increase risk.

c) Cage Systems
Individually ventilated animal racks and micro-isolator cages will be used provide protection for the animals and to minimize the potential for employee exposure to animal allergens where possible. Animal cages that are under positive air pressure to the room should be equipped with a scavenger system to reduce allergen load within the animal room. Conventional cages (e.g., open top) provide no protection for the employee and contribute to significantly higher airborne allergen levels than cages fitted with filter tops. Where feasible, filter top cages should be used.

5.3.2.1.2. Bedding Material
Corncob bedding is the primary bedding material used in the facility. These materials are preferred due to their hypoallergenic properties. It is relatively free from dust and contaminants after manipulation, and is absorbent.

5.3.2.1.3. Equipment for Small Animal Cage Dumping and Cleaning
The animal facility utilizes several different techniques to dump, clean, and sanitize animal cages. When dumping cages, procedures must be used that minimize exposure to animal allergens. Cages should be either wetted down before they are dumped or a cage dumping station should be used. A cage dumping station is a simple device utilizing a fan and a high-efficiency particulate air (HEPA) filter to capture airborne particulate while the employee dumps the bedding material into the disposal container. Employees working at these stations must use recommended PPE. When containment systems are not available employees are to ensure adequate PPE including respiratory protection. In addition scrubs should be changed after cage changing procedures to minimize exposure.

5.3.2.2. Administrative Controls

5.3.2.2.1. Equipment Certification Documentation
Primary barrier equipment is certified annually. Systems that fail inspections are labelled and taken out of service until they are repaired and pass inspection.

5.3.2.2.2. Standard Operating Procedures
Each animal facility’s standard operating procedures for veterinary care and animal husbandry should entail techniques to provide protection to personnel from the proteins, dander, and waste generated by the animals. In addition cleaning and sanitation measures will be in place to minimize allergen concentration in the environment. The facility management staff is an excellent resource to the laboratory staff when developing research-related standard operating procedures involving animals.

5.3.2.2.3. Animal Handling and Transportation
• Animals should be maintained and manipulated in primary barrier equipment (i.e., BSC, CFH, downdraft table) during manipulation.
• In areas where primary barrier equipment or systems are not feasible, and administrative options have been implemented, appropriate PPE shall be worn.
• Avoid moving animals into the laboratory unless it is not feasible for the procedures to be performed within the animal facility.
• If transport is necessary, the animals should be in a micro-isolator (filter top cage) approved filtered transport box
• Movement of animals must avoid general public congregation areas. (see appendix 12 Movement of goods in the Lowy Cancer Research Centre)

5.3.2.2.4. Animal Density
Animal density can be a major factor in ambient allergen concentrations, and maintaining the number of animals in a room at an acceptable, predetermined density is an effective means to help control allergen levels. The animal facility manager and the animal program director establish an acceptable animal density for their animal housing rooms.

5.3.2.2.5. Proper Use and Maintenance of Equipment
It is the immediate supervisor’s responsibility to ensure that personnel working in their facility are adequately trained to properly use and maintain the designed primary barrier equipment, (i.e., dumping stations, cage wash equipment, cage ventilation systems).
5.3.2.2.6. Housekeeping
Animal facilities should be cleaned on a regular schedule using wet methods. Dry sweeping is not the preferred method for cleaning animal rooms. If dry sweeping is used, employees shall wear appropriate PPE. Employees should follow these recommended work practices:

- Work surfaces must be routinely cleaned to reduce allergen loads.
- The use of a mechanical vacuum system can be used to collect dry solid material “ONLY” when the exhaust air is either filtered with a HEPA filter back into the room or is hard-ducted for discharge to outside of the building.
- Waste materials should be promptly bagged and correctly disposed of in the appropriate receptacle(s).
- Shipment /transfer boxes must be disposed of promptly in a leak-proof secondary container, (i.e., plastic bag, MPW box). These types of boxes must not be left out in the open corridors or in laboratories.

5.3.2.2.7. Personal Hygiene
Eating or drinking is not permitted in animal rooms or laboratories. Employees are discouraged from touching their face and eyes while in animal rooms or laboratories. Before employees leave the animal facility, they must remove their PPE, place it in the appropriate waste receptacle, and wash their hands. Animal care and support staff will wear scrubs provided while in the facilities. It is recommended that other personnel working with animals wear dedicated clothing not worn outside animal areas to reduce exposure as well as minimise exposure to family members.

5.3.2.2.8. Training and Education
Immediate supervisors are responsible for ensuring employee comprehension of the following topics relating to animal allergy:

- Importance of good personal hygiene (e.g., washing hands)
- Proper use of PPE
- Prescribed work practices and proper use of equipment
- Awareness of allergy symptoms
- Importance of promptly seeking medical advice and assistance if symptoms develop

5.3.2.3. Personal Protective Equipment (PPE)
PPE that prevents skin contact and inhalation of animal allergens can help to reduce the likelihood of employee exposure. Employees working with animals and/or soiled bedding should wear gloves and a lab coat or other coverings (e.g., Tyvek® suits, dedicated animal facility uniforms, disposable single-use lab coats). The use of dust/mist masks is recommended whenever animals and/or soiled bedding are handled outside of primary containment equipment. All PPE should be single use and disposed of prior to exiting the animal facility. Additional PPE such as hair bonnets, shoe covers, and scrubs are also recommended to further limit personal exposure and to contain the animal allergens within the dedicated animal facility.

Employees wearing non-disposable PPE outside of the animal facility, such as lab coats or street clothes coverings, should keep one set specifically for animal work at the location were the animals will be handled. These items should not be worn for other laboratory activities and should be laundered regularly to prevent them from becoming a collection medium for allergens.

(see appendix 6 SWP register: Workflows involving wearing personal protective clothing outside of designated facilities SWP)
5.4 Other WHS issues

5.4.1 Cytotoxic work
All work with cytotoxins is to be carried out within an appropriately designed and maintained cytotoxic biological safety cabinet. All materials contaminated or potential contaminated with cytotoxins are to be disposed of in the cytotoxic waste stream. Gloves are to be replaced after using cytotoxic agents so not to contaminate areas outside of the cytotoxic BSC. In addition the exterior surfaces of cages must be kept clean and wiped down with a proper decontaminate. The cytotoxic BSC is then cleaned by the research staff at the completion of their work, so not to expose other users to their cytotoxin. A risk assessment and safe work procedure must be given to and approved by the area manager before any such work is commenced within the facility.

5.4.2 Movement of goods in Lowy: see appendix 12

5.4.3 Viral work
A risk assessment and safe work procedure must be given to and approved by the area manager before any such work is commenced within the facility.

5.4.4 Working with Liquid Nitrogen:
Research staff must, before bringing liquid nitrogen into any room, check the volume if liquid nitrogen does not exceed the safe levels for the room volume. If it does, then oxygen monitoring must be installed in the room before the liquid nitrogen is taken into the room. All staff handling liquid nitrogen must wear appropriate eye protection, cryo-gloves and fully enclosed non-absorbent shoes. A risk assessment and safe work procedure must be given to and approved by the area manager before any such work in commenced within the facility.

5.4.5 Working with Radioactive isotopes: see Radiation Policy (appendix 10) 
All work involving radioactive isotopes must be approved by the UNSW Radiation Safety Committee. A risk assessment and safe work procedure must be given to and approved by the area manager before any such work is commenced within the facility.

5.5 Personal Protective Equipment (PPE)

The use of PPE needs to match the risk. A risk assessment needs to be done for each work areas, so that appropriate PPE can be made available.
The PPE to match the risk matrix in appendix 6 summarises risks in each work area and PPE to match the risk.
All staff should be trained in the appropriate use of PPE.
Chapter 6: Process review and change management

The processes described in this manual have been developed in consultation between CCIA and UNSW, following ethics and legislative requirements.

A review of these processes shall be carried out by the Executive Committee annually or in case of a major process change or legislation update.

Committee meeting minutes shall be documented and communicated to relevant staff. Area managers are responsible for implementing changes.

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<td>24-10-12</td>
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Chapter 7: Acknowledgements

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