



## Animal Biosafety Level 2

### Introduction

Animal Biosafety Level 2 is suitable for work with for projects involving:

- ♦ **Human** blood, body fluids, tissues, primary human cultures, well characterized human cell lines and established human cell cultures from poorly characterized sources unless specifically reviewed and exempted by the Institutional Biosafety Committee.
- ♦ All materials that are known or reasonably suspected to contain **BL2 pathogens**.
- ♦ Animals receiving cultures and materials, considered **Risk Group 2 organisms**, must be handled at ABSL2. ([BMBL Section IV - Vertebrate Animal Biosafety Level Criteria](#)) Animal Biosafety Level 2 is defined by the most recent CDC BMBL Guidelines.

The Principal Investigator responsible for the animal experiment, in association with the Vivarium must ensure that all those having contact with the animals and wastes material are suitably trained, adequately supervised, offered relevant vaccines, and are familiar with the local code of practice and aware of any other precautions and procedures that may be required. Animal Biosafety Level 1 requirements should be met in addition to the following requirements.

### A. Standard Practices

1. Access to the animal facility must be limited or restricted at the discretion of the laboratory or Vivarium director.
2. All personnel must wash their hands after handling cultures and animals, after removing gloves and before leaving the animal facilities.
3. Eating, drinking, smoking, handling contact eye lenses, applying cosmetics and storing food for human use are not permitted in animal rooms. Persons who wear contact lenses in animal rooms should also wear goggles or a face shield.
4. All invasive procedures must be carefully performed to minimize the creation of aerosols.
5. Work surfaces must be decontaminated after use or spill of viable materials.
6. Doors to animal rooms must open inward, be self closing and kept closed when experimental animals are present.
7. **All wastes from the animal room must be appropriately decontaminated, preferably by autoclaving, before disposal.** Infected animal carcasses are placed in a special freezer and are sent out for incineration as infectious waste
8. An insect and rodent control program must be in effect.



## B. Special Practices

1. Access to the animal room(s) shall be limited to personnel who have been advised of the potential hazard and who need to enter the room for program or service purposes when work is in progress. In general, persons with special medical conditions who may be at increased risk of acquiring infection (skin eczema, severe animal dander allergies, immunosuppressed, etc), or for whom infection might be unusually hazardous (pregnancy), should not be allowed in the animal rooms. Decisions to permit pregnant workers to handle biohazardous materials must be made by the PI in consultation with RWJMS Employee Health Services.
2. The Vivarium Director must establish policies and procedures whereby only persons who have been advised of the potential hazard and meet any specific requirements (e.g. immunization) may enter the animal room(s).
3. Animal rooms housing BL-2 work require a biohazard warning sign, incorporating the universal biohazard symbol posted on the access door to the animal room. The hazard warning sign should identify the infectious agent(s) in use, list the name and telephone number of the Vivarium manager or other responsible person(s) and indicate the special requirement(s) for entering the animal room.
  - a. **Warning Signs on Animal Cage Cards:** The name of the hazardous agent should appear on the cage cards of animals treated with the agent.
4. Laboratory personnel, animal handlers, and other animal service personnel must receive appropriate immunizations or tests for the agent(s) handled or potentially present in the laboratory (e.g. Hepatitis B vaccine or TB skin testing).
5. When appropriate, considering the agent(s) handled, baseline serum samples from animal care and other at-risk personnel should be collected and stored. Additional serum samples may be collected periodically depending on the agents handled or the function of the facility. The decision to establish a serologic surveillance program must take into account the availability of methods for the assessment of antibody to the agent(s) of concern.
6. A special biosafety plan or specific SOPs must be prepared or adopted for protocols involving BL2 agents. Personnel must be advised of special hazards and be required to read and follow instructions on practices and procedures.
7. Laboratory personnel must receive appropriate training from the Principal Investigator or designee of the Vivarium director on the potential hazards associated with the work involved, necessary precautions to prevent exposures, and exposure evaluation procedures. Personnel must receive annual updates, or additional training as necessary for procedural or policy changes.
8. A high degree of precaution must always be taken with any contaminated sharp items, including needles and syringes, slides, glass cover slips, pipettes, capillary tubes, and scalpels. Needles and syringes or other sharp instruments should be restricted in the animal facility for use only when there is no alternative, such as for parenteral injection, blood collection, or aspiration of fluids from laboratory animals and diaphragm bottles. Plasticware should be substituted for glassware whenever possible.



- 8.1 Used disposable needles must not be bent, sheared, broken, recapped, removed from disposable syringes, or other-wise manipulated by hand before disposal; rather, they must be carefully placed in conveniently located puncture-resistant containers used for sharps disposal. Non-disposable sharps must be placed in a hard-walled container for transport to a processing area for decontamination, preferably by autoclaving.
  - 8.2 Needle-less systems, and other needle safety devices should be used when appropriate.
  - 8.3 Broken glassware must not be handled directly by hand, but must be removed by mechanical means such as a brush and dustpan, tongs or forceps. Containers of contaminated needles, sharp equipment, and broken glass should be decontaminated before disposal, according to local, state or federal regulations.
9. Cultures, tissues, or specimens of body fluids must be placed in a container that prevents leakage during collection, handling, processing, storage, transport or shipping.
  10. **Cages must be appropriately decontaminated preferably by autoclaving, before they are cleaned and washed.** Equipment and work surfaces should be decontaminated with an appropriate disinfectant on a routine basis, after work with infectious materials is finished, and especially after overt spills, splashes or other contamination by infectious materials. Contaminated equipment must be decontaminated according to local, state or federal regulations before it is sent for repair or maintenance or packaged for transport in accordance with applicable local, state or federal regulations, before removal from the facility.
  11. Instructions on the Emergency Response Guide flip chart shall be followed for spills or exposures. After decontamination the incident must be immediately reported to the Vivarium Director. Medical evaluation, surveillance, and treatment are provided as appropriate and written records are maintained. RWJMS Employee Health Service must be notified, and a UMDNJ Incident Report must be completed and faxed to UMDNJ Risk and Claims by the next business day.
  12. All procedures are carefully performed to minimize the creation of aerosols or splatters.
  13. Only animals used for the experiment(s) are allowed in the room.

## C. Safety Equipment (Primary Barriers)

1. **Biological safety cabinets** and other physical containment devices, and/or personal protective equipment (e.g., respirators, face shields) are used whenever procedures with a high potential for creating aerosols are conducted. These include necropsy of infected animals, harvesting of tissues or fluids from infected animals or eggs, intranasal inoculation of animals, and manipulations of high concentrations or large volumes of infectious materials.



2. A HEPA-filtered dumping station should be used for cage changes.
3. Animals are housed in primary biosafety containment equipment appropriate for the animal species. **Filter top cages** (microisolator) are always handled in properly designed and operating animal biocontainment cabinets recommended for rodents.
4. Laboratory coats, gowns, or uniforms must be worn while in the animal room. The protective clothing must be removed before leaving the animal facility.
5. Special care must be taken to avoid skin contamination with infectious materials; gloves should be worn when handling infected animals and when skin contact with infectious materials is unavoidable.

### D. Animal Facilities (Secondary Barriers)

1. The animal facility must be designed and constructed to facilitate cleaning and housekeeping.
2. A hand-washing sink must be available in the room where infected animals are housed.
3. If floor drains are provided, the drain traps must always be filled with water or a suitable disinfectant.
4. Exhaust air is discharged to the outside without being re-circulated to other rooms. Ventilation should be provided in accordance with criteria from *Guide for Care and Use of Laboratory Animals*, latest edition. The direction of airflow in the animal facility is inward; animal rooms should maintain negative pressure compared to adjoining hallways.
5. It is considered good practice to use an animal room with at least 10 air changes per hour
6. An autoclave, which can be used for decontaminating infectious laboratory waste, must be available in the building with the animal facility.

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