BIOSAFETY PLAN

Hazard Communication

Risk Group 2 (RG-2) infectious agents are used in this laboratory. RG-2 agents are associated with disease that can cause infection of varying severity (rarely lethal). Host immunity is usually capable of controlling the infection and preventable or therapeutic interventions are often available. If you are immune compromised, you may be at greater risk for an infection if exposed.

Standard Microbiological Practices (BSL-1 and higher)

1. Access to areas containing Risk Group 2 (RG2-) agents (or those potentially contaminated with RG-2 agents) is limited or restricted by the Principal Investigator.
2. Persons must wash their hands after working with RG-2 agents and before leaving the room where they are utilized.
3. Eating, drinking, smoking, handling contact lenses, applying cosmetics, and storing food for human consumption must not be permitted in areas containing RG-2 agents. Food must be stored outside the laboratory area in cabinets or refrigerators designated and used for this purpose.
4. Mouth pipetting is prohibited; mechanical pipetting devices must be used.
5. Policies for the safe handling of sharps, such as needles, scalpels, pipettes, and broken glassware must be developed and implemented. Whenever practical, supervisors should adopt improved engineering and work practice controls that reduce risk of sharps injuries. Precautions, including those listed below, must always be taken with sharp items. These include:
    - Careful management of needles and other sharps are of primary importance. Needles must not be bent, sheared, broken, recapped, removed from disposable syringes, or otherwise manipulated by hand before disposal.
    - Used disposable needles and syringes 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.
    - Broken glassware must not be handled directly. Instead, it must be removed using a brush and dustpan, tongs, or forceps. Plasticware should be substituted for glassware whenever possible.
6. Perform all procedures to minimize the creation of splashes and/or aerosols.
7. Decontaminate work surfaces after completion of work and immediately after any spill or splash of RG2 agents with appropriate disinfectant.
8. Decontaminate all cultures, stocks, and other potentially infectious materials before disposal using an effective method. Depending on where the decontamination will be performed, the following methods should be used prior to transport.
    - Materials to be decontaminated outside of the immediate laboratory must be placed in a durable, leak proof container and secured for transport.
    - Materials to be removed from the facility for decontamination must be packed in accordance with applicable local, state, and federal regulations.
9. A sign incorporating the universal biohazard symbol must be posted at the entrance to areas where RG2 agents are present. The sign must include the biosafety level and the name and phone number of the supervisor (or other responsible personnel). RG-2 agent information

should be posted in accordance with the institutional policy.

10. An effective integrated pest management program is required.

11. **The supervisor must ensure that laboratory personnel receive appropriate training regarding their duties, the necessary precautions to prevent exposures, and exposure evaluation procedures. Personnel must receive annual updates or additional training when procedural or policy changes occur.**

    Personal health status may impact an individual's susceptibility to infection, ability to receive immunizations or prophylactic interventions. Therefore, all laboratory personnel and particularly women of childbearing age should be provided with information regarding immune competence and conditions that may predispose them to infection. The individual is responsible for informing The UAB employee health program when medical conditions arise that may impact their susceptibility to infection, ability to receive immunizations or other medical interventions. They can do this by contacting ehocchealth@uab.edu (205 934 3675) to schedule a consult to determine what measures need to be taken to assure that they are adequately protected in the laboratory environment.

BSL–2 Containment:

This biosafety level applies to work with agents—or tissues/materials potentially infected with agents—that are associated with human disease and pose a moderate health risk to otherwise healthy adults. Examples of agents typically worked with in a BSL-2 facility include Human Immunodeficiency virus (HIV), and Hepatitis B and C viruses.

BSL-2 facilities require the same standard microbial practices as BSL-1 facilities, with enhanced measures due to the potential risk of human disease. Personnel working in BSL-2 areas are expected to take greater care to prevent exposures through percutaneous injury, ingestion, or mucous membranes. In addition to BSL-1 requirements, the following special practices are added for facilities designated as BSL-2:

A. Special Practices:

1. All persons entering the area must be advised of the potential hazards and meet specific entry/exit requirements. A "Biosafety Level 2" sign, with the biohazard symbol, the agents present, and the requirements for entry must be placed at each entrance
2. Personnel must be provided medical surveillance, as appropriate, and offered available immunizations for agents handled or potentially present in the laboratory.
3. UAB does not bank serum samples from at-risk personnel.
4. A facility-specific biosafety manual (this document) must be prepared and adopted as policy. The biosafety manual must be available and accessible.
5. The supervisor must ensure that personnel demonstrate proficiency in standard and special microbiological practices before working with BSL-2 agents.
6. Potentially infectious materials must be placed in a durable, leak proof container during collection, handling, processing, storage, or transport within a facility.
7. Equipment that may be exposed to RG-2 agents should be routinely decontaminated, as well as, after spills, splashes, or other potential contamination.
8. Spills involving infectious materials must be contained, decontaminated, and cleaned up by staff properly trained and equipped to work with infectious material.
9. Equipment must be decontaminated before repair, maintenance, or removal from the area.

10. Incidents that may result in exposure to infectious materials must be immediately evaluated and treated according to procedures described in the facility-specific biosafety manual. All such incidents must be reported to the supervisor. Medical evaluation, surveillance, and treatment should be provided and appropriate records maintained.
11. Animal and plants not associated with the work being performed must not be permitted in the areas where RG-2 Agents are stored, dispensed, or administered.
12. All procedures involving the manipulation of infectious materials that may generate an aerosol should be conducted within a BSC or other physical containment devices.

B. Safety Equipment: Sample processing will not be conducted at this site

1. Properly maintained BSCs, other appropriate personal protective equipment, **or other physical containment devices must be used whenever**:
   a. Procedures with a potential for creating infectious aerosols or splashes are conducted. These may include pipetting, centrifuging, grinding, blending, shaking, mixing, sonicating, opening containers of infectious materials, infusion, and harvesting samples.
   b. High concentrations or large volumes of infectious agents are used. Such materials may be centrifuged in the open laboratory using sealed rotor heads or centrifuge safety cups.
2. **Appropriate personal protective equipment (PPE) must be worn** *(the list below is an example list of minimum PPE, follow PPE requirements in Agent Specific Safety Plan)***:**
   a. **Protective gowns or Lab coats**:
   b. **Nitrile gloves**
   c. **Eye Protection**:
      - glasses or face shield

C. Facilities:

1. The facility doors should be self-closing and lockable, according to the institutional policies.
2. A sink and eyewash station should be readily available. The sink should be located near the exit.
3. The BSL-2 facility should be designed so that it can be easily cleaned and decontaminated.
   a. Carpets and rugs are not permitted.
   b. Furniture must be capable of supporting anticipated loads and uses. Spaces between benches, cabinets, and equipment should be accessible for cleaning. Bench tops must be impervious to water and resistant to heat, organic solvents, acids, alkalis, and other chemicals.
   c. Chairs used in RG-2 agents work must be covered with a non-porous material that can be easily cleaned and decontaminated with appropriate disinfectant.
4. An autoclave or an alternative method of decontamination is available for proper disposals.

   Biohazard warning signs should be placed on all equipment used for processing, storage, or transport of RG2 agents, samples, or contaminated wastes

D. General Incident Response Plan

1. **Work-related Exposures to Potentially Infectious Material:** Individuals with blood or other potentially infectious material exposures (including needlesticks):
   - **a.** Rinse the exposure site with water for 15 minutes. Call Employee Health's Needlestick team: 205-934-3411
   - **b.** HIV/Lentiviral vector exposures must be addressed promptly for infection-prevention measures to be effective: See Lentiviral Exposure Response Plan.
   - **c.** Campus employees must submit On-the-job-injury (OJI) forms to UAB HR at http://www.uab.edu/humanresources/home/relations/on-the-job-injury-oji
   - **d.** Notify the UAB Biosafety Officer, who will conduct a review to determine whether containment controls in place are adequate
   - **e.** Follow Employee Health recommendations:
     - **If medical attention is being sought for a job-related exposure injury**: follow the Quick Response Info for UAB Researchers (below)
     - If symptoms develop from a potential exposure: Report symptoms and the exposure on the Employee Health Tracker and notify the Biosafety Officer (biosafety@uab.edu)

Quick Response Info for UAB Researchers:

Injuries (see UAB HR On-the-job-injury Forms/Reporting):

Emergencies: Call 911 from campus phones, or (205)-934-3535 from mobile phones
UAB ED, Highlands ED

Non-Emergency Injuries:
During work hours (Monday-Friday, 7 AM - 4:00 PM):
The Workplace Clinic, 1201 11th Avenue South, Birmingham, AL 35205
(205) 930-7007

After hours, weekends, and holidays:
UAB ED, Highlands ED, or UAB Urgent Care

Exposures (see TREATMENT FOR EXPOSURES AT UAB):

UAB Biosafety Officer (EXPOSURE REPORTING):

During Work Hours: 205-934-2487
After Hours and Weekends: 205-917-4766; Biosafety@uab.edu

2. **Treatment for Other Injuries:**
   a. **Emergencies, after hours, or weekends:**
   UAB ED, Highlands ED, or UAB Urgent Care
   b. **During work hours (Monday-Friday, 7:30 AM - 4:00 PM):**
   The Workplace Clinic, 1201 11th Avenue South, Birmingham, AL 35205
   (205) 930-7007

3. **Small spills of potentially infectious samples (<10 mL)*:*** A small spill, in this circumstance, is defined as a spill with low potential to aerosolize, presents no inhalational hazard, and no endangerment to people or the environment. *The following is appropriate for most small BSL-2 spills*:

   - First, ascertain the nature of the spill. A spill inside a closed Ziploc bag does not constitute a spill, since there is no breach of containment—as long as the secondary container stays closed.
   - If other personnel are present, alert them immediately. Keep in mind that spills can generate aerosols. If aerosols are likely:
     - Quickly check to ascertain the extent of the spill: Is PPE contaminated? (Gloves, lab coat, pants cuffs, shoes?) Is bare skin is exposed? Has liquid splashed over a large area? If shoes are visibly contaminated, decontaminate them with appropriate disinfectant, then evacuate the room, doffing and disinfecting PPE before exiting the door. Make sure to remove gloves before touching the door knob.
     - Post a sign on the door warning personnel not to enter.
     - Remove any additional PPE and place it in a biohazard bag, wash hands and face thoroughly.
   - If necessary, contact Employee Health for BP exposure response, as described above.
   - Allow 30 min. for aerosols to settle. During this time, notify the PI.
   - After 30 min., don fresh PPE, re-enter the room, cover the spill with paper towels, then soak them with disinfectant starting at the periphery and moving inward toward the center. Be sure to check for and decontaminate small splashes beyond the main affected area.
   - Leave the soaked towels in place for the contact time required to inactivate the agent. Leave the room during this time.
   - After the appropriate inactivation time, transfer soaked paper towels to biohazard waste. Wipe up the residual spill with more paper towels. Give the area a final wipe-down with paper towels using the appropriate disinfectant.

4. **Large spills (>10 mL) of potentially infectious samples*:*** A large spill, in this circumstance, is defined as a spill that spreads rapidly, presents an inhalational hazard, endangers people or the environment, and/or involves personal injury or rescue and should be handled as an emergency. In practical terms, this might be a spill of more than 10 ml splattering over a large area, thus presenting the possibility of aerosolization and widespread contamination. *The following is appropriate for most large spills of BSL-2* :

   a. If other personnel are present, alert them immediately. Keep in mind: spills generate aerosols. Ascertain the extent of the spill: possible overt exposure, splash on shoes or soles of shoes, contamination of PPE.
   b. If shoes are contaminated, disinfect them before evacuating the room (if shoes are extensively contaminated, you should remove them as you leave the room). After removing gloves (or outer gloves, if double-gloved), evacuate the room, closing the door

as you leave.

c. Remove additional PPE. Wash hands and face thoroughly. Post a sign on the door warning personnel not to enter. Allow 30 min. for aerosols to settle. During this time, notify the PI and the Biosafety Officer (934-2487) and consider any exposure response procedures necessary

d. If the spill is too difficult to manage alone, seek help from the Biosafety Officer or UAB PD (934-3535) after business hours.

e. If spill cleanup is feasible:

- After 30 minutes, don fresh PPE (including eye and respiratory protection) and re-enter the room
- Cover the spill with paper towels, and soak the towels with appropriate disinfectant, working from the outside toward the center.
- Allow the appropriate contact time for inactivation.
- If there is any broken glass associated with the spill, pick it up with tongs or forceps, and transfer it to a biohazardous broken glass container.
- Pick up soaked paper towels, and transfer to a biohazard bag.
- Give the area a final wipe-down with paper towels using the appropriate disinfectant.

*****All Spills outside of primary containment, regardless of exposure, must be reported to the Biosafety Officer (biosafety@uab.edu).**

E. Enrollment in Occupational Medicine

All UAB campus faculty, students, and staff must be enrolled with Employee Health. Enrollment renewal is due every two years, or if job hazards change. As part of their services, Occupational Medicine offers free:

- **Vaccinations:** for work-related exposure risks, including: Hepatitis, TDAP, Seasonal Flu, etc.
- **N95 use:** Anyone requiring N95 respirators should submit a Respirator Use Form and schedule fit testing with Occupational Medicine

F. Safety Training

Anyone providing infectious materials to other UAB faculty, students, or staff are responsible for notifying EH&S Biosafety, or ensuring the recipients are compliant will all UAB policies associated with the recipient's work with that material

All UAB campus faculty, students, and staff must have safety training appropriate to the hazards in their work area.

- **Basic Biosafety Training (ID: E-5VNQVM):** How to conduct a biological risk assessment for safe work with infectious organisms
- **Medical Waste Management for Labs (ID: E-7VR7VE):** How to properly dispose of medical waste at UAB
- **Bloodborne Pathogen Training (ID: E-E04XRO):** Bloodborne Pathogen Standard awareness and annual refresher training
- Agent- and procedure-specific training on how to safely conduct your job duties

G. References

1. Biosafety in Microbiological and Biomedical Laboratories. 6th Ed.
2. UAB Biosafety Manual