



Institutional Biosafety Committee

413 UCB

Boulder, Colorado 80309-0413

(303) 492-6025 FAX (303) 492-2854

e-mail: EHSBio@Colorado.edu

This is a "SAMPLE" Biohazard Control Plan for Human Blood, Body Fluids, and Reagents Derived from Blood or Body Fluids; human cell lines (e.g. HeLa, HEK 293, etc. Please read carefully and make sure that the "Biohazard Control Plan" that will be submitted to the IBC for review and approval is specific to your proposed research and the associated biohazards.

Principal Investigator: _____

D. IBC Biosafety Application - Biohazard Control plan

Please complete this part of the Application using Word ("Unprotect Document")

The "Biohazard Control Plan" must be completed for research that involves Risk Group 2 agents; human blood, blood products, reagents derived from blood; human cell lines which are known or reasonably likely to contain or be infected with HIV, Hepatitis B virus, Hepatitis C virus, or that support HIV replication (e.g. HeLa, HEK 293, etc.); or field work that involves potential exposure to infectious agents like plague, hanta virus, rabies, etc. Please visit the EH&S Campus Biological Safety Program web site: <http://ehs.colorado.edu/Biosafety.htm> to view a "sample" Biohazard Control Plan.

Instructions: Principal investigator is required to develop a plan to assure adequate protection of employees, students, the community, and the environment. The plan should take into account the nature of the research and the degree of risk. General information regarding biological safety can be obtained from the University of Colorado [Department of Environmental Health and Safety \(http://ehs.colorado.edu/Biosafety.htm\)](http://ehs.colorado.edu/Biosafety.htm) or from the following reference sources: [Biosafety in Microbiological and Biomedical Laboratories \(http://www.cdc.gov/od/ohs/biosfty/bmb15/bmb15toc.htm\)](http://www.cdc.gov/od/ohs/biosfty/bmb15/bmb15toc.htm), Centers for Disease Control and National Institutes of Health, HHS publication no. (CDC) 93-8395, 5th ed., February 2007; "[Guidelines for Research Involving Recombinant DNA Molecules \(http://www4.od.nih.gov/oba/rac/guidelines/guidelines.html\)](http://www4.od.nih.gov/oba/rac/guidelines/guidelines.html)," Federal Register 51: 16958-16985 (1986) and current revisions.

1. Exposure determination:

Note: For research involving human blood, body fluids, and reagents derived from blood or body fluids, investigators are required to treat all materials as if known to be infectious for HIV, hepatitis B or hepatitis C virus and/or other blood-borne pathogens.

a. List who will be working with hazardous material (by name & job title).

David Smith, doctoral candidate
Stephen Jones, PhD, Research Associate

b. Describe the general types of experimental procedures that will be performed (e.g. cell culture, protein purification, drawing blood, etc).

Protein purification, RNA purification, RT-PCR, plasmid DNA purification, molecular cloning of gene fragments into plasmids, cell culture, cell transfection, plasmid DNA injection into animals, isolation and freezing of mouse muscle tissues, immunohistochemical analysis.

2. Control methods:

a. Describe facility in which work is to be performed.

The majority of the laboratory work – protein, RNA, and DNA purification, cloning, and immunohistochemistry will be performed in the PI's laboratory (list Building and Room(s)). The cell culture work will be done in (list Building and Room(s)). The biological safety cabinet(s) (list BSC # as listed on front of cabinet) that will be



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used for the cell culture work has been registered with EH&S. Animal work (injections, surgeries, and sacrifice and tissue harvest) will be carried out in (list Building and Room(s)). Human blood samples will be collected by a qualified (List personnel and location of blood draw. i.e. phlebotomist, clinical research personnel at the General Clinic Research Center (GCRC) at the Wardenburg Health Center on the CU – Boulder Campus, etc.).

All cell culture is performed in (list room) in BL2 tissue culture hoods. Harvested cell suspensions will be transported to MCDB vivarium for injection into mice. All syringes and needles will be disposed of in biohazard waste containers approved for sharps. Cell culture waste will be placed in approved Biohazard waste containers.

b. Describe who will have access to the facility and how access will be controlled (If relevant, describe signs, doors, type of lock, separation from corridors and other work areas, etc.)

Aside from custodial personnel, only the (list PI name) and their research personnel will have access to (list room(s) and building). The room is always locked and only (list PI and names of research personnel who have keys) have keys to them. Both the doors and locks are solid and cannot be accessed without breaking them illegally. All other rooms are also locked and can only be accessed by a key, and only research personnel have these keys.

c. How and when will facility be cleaned and decontaminated? Will Facilities Management custodial personnel have routine access, and if so, how will they be protected from hazardous materials?

These rooms are currently cleaned by custodial personnel. All hazardous chemicals and reagents are stored in appropriate facilities that are not part of the custodial services cleaning program. All hazardous waste is stored in Satellite Accumulation Areas (SAAs) which are clearly marked. All biohazardous waste – tissue culture plastic, tips, tubes, plates, etc., used for cells, DNA, protein, human blood and blood products, or tissue handling is disposed of in special covered containers clearly labeled with biohazard stickers/labels. The (list lab benches, cell culture facilities, biosafety cabinet, etc.) are cleaned with (list appropriate disinfecting agent, i.e. 70% ethanol, 10% bleach solution, UV lighting, etc.) after each procedure.

Tissue culture hoods and counter top area will be cleaned daily by research personnel. Floors will be disinfected on as needed basis by custodial staff upon request.

d. Describe safety devices that will be used. These may include some or all of the following: biosafety cabinets, hand washing facilities, mechanical pipetting devices, puncture resistant sharps containers, splash guards, self-sheathing needles.

The PI's laboratory has two sinks (list room(s) and Building location for each sink) for routine hand washing and for emergency washing of any body part exposed to an infectious or hazardous agent. The biological safety cabinet (list EH&S BSC#) in room (list room # and building) will be used for (list procedure and biological agent). This BSC was last certified (list date) by (list Vendor). The fume hood (list EH&S fume hood #) in room (list room # and building) for use with all hazardous chemicals. All sharps will be disposed of in a puncture resistant container, autoclaved if infectious, and disposed of through the EH&S hazardous waste program. All chemical and biological reagents will be dispensed using mechanical pipetting devices and disposable tips.



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- e. **What types of personal protective equipment will be used (gloves, masks, lab coats, etc). How will the equipment be decontaminated, laundered, or disposed of?**

All laboratory staff handling biological samples will wear lab coats, safety glasses or goggles, and disposable gloves. Gloves will be disposed of as biohazardous waste and disposed of in accordance with the EH&S "Biological Laboratory Waste Management – Disposal Policy & Procedure". Goggles will be cleaned with alcohol after each use. Lab coats will be laundered in hot water, commercial laundry detergent and bleach.

3. **Vaccination: Will it be necessary to vaccinate workers against infectious agents? If so, describe plans for vaccinations. (Workers who handle human blood or other materials that may contain hepatitis B virus have the right to be vaccinated against HBV at no cost to them. HBV vaccinations can be arranged through Wardenburg Health Service at a cost of approximately \$150.00 per worker).**

HBV vaccine will be offered to all lab personnel working with human specimens or cell cultures. A record of lab personnel who have received the HBV vaccine series will be maintained and made available to the IBC and EH&S.

4. **Accidents: What procedures will be followed in case of an accident? (Note that incidents involving worker exposure to infectious material are covered under Worker's Compensation for initial medical care at Arbor Occupational Medicine (303) 443-0496 or WORKWELL Occupational Medicine (303) 702-1612. Workers have the right to confidential medical evaluation, follow-up, and counseling). The IBC and EH&S must be notified immediately of incident, even if there is a "perceived" exposure. A Risk Management "Employee Injury Report Form" must be completed for all injuries, https://urm.cusys.edu/docs/forms/incident_report_form.asp and a "Needle Stick or Bodily Fluid Exposure Report Form" for these types of injuries/exposures, https://urm.cusys.edu/docs/forms/needlestick_incident_report_form.asp**

Emergency eye/face wash and/or shower, or sink faucet will be used in case of accidental exposure to biological agents. Any lab personnel that have an accidental exposure to an infectious biological agent will be referred to Worker's Compensation at Arbor Occupational Medicine, WORKWELL Occupational Medicine, or Boulder Community Hospital in case of after hour's emergency. A Risk Management "Employee Injury Report Form" or a "Needle Stick or Bodily Fluid Exposure Report Form" will be completed for all injuries.

5. **Waste disposal: Describe provisions for disposal of hazardous materials. If all or part of hazardous material is to be decontaminated on site, specify procedures to be used. All biohazardous waste will be processed according to EH&S "[Biological Laboratory Waste Management – Disposal Policy & Procedure](http://ehs.colorado.edu/Download/EHSBiowaste.pdf)" (<http://ehs.colorado.edu/Download/EHSBiowaste.pdf>).**

All hazardous chemical waste will be properly labeled, stored, and tagged in the SAA for pick-up by EH&S. All biohazardous waste will be stored in an autoclave bag that is placed inside a closable receptacle that is clearly marked "Biohazard". All biohazardous waste will be processed according to EH&S "[Biological Laboratory Waste Management – Disposal Policy & Procedure](http://ehs.colorado.edu/Download/EHSBiowaste.pdf)" (<http://ehs.colorado.edu/Download/EHSBiowaste.pdf>). Biohazardous waste will be autoclaved, properly tagged, and disposed of through the EH&S biohazardous waste program. **OR** Biohazardous waste will be processed through an EH&S approved Vendor (list Vendor). EH&S has been notified and the Vendor has been approved for biohazardous waste disposal.

Disposal of tissue culture waste and contaminated bedding from mice will be placed in biohazard bags and sent to approved disposal waste management firm for high temperature incineration. All sharps will be placed in approved sharps containers and disposed of by safety services. All unused experimental drugs will be placed in hazard containers for disposal by waste management. Spent tissue culture media will be mixed with bleach for decontamination and disposed of in sanitary sewer.



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6. **Labeling:** Describe tags, labels, or bags that will be used to identify hazardous materials. If hazardous material is to be decontaminated on site, specify how material will be labeled to indicate that it is no longer infectious.

All hazardous waste containers in the SAA are labeled with the chemical or substance they contain and a "hazardous waste" sticker. Any containers for biohazardous waste are labeled with a "biohazard" sticker. All stock chemicals have their original label clearly marked and all reagents/working solutions have a fixed label listing all contents.

All contaminated tissue culture materials will be placed in biohazard bags inside approved containers. Tops of bags will be tied closed, and bags will be transferred to disposal companies' containers for shipment. All sharps containers, and glass vials containing unused drugs will be placed in metal hazard cans lined with pre-labeled liners for proper disposal.

7. **Training:** Describe how workers will be trained to handle all hazardous materials (biological, chemical and radioactive). For training in biological lab safety, the safe use of blood-borne pathogens or to properly package and ship biological materials, contact EH&S at 2-6025 or Denise Donnelly at 2-7072, denise.donnelly@colorado.edu.

All laboratory personnel will complete the Environmental Health & Safety – Hazardous Waste Generator Training prior to using chemicals and generating hazardous waste.

All laboratory personnel will complete the Environmental Health & Safety – Bloodborne Pathogen Training. The Principal Investigator will provide this training to all lab personnel who will be working with any "potentially" or known infectious materials.