The University of Vermont
Risk Management & Safety
Biosafety Office

BIOHAZARDOUS AGENT REFERENCE DOCUMENT

Lentivirus & Lentiviral Vectors

The Biohazardous Agent Reference Document (BARD) is a general guidance resource that reviews and summarizes the nature of a pathogen or biotoxin, and offers safety requirements for work with the agent in the laboratory. The BARD may replace the formal SOPs used in conjunction with some IBC registrations.

The BARD is provided as an additional guidance tool, and is not a substitute for a risk assessment, biosafety training, lab-specific training, or a formal IBC master protocol registration. This document should be readily available in the laboratory, and it is the responsibility of the Laboratory Supervisor or Principal Investigator to ensure that all personnel have read, understood, and signed the document. The BARD is for informational purposes only, and is not intended to be a substitute for professional medical advice, diagnosis, or treatment. Please consult a health care provider for any medical questions or concerns.

INSTRUCTIONS

1. **Review the information contained in this document.**
2. **Add any necessary information that is specific to your work in the laboratory (such as strain-specific information). Please be sure that the track changes function is turned on to indicate any changes that you make.**
3. **Instruct all personnel to review the BARD and sign the last page, indicating that they have read and understood the information.**
4. **Submit the BARD along with your IBC master protocol registration, amendment, or continuing review.**

Principal Investigator: _____ IBC Registration #: _____

The UNIVERSITY of VERMONT
Risk Management & Safety
Biosafety Office

BIOHAZARDOUS AGENT REFERENCE DOCUMENT

Lentivirus & Lentiviral Vectors

CHARACTERISTICS	
Morphology	Member of the retrovirus family, enveloped virus, commonly used to deliver genetic information into DNA of host cells, most are derived from HIV-1
Strain Specific Characteristics	Several generations of lentiviral vectors exist with multiple safety features such as segregation of vector and packaging functions on separate plasmids, or deletions of genes essential to replication

HEALTH HAZARDS	
Host Range	Humans and non-human primates. Replacing the envelope with VSV creates a broader host range
Modes of Transmission	Mucous membrane contact, ingestion, needlestick or other injury, contact with non-intact skin
Signs and Symptoms	Fever, fatigue, weight loss, immunological and neurological disease, insertional mutagenesis
Infectious Dose	Unknown
Incubation Period	1 – 6 months

MEDICAL PRECAUTIONS / TREATMENT	
Prophylaxis	None available
Vaccines	None available
Treatment	Anti-retroviral post-exposure prophylaxis (PEP) as indicated by physician
Surveillance	Monitor for symptoms and test using serology or western blot
UVM IBC Requirements	Report any exposures or signs and symptoms to your supervisor
Additional Medical Precautions	

LABORATORY HAZARDS	
Laboratory Acquired Infections	6 reported lab-acquired infections
Sources	Blood, tissues, cerebrospinal fluid, nasopharynx secretions, and cells from infected humans, animals and infected cell lines.

CONTAINMENT REQUIREMENTS	
BSL - 2	Manipulation of known or potentially infected clinical samples and cell cultures of laboratory adapted strains (RG2)
BSL - 3	
ABSL - 2	Work with animals infected with risk group 2 strains. Animals infected with replication incompetent strains may be moved to ABSL-1 after 72 hours. If the strain is replication competent, animals must remain at ABSL-2
ABSL - 3	
Aerosol generating activities	Centrifugation, homogenizing, vortexing or stirring, changing of animal cages, animal surgeries, cell sorting, pipetting, pouring liquids, sonicating, loading syringes
Primary containment device (BSC)	Use for all work with infectious or potentially infectious material, loading and unloading centrifuge rotors.

EXPOSURE PROCEDURES	
Mucous membranes	Flush eyes, mouth or nose for 15 minutes at eyewash station.
Other exposures	Wash area with soap and water for 15 minutes
Medical Follow-Up	Contact UVMMC Infectious Disease Dept. directly at **(802) 847-2700** for immediate assistance. Bring this document with you if seeking medical care.
Reporting	Report all exposures or near misses to: 1. Your immediate Supervisor 2. The UVM Biosafety Officer at **(802) 777-9471** and Risk Management at **6-3242** 3. Risk Management and Safety; https://www.uvm.edu/riskmanagement/incident-claim-reporting-procedures

PERSONAL PROTECTIVE EQUIPMENT (PPE)	
Minimum PPE Requirements	Nitrile gloves, closed toed shoes, lab coat, appropriate eye/face protection
Additional Precautions (Risk assessment dependent)	Sharps use strictly limited. Open wounds or cuts should be allowed to scab over before entering the laboratory, and should then be covered with waterproof dressings.

Principal Investigator: _____ IBC Registration #: _____

The UNIVERSITY of VERMONT
Risk Management & Safety
Biosafety Office

BIOHAZARDOUS AGENT REFERENCE DOCUMENT

Lentivirus & Lentiviral Vectors

VIABILITY	
Disinfection	Susceptible to fresh 10% bleach, 2% glutaraldehyde, formaldehyde; with 10 minute contact time
Inactivation	Inactivated by heat above 56°C for at least 30 minutes
Survival Outside Host	Drying causes 90 – 99% reduction in viability after several hours

SPILL CLEAN UP PROCEDURES	
Small Spill	Notify others working in the lab. Allow aerosols to settle. Don appropriate PPE. Cover area of the spill with paper towels and apply approved disinfectant, working from the perimeter towards the center. Allow 30 minutes of contact time before clean up and disposal. Dispose in double biowaste bags and biobox.
Large Spill	**Inside of a lab:** Call UVM Service Operations at 656-2560 and press option 1 to speak to a dispatcher. Ask them to page Risk Management and Safety. **Outside of a lab:** Pull the nearest fire alarm and evacuate the building. Wait out front of the building for emergency responders to arrive.

REFERENCES	
NIH Office of Science Policy (RAC guidelines)	https://osp.od.nih.gov/wp-content/uploads/2013/12/Lenti_Containment_Guidance.pdf
BMBL	https://www.cdc.gov/biosafety/publications/bmbl5/
Journal of Occupational & Environmental Medicine	http://journals.lww.com/joem/pages/results.aspx?txtkeywords=lentivirus
UVM Lentivirus Fact Sheet	http://www.uvm.edu/safety/sites/default/files/lentiviral_vectors_fact_sheet.pdf

STUDENT / EMPLOYEE NAME	SIGNATURE	DATE

Biosafety Review:

_____ _____

Jeff LaBossiere, Biological Safety Officer — Date

Principal Investigator: _____ IBC Registration #: _____