The University of Vermont
Risk Management & Safety
Biosafety Office

BIOHAZARDOUS AGENT REFERENCE DOCUMENT

Coronavirus SARS-CoV-2

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

Coronavirus SARS-CoV-2

LABORATORY HAZARDS	
Laboratory Acquired Infections	None reported
Sources	Respiratory droplets, nasopharyngeal and oropharyngeal secretions, lower respiratory sputum, laboratory cultures

CHARACTERISTICS	
Morphology	Positive-stranded RNA virus with a crown-like appearance due to the presence of spike glycoproteins on the envelope
Strain Specific Characteristics	Novel coronavirus that causes the respiratory illness COVID-19 by infecting alveolar epithelial cells. Primary clinical isolates will be used, which could include variants of interest & variants of concern (ie, B.1.17, P.1., B.1.351, B.1.427/B.1.429 and others circulating in the human population during the time of sample collection.

HEALTH HAZARDS	
Host Range	Humans. Research suggests that the virus may have originated in bats.
Modes of Transmission	Inhalation of aerosols, contact with mucous membranes
Signs and Symptoms	Most cases have mild symptoms, including: Cough, fever, sore throat, head or body aches, nasal congestion, and/or malaise. More serious cases may also include shortness of breath and abnormalities visible through imaging of the lungs. Severe cases may result in respiratory failure, septic shock, and/or organ failure.
Infectious Dose	Unknown
Incubation Period	2 – 14 days

MEDICAL PRECAUTIONS / TREATMENT	
Prophylaxis	None available
Vaccines	A variety of SARS-CoV-2 vaccines are available that are highly protective against circulating SARS-CoV-2.
Treatment	Supportive care is the primary treatment, most patients recover within 1-2 weeks. Monoclonal antibody therapy is now available and is most effective when administered as early as possible in the course of disease. For an updated list of treatments, please visit: https://www.cdc.gov/coronavirus/2019-ncov/your-health/treatments-for-severe-illness.html

Surveillance	Monitor for symptoms, and test using RT-PCR.
UVM IBC Requirements	Report any exposures or signs and symptoms to your supervisor
Additional Medical Precautions	Immunocompromised people, people with heart or lung disease, and older adults are at a higher risk for serious illness

CONTAINMENT REQUIREMENTS	
BSL - 2	Manipulation or examination of clinical samples, fixed or inactivated specimens, molecular analysis of extracted nucleic acid preparations. Manipulation of infected samples must occur in a certified biosafety cabinet
BSL - 3	Virus isolation in cell culture and characterization of viral agents recovered from clinical specimens
ABSL - 2	
ABSL - 3	All work with infected animals
Aerosol generating activities	Centrifugation, homogenizing, vortexing or stirring, , pipetting, pouring liquids.
Primary containment device (BSC)	Use for all activities that have the potential to generate aerosols, all manipulation of potentially infected specimens or cultures

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 **508-904-0866** 3. Risk Management and Safety; http://www.uvm.edu/safety/lab/incident-reporting

PERSONAL PROTECTIVE EQUIPMENT (PPE)	
Minimum PPE Requirements	Double nitrile gloves, lab coat or gown, eye/face protection. Wash hands after removing gloves.
Additional Precautions (Risk assessment dependent)	PAPR with full face shield, shoe covers, double nitrile gloves, and full-coverage protective clothing for BSL-3 work (Tyvek suit, waterproof apron with full sleeves). Medical clearance, fit testing and training is required annually per UVM's Respiratory Protection Program: https://www.uvm.edu/riskmanagement/personal-protective-equipment

Principal Investigator: _____ IBC Registration #: _____

The UNIVERSITY of VERMONT
Risk Management & Safety
Biosafety Office

BIOHAZARDOUS AGENT REFERENCE DOCUMENT

Coronavirus SARS-CoV-2

VIABILITY	
Disinfection	10% bleach, 70% alcohols, quaternary ammonium compounds, other EPA-registered disinfectants. Minimum contact time of 10 minutes.
Inactivation	Most coronaviruses are sensitive to UV radiation (60-minute contact time) and heat (above 60°C for 30 minutes).
Survival Outside Host	Capable of surviving on surfaces for up to 9 days at room temperature. May survive longer at 4°C

SPILL CLEAN UP PROCEDURES	
Spill inside of the BSC	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 lab biowaste container.
Spill Outside of the BSC	Follow the emergency contact list to notify VDH and UVM Biosafety Officers after you safely doff PPE and leave the facility.

REFERENCES	
Canadian PSDS (SARS-CoV)	https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/severe-acute-respiratory-syndrome-sars-associated-coronavirus.html
BMBL	https://www.cdc.gov/labs/pdf/SF__19_308133-A_BMBL6_00-BOOK-WEB-final-3.pdf
CDC Guidelines	https://www.cdc.gov/coronavirus/2019-nCoV/lab/index.html
EPA list of approved disinfectants	https://www.epa.gov/sites/production/files/2020-03/documents/sars-cov-2-list_03-03-2020.pdf
Journal of Hospital Infection	https://www.journalofhospitalinfection.com/article/S0195-6701(20)30046-3/pdf
Nature	https://www.ncbi.nlm.nih.gov/pubmed/32015507
International Society for Advancement of Cytometry	https://isac-net.org/news/news.asp?id=497501

STUDENT / EMPLOYEE NAME	SIGNATURE	DATE

Biosafety Review:

_____
Sonia Godoy-Tundidor, Biological Safety Officer

_03 June 2022_____
Date

Principal Investigator: _____ IBC Registration #: _____