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](https://www.uvm.edu/rpo/biosafety-oversight). 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.**

1. **Submit the BARD along with your IBC master protocol registration, amendment, or continuing review.**

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| **Characteristics** | |
| ***Morphology*** | Tickborne zoonotic spirochete bacterium, causative agent of Lyme disease, carried by ticks of the genus *Ixodes.* |
| ***Strain Specific***  ***Characteristics*** |  |

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| **health hazards** | |
| ***Host Range*** | Humans, deer, wild rodents, ticks are vectors. |
| ***Modes of Transmission*** | Exposure to an infected tick, accidental parenteral inoculation, inhalation of aerosols |
| ***Signs and Symptoms*** | Skin lesion at site of tick bite, polyarthritis, malaise, fatigue, fever, headache, stiff neck, muscle pain. Neurological and cardiac abnormalities weeks to months after infection. Chronic arthritis may develop. |
| ***Infectious Dose*** | Unknown |
| ***Incubation Period*** | 3 - 32 days after tick exposure |

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| **Medical precautions / treatment** | |
| ***Prophylaxis*** | Not generally warranted for tick bite alone |
| ***Vaccines*** | Under development |
| ***Treatment*** | Doxycycline, amoxicillin, or erythromycin to control infection and lessen severity of complications |
| ***Surveillance*** | Monitor for symptoms and test using serology |
| ***UVM IBC Requirements*** | Report any exposures or signs and symptoms to your supervisor. |
| ***Additional Medical Precautions*** | Endemic areas include east coast of USA, WI, MN, CA, OR, Southern Ontario, Europe, Soviet Union, Australia, China, Japan. Cases occur primarily during summer. |

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| **laboratory hazards** | |
| ***Laboratory Acquired Infections*** | None specifically for B. burgdorferi, but 45 reported cases with 2 deaths attributed to B. recurrentis and B. duttoni (up to 1976) |
| ***Sources*** | Blood, cerebrospinal fluid, urine, skin scrapings, retinal and synovial specimens. Infected mammals, their ectoparasites, infected tissues, laboratory cultures. |

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| **Containment Requirements** | |
| ***BSL - 2*** | Manipulation of known or potentially infected clinical samples and cultures of laboratory adapted strains (RG2) |
| ***BSL - 3*** |  |
| ***ABSL - 2*** | Work with animals infected with risk group 2 strains |
| ***ABSL - 3*** |  |
| ***Aerosol generating activities*** | Centrifugation, homogenizing, vortexing or stirring, changing of animal cages, cell sorting, pipetting, pouring liquids, sonicating, loading syringes |
| ***Primary containment device (BSC)*** | Use for aerosol-generating activities, large volumes, or high concentrations |

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| **exposure procedures** | |
| ***Mucous membranes*** | Flush 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 |
| ***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> |

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| **Personal protective equipment (PPE)** | |
| ***Minimum PPE Requirements*** | Nitrile gloves, lab coat, appropriate eye/face protection. Wash hands after removing gloves. |
| ***Additional Precautions***  ***(Risk assessment dependent)*** | Sharps use strictly limited. |

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| **Viability** | |
| ***Disinfection*** | Susceptible to 1% sodium hypochlorite and 70% ethanol, with 10 minutes contact time |
| ***Inactivation*** | Inactivated by heat |
| ***Survival Outside Host*** | Capable of surviving in infected blood 28 – 35 days at room temperature, short periods of time in urine, and up to 48 days at 4°C in human blood. |

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| **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. |

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| **Student / Employee Name SIGNATURE DATE** |
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***Biosafety Review:***

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Jeff LaBossiere, Biological Safety Officer

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| **References** | |
| Canadian PSDS | <https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/borrelia-burgdorferi-material-safety-data-sheets-msds.html> |
| BMBL | <https://www.cdc.gov/biosafety/publications/bmbl5/> |
| CDC Guidelines | <https://www.cdc.gov/lyme/index.html> |
| Current Protocols in Microbiology | <http://onlinelibrary.wiley.com/store/10.1002/9780471729259.mc12c01s4/asset/mc12c01.pdf?v=1&t=j5y6xibr&s=a44c077c8ca402f750d8834640f5d99af8b8c8d2> |

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