## UNMC SARS-CoV-2 (COVID-19) Research Laboratory Biosafety Guidelines

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<th>Research Activities with Known or Likely Infected Specimens from Humans or Animal Models</th>
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| **BSL-3/ABSL-3**         | • Storage and laboratory work with seed stocks, working stocks, or specimens\(^2\) with the intent to grow or use live virus at UNMC.  
  - Virus isolation, characterization, and/or expansion  
  - Ship viral cultures or isolates as Category A, UN2814, infectious substance, affecting humans\(^3\)  
  • Use of live SARS-CoV-2 virus in functional assays:  
    - Plaque/Focus Forming Unit assays  
    - Serologic virus capture/binding assays  
    - Therapeutic MIC assays  
  • Use of live SARS-CoV-2 virus in animals | Restricted activity. Contact the Biosafety Officer or Associate Biosafety Officers for additional information. PI and personnel must have access to the facility, BSL-3 training, and project approval from the BSL-3/ABSL-3 Facility Director. |
| **BSL-2 with enhanced precautions** | • Processing, aliquoting, or preparing specimens\(^2\) for research use and storage.  
  • Preparation of chemical- or heat-fixed specimens\(^2\) for microscopic analysis  
  • Nucleic acid extraction of specimens\(^2\) for molecular analysis  
  • Preparation of inactivated specimens for other laboratory assessments  
  • Performing diagnostic tests with respiratory samples that do not involve activities with the potential to propagate the virus  
  • Inoculating bacterial or mycological culture media  
  • Work with inactivated viral lysate | Meet BSL-2 Requirements below, PLUS:  
  • Wear the following PPE: surgical mask (blood)/N-95 or PAPR (respiratory secretions), double gloves, impervious closed-front gown, eye protection or face shield.  
  • Perform all sample manipulations in a BSC  
  • Must use sealed centrifuge rotors or samples cups  
  • Do not use sharps (unless absolutely necessary)  
  • Restricted access to the lab and samples |
| **BSL-2** | • Molecular analysis of already extracted nucleic acid preparations  
  • Analysis of specimens\(^2\) that have been inactivated by a method approved by UNMC Institutional Biosafety Committee (IBC).  
  • Final packaging of specimens\(^2\) already in a sealed, decontaminated primary container for transport to collaborating laboratories for additional analyses  
  • Specimens\(^2\) from suspected or confirmed cases should be transported as UN3373, "Biological Substance, Category B  
  • Pathologic/microscopic examination of fixed specimens\(^2\) (e.g., formalin-fixed tissues or glutaraldehyde-fixed grids).  
  • FACS – fixed cells/samples  
  • Serological analysis of serum or plasma or urinalysis | • An approved IBC protocol\(^1\) detailing the materials handled, procedures performed, aerosol-generating procedures, location of work, waste handling procedures, and personnel involved.  
  • The laboratory must meet requirements as outlined in **IBC-19 Policy.**  
  • Good (Standard) Microbiological Practices\(^4\)  
  • Conduct all procedures with the potential to generate aerosols in a BSC  
  • Use centrifuge safety cups whenever possible  
  • Ensure personnel have completed biosafety training and PI/lab supervisor must document their proficiency at working under BSL-2 conditions |

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1. All research-related activities involving SARS-CoV2 must be covered by an IBC protocol
2. Specimens are defined as, but not limited to, blood, tissues, feces, sputum, mucosal swabs, or washes/secretions collected from any species.
3. For assistance with required import and export regulations, please contact the Export Control Office.
4. PPE: single gloves, gown/lab coat, eye protection, (surgical mask)

Resources:  
- CDC’s Frequently Asked Questions about Laboratory Biosafety and SARS-CoV-2  
- CDC/NIAID Biosafety in Microbiological and Biomedical Laboratories, 5th ed.

Questions about Laboratory Biosafety? Email: UNMC Biosafety

UNMC Vice Chancellor for Research Institutional Biosafety Committee

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