# 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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| **Storage and laboratory work with seed stocks, working stocks or specimens\(^1\) with the intent to grow or use live virus at Duke.**  
  - Virus isolation, characterization and/or expansion  
  - Viral cultures or isolates should be transported as Category A, UN2814, “infectious substance, affecting humans” \(^2\)  
| BSL-3/ABSL3\(^3\) | Scott Alderman, MS, CBSP  
  Director of Facilities and Safety, DHVI  
  Interim Director, Regional Biocontainment Laboratory  
  Duke Human Vaccine Institute  
  Phone: 919-668-6593  
  scott.alderman@duke.edu  
  https://shared-resources.dhvi.duke.edu/rbl |
| **Use of live SARS-CoV-2 virus in functional assays:**  
  - Plaque/Focus Forming Unit assays  
  - Serologic virus capture/binding assays  
  - Therapeutic MIC assays  
  - Live cell sorting with intact virus  
| BSL-2 with enhancements\(^4\) | Antony Schwartz, Ph.D., SM(NRCM), CBSP(ABSA)  
  Director, Biological Safety / BSO / RO  
  Occupational and Environmental Safety Office  
  Phone: 919-684-8822  
  antony.schwartz@duke.edu  
  https://www.safety.duke.edu/biological-safety |
| **Processing, aliquoting or preparing specimens\(^1\) for research use and storage**  
**Preparation of chemical- or heat-fixed specimens\(^1\) for microscopic analysis**  
**Nucleic acid extraction of specimens\(^1\) for molecular analysis**  
**Preparation of inactivated specimens for other laboratory assessments**  
**Performing diagnostic tests (e.g. serology) that do not involve activities with the potential to propagate virus**  
**Inoculating bacterial or mycological culture media**  
| BSL-2 | Antony Schwartz, Ph.D., SM(NRCM), CBSP(ABSA)  
  Director, Biological Safety / BSO / RO  
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| **Molecular analysis of already extracted nucleic acid preparations**  
**Analysis of specimens\(^1\) that have been inactivated by a method approved by Duke Biological Safety.**  
**Final packaging of specimens\(^1\) already in a sealed, decontaminated primary container for transport to collaborating laboratories for additional analyses**  
  - Specimens from suspected or confirmed cases should be transported as UN3373, “Biological Substance, Category B”  
  - Pathologic/microscopic examination of fixed specimens\(^1\) (e.g. formalin-fixed tissues or glutaraldehyde-fixed grids).  
  - Routine staining and microscopic analysis of fixed smears  
  - Routine examination of bacterial and mycotic cultures**  
| BSL-2 | Antony Schwartz, Ph.D., SM(NRCM), CBSP(ABSA)  
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*Please note that all proposed research with SARS-CoV-2 (COVID-19) requires review by the Biological Safety Division of OESO and will require approval of a Standard Operating Procedure (SOP) for the research. In addition, some research will also require approval by the Institutional Biosafety Review Committee (IBRC) and/or the Institutional Biosafety Committee (IBC), which will be coordinated by OESO-Biological Safety Division. For details, email biosafety@duke.edu.*

1 Specimens are defined as, but not limited to, blood, serum, plasma, tissues, feces, urine, sputum, mucosal swabs or washes/secretions collected from any species.

2 For assistance with *required* import permits and export licenses contact Duke Office of Export Controls (export@duke.edu; 919-613-6800).

3 Animal Biosafety Level-3 (ABSL-3)  

4 Required enhancements to standard BSL2:  
  - Any procedure with the potential to generate aerosols or droplets (e.g., flipping open snap-cap tubes, pipetting, vortexing, cell sorting, ELISA plate washing) should be performed in a certified Class II Biological Safety Cabinet (BSC). BSC must be decontaminated with an EPA approved disinfectant for coronavirus.  
  - If a BSC is unavailable for aerosol or droplet generating procedures, a combination of PPE (lab coat, gloves, and mucous membrane and respiratory protection such as a N95 respirator with a faceshield, safety glasses, or goggles) along with equipment (e.g. splash guards, sealed centrifuge rotors, and/or gasketed centrifuge caps) must be implemented. N95 users must be adhere to the Respiratory Protection Policy.  
  - The use of sharps should be eliminated wherever possible. When the use of sharps is unavoidable, strict sharps safety measures must be followed.