

## **Animal Biosafety Levels**

### **Animal Biosafety Level 1**

Animal Biosafety Level 1 is suitable for work involving well-characterized agents that are not known to cause disease in immunocompetent adult humans, and present minimal potential hazard to personnel and the environment. ABSL-1 facilities should be separated from the general traffic patterns of the building and restricted as appropriate. Special containment equipment or facility design may be required as determined by appropriate risk assessment. Personnel must have specific training in animal facility procedures and must be supervised by an individual with adequate knowledge of potential hazards and experimental animal procedures.

### **Animal Biosafety Level 2**

Animal Biosafety Level 2 builds upon the practices, procedures, containment equipment, and facility requirements of ABSL-1. ABSL-2 is suitable for work involving laboratory animals infected with agents associated with human disease and poses moderate hazards to personnel and the environment. It also addresses hazards from ingestion as well as from percutaneous and mucous membrane exposure.

ABSL-2 requires that:

1. Access to the animal facility is restricted.
2. Personnel must have specific training in animal facility procedures, the handling of infected animals, and the manipulation of pathogenic agents.
3. Personnel must be supervised by individuals with adequate knowledge of potential hazards, microbiological agents, animal manipulations, and husbandry procedures.
4. Procedures involving the manipulation of infectious materials, or where aerosols or splashes may be created, should be conducted in BSCs or by use of other physical containment equipment. Appropriate personal protective equipment must be utilized to reduce exposure to infectious agents, animals, and contaminated equipment. Implementation of employee occupational health programs should be considered.

### **Animal Biosafety Level 3**

Animal Biosafety Level 3 involves practices suitable for work with laboratory animals infected with indigenous or exotic agents, agents that present a potential for aerosol transmission, and agents causing serious or potentially lethal disease. ABSL-3 builds upon the standard practices, procedures, containment equipment, and facility requirements of ABSL-2. ABSL-3 laboratory has special engineering and design features.

ABSL-3 requires that:

1. Access to the animal facility is restricted.
2. Personnel must have specific training in animal facility procedures, the handling of infected animals, and the manipulation of potentially lethal agents.
3. Personnel must be supervised by individuals with adequate knowledge of potential hazards, microbiological agents, animal manipulations, and husbandry procedures
4. Procedures involving the manipulation of infectious materials, or where aerosols or splashes may be created, must be conducted in BSCs or by use of other physical containment equipment. Appropriate personal protective equipment must be utilized to reduce exposure to infectious agents, animals, and contaminated equipment. Employee occupational health programs must be implemented.

### **Animal Biosafety Level 4 (NO ALLOWED AT GW)**

Animal Biosafety Level 4 is required for work with animals infected with dangerous and exotic agents that pose a high individual risk of life-threatening disease, aerosol transmission, or a related agent with an unknown risk of transmission. Agents with a close or identical antigenic relationship to agents requiring ABSL-4 containment must be handled at this level until sufficient data are obtained either to confirm continued work at this level or to re-designate the level. Animal care staff must have specific and thorough training in handling extremely hazardous, infectious agents and infected animals. Animal care staff must understand the primary and secondary containment functions of standard and special practices, containment equipment, and laboratory design characteristics. All animal care staff and supervisors must be competent in handling animals, agents, and procedures requiring ABSL-4 containment. Access to the animal facility within the ABSL-4 laboratory is controlled by the animal facility director and/or laboratory supervisor following institutional policies.

There are two models for ABSL-4 laboratories:

1. A *Cabinet Laboratory* where all handling of agents, infected animals, and housing of infected animals must be performed in Class III BSCs.
2. A *Suit Laboratory* where personnel must wear a positive pressure protective suit (See Appendix A); infected animals must be housed in ventilated enclosures with inward directional airflow and HEPA filtered exhaust; infected animals should be handled within a primary barrier system, such as a Class II BSC or another equivalent containment system.

ABSL-4 builds upon the standard practices, procedures, containment equipment, and facility requirements of ABSL-3. However, ABSL-4 cabinets and suit laboratories have special engineering and design features to prevent microorganisms from being disseminated into the environment and personnel. The ABSL-4 cabinet laboratory is distinctly different from an ABSL-3 laboratory containing a Class III BSC.