

**Guidelines for the Use of Appropriate Personal Protective Equipment for Personnel
Working with Non-Human Primates**

The University of Texas at Austin Institutional Animal Care and Use Committee

These guidelines have been written to assist faculty, staff, and students in performing vertebrate animal procedures in a humane manner and complying with pertinent regulatory requirements. Under some circumstances deviations from these procedures may be indicated but such variances must be approved in advance by the IACUC.

The following guidelines specify the protective measures required to address the risks of infection to laboratory personnel when working in animal rooms and laboratories that are associated with non-human primates. The use of personal protective equipment (PPE) to cover street clothes and exposed human skin also provides the primates a level of protection from cross-contamination with agents that might be carried by humans. These guidelines define the levels of protection that are commensurate with the risk encountered for different activities. It is organized into two sections:

Section A – Background and Rationale

Section B – Species Specific Requirements

1. Working with Marmosets
2. Working with Macaques – Low-risk activities
3. Working with Macaques – Moderate-risk activities
4. Working with Macaques – High-risk activities

Section A – Background and Rationale

As noted by the National Research Council:

Many pathogenic organisms that naturally infect nonhuman primates are communicable to humans, and several human pathogenic organisms are communicable to nonhuman primate and can be retransmitted back to humans. Because humans and nonhuman primates have a close phylogenetic relationship, the risk of transmission of pathogenic organisms with nonhuman primates is greater than with any other group of laboratory animals used in biomedical research. [Occupational Health and Safety in the Care and Use of Nonhuman Primates, 2003]

The potential risks of exposure to the Old World primate group (which includes macaques such as rhesus and cynomolgus monkeys) is considered higher than the risks associated with New World primates (such as marmosets). Much of the increased concern with macaque exposure centers around the risk of exposure to B Virus (also known as Herpesvirus simiae). For over a decade, all macaques procured for use at UT- Austin have been selected based on repeated negative B virus serology, and this practice will continue for the foreseeable future. Occupational exposure to the macaques in our colonies can accordingly be considered to have a lower risk as compared to known-positive colonies or those of unknown status. For this reason, some of the more stringent guidelines regarding PPE proposed for positive or suspect colonies are not appropriate. A good alternate model for "universal precautions" regarding mucus membrane and eye protection for research personnel in our low-risk macaque colonies can be found in the OSHA requirements for exposure to human blood and bodily fluids:

Masks, Eye Protection, and Face Shields. *Masks in combination with eye protection devices, such as goggles or glasses with solid side shields, or chin-length face shields, shall be worn whenever splashes, spray, spatter, or droplets of blood or other potentially infectious materials may be generated and eye, nose, or mouth contamination can be reasonably anticipated. [Bloodborne Pathogens Standard, 29 CFR 1910.1030]*

The two primary protective measures are protective clothing to prevent scratches and bites as well as skin contact with contaminated materials, and mucous membrane splash protection to shield eyes, nose and mouth from potentially hazardous contact with wastes or bodily fluids from primates.

Protective clothing includes a long-sleeved lab coat, dedicated uniform or surgical gown as well as gloves and, where necessary, shoe covers or dedicated shoes. As is the case in all laboratory environments, shoes that fully cover the feet must be worn in the animal facility. Sandals or perforated shoes are not appropriate. Because shorts or skirts leave significant areas of skin unprotected even when a lab coat is worn, long pants are required as well.

Mucous membrane splash protection includes protection of nose and mouth with a face mask in conjunction with protection of eyes by ANSI-approved safety glasses or goggles designed to provide front and side protection, and/or a full face shield. For operations with macaques having a high splash potential, safety glasses or goggles must be used in combination with a face shield to provide appropriate protection. Regular prescription eyeglasses without side shields DO NOT do not constitute protective eyewear, nor do surgical masks that have a simple plastic eye shield attached.

ADDITIONAL COMMENTS:

While these guidelines specify university-wide minimum standards, PI's may implement additional lab-specific guidelines that are appropriate to the unique circumstances of individual laboratories.

These guidelines cover exposure to primates not known to pose specific risks of exposure. Primates that are being used in research that involves the administration of potentially hazardous materials (e.g., infectious agents, toxins or rDNA) or that are known or suspected to be infected with a contagious zoonosis may need to be handled with additional protective measures. This must be coordinated with the ARC and EH&S.

Section B – Species Specific Requirements

The appropriate protection for specific primate-related activities depends on the species and the degree of risk involved. Activities with macaques can be characterized as low, moderate, or high risk as detailed below. The sections that follow below describe the risk level and the required personal protection for a variety of activities. If a particular activity is not listed, consider the example that provides the nearest match. Contact EHS or ARC for further consultations when novel circumstances arise.

1. Working with Marmosets
2. Working with Macaques - Low risk activities
3. Working with Macaques - Moderate risk activities
4. Working with Macaques - High risk activities

1. Working with Marmosets

PPE required for New World monkeys is comparable to what is required for macaques, with the exception that eye protection is not required at all times.

Required PPE:

- a) lab coat, dedicated uniform or surgical scrubs/gown (long-sleeved)
- b) impermeable gloves (vinyl, latex or nitrile)
- c) mask (surgical or dust/mist type acceptable)
- d) in addition, location-specific additional requirements such as the use of shoe covers or bonnets may be required; always follow the PPE requirements posted on the animal room or laboratory door.

Comments: Eye protection for individuals working with new world primates may be indicated under circumstances involving high risk of splash exposure or when additional hazards are involved, such as the use of chemical or biological agents. Contact EHS for a risk analysis and recommendation when unique hazards or situations arise.

2. Working with Macaques – Low-risk activities

Routine procedures that may involve exposure to primates via direct contact, splashes, or aerosols but have an overall low risk due to the relatively controlled circumstances under which they are performed.

Example 1) Procedure or treatment room: performing minor procedures on restrained or sedated animals.

This applies to minor procedures such as suture removal, venipuncture, anesthesia induction and physical exam. Double gloves can be used at the individual's discretion, depending on the animal and procedure involved. Adequate eye protection is especially important when intubating animals.

Example 2) Physiology or behavior lab: activities requiring entry into isolation and recording areas

This category includes activities that occur during electrophysiological and behavioral experiments utilizing animals in a restraint device that has a shielded litter pan. The investigator or technician is working in the same room with an animal in the laboratory. Examples include applying head fixation, making adjustments to primate chair, actively running monkeys in behavioral rigs, caring for an implant, placing electrodes, or feeding an animal. Note that cleaning implanted caps or cylinders by flushing them with solutions is a high-risk activity (see below).

Required PPE:

- a) Lab coat, dedicated uniform or surgical scrubs/gown (long-sleeved)
- b) impermeable gloves (vinyl, latex or nitrile)
- c) mask (surgical or dust/mist type acceptable)
- d) safety glasses or goggles
- e) in addition, location-specific additional requirements such as the use of shoe covers or bonnets may be required; always follow the PPE requirements posted on the animal room or laboratory door.

Comments: Laboratory personnel working with computers, electronic instrumentation, or conducting experiments remotely (i.e., at the electronics racks) while the monkey is fully enclosed in an adjacent isolation booth or a physically separated room in a physiology suite do not need to wear PPE. However, it is recommended that they be provided with primate-specific training so that they are aware of the risks while

working in primate areas.

3. Working with Macaques – Moderate-Risk Activities

Procedures that a) result in exposure to primates within an animal holding room where the degree of surface contamination is greater and the primates are not restrained nor sedated, or b) surgical exposure where blood and tissue exposure is more likely.

Example 3) Animal housing room: all activities

Example 4) Operating room: Surgeon, assistant, or anesthesiologist

Required PPE:

- a) lab coat, dedicated uniform or surgical scrubs/gown (long-sleeved)
- b) impermeable gloves (vinyl, latex or nitrile)
- c) mask (surgical or dust/mist type acceptable)
- d) safety glasses or goggles
- e) shoe covers over street shoes or dedicated shoes/boots
- f) in addition, location-specific additional requirements such as the use of bonnets may be required; always follow the PPE requirements posted on the animal room or laboratory door.

Comments: During the initial stages of pole & collar training or when animals are being immobilized with a squeeze mechanism, leather gloves (worn over impermeable gloves) to protect hands/arms near to the animal are recommended and should be made available. Double gloving is deemed advisable when hands are near the cage or primate chair or when the surgeon will be handling sharp instruments or working with bony tissues, including the skull. Shoe covers are always required in an operating room.

4. Working with Macaques – High-Risk Activities

Procedures that may actively aerosolize primate wastes/bodily fluids or generate potentially contaminated fluids at either high velocity or high volume

NOTE: If someone is performing a high-risk activity, then ALL personnel in that room must take the precautions listed below:

Example 5) Performing dentistry or oral surgery

Example 6) Using a hose or mop & bucket to wash down primate-contaminated cages or other equipment, floors, etc.

Example 7) Flushing a recording cylinder by using a pressurized delivery system (e.g., a syringe and needle, an IV bag, a rubber bulb and pipette, etc.)

Required PPE:

- a) lab coat, dedicated uniform or surgical scrubs/gown (long-sleeved)
- b) impermeable gloves (vinyl, latex or nitrile)
- c) mask (surgical or dust/mist type acceptable)
- d) full faceshield in addition to safety glasses/goggles.

- e) shoe covers over street shoes or dedicated shoes/boots
- f) in addition, location-specific additional requirements such as the use of bonnets may be required; always follow the PPE requirements posted on the animal room or laboratory door.

Comments: The full face shield must be ANSI-approved model that includes a durable protective crown. Disposable plastic faces shields are not sufficient. The relevant federal guideline states:

To minimize the potential for mucous membrane exposure, faceshields must prevent droplet splashes to the head from running down into the eyes and prevent mucous membrane exposure around the edges (sides, top, and bottom to below the chin). [NIOSH Hazard ID #5 Cercopithecine herpesvirus 1 (B Virus) Infection Resulting from Ocular Exposure (1999)]