

Penn Policy for Laboratory Work with NON-HUMAN PRIMATE MATERIALS

I. DEFINITIONS

Non-human primate (NHP): Refers to species ranging from apes to monkeys. Specifically, old world macaque monkeys, including rhesus macaques, pig-tailed macaques, and cynomolgus monkeys, are of concern as they are known to carry Herpes B virus (see below).

NHP source material: Cells, blood, serum, tissues, feces, and body fluids (sputum, urine, saliva, etc.) originating from non-human primates.



II. RISKS: ZONOTIC AGENTS

Due to their genetic similarities, humans and non-human primates are susceptible to many of the same diseases. Therefore, all NHP materials are considered potentially infectious regardless of whether they are primary materials or commercially available. Laboratory acquired infections from handling NHP materials have been well documented.

Some NHP zoonotic agents are as follows:

(source: Fleming, Diane O., and Debra L. Hunt, eds. *Biological Safety Principles and Practices*. 4th ed. Washington, DC: ASM, 2006.)

Viruses

- Hepatitis A and B virus
- * Macacine herpesvirus 1*
- Poxviruses
- Respiratory syncytial virus
- Rotavirus
- Simian hemorrhagic fever virus
- Simian Immunodeficiency viruses
- Simian retrovirus type D
- Simian T-cell leukemia virus
- Simian virus 40

Bacteria

- *Campylobacter* spp.
- *Mycobacterium tuberculosis*
- *Shigella flexneri*
- *Streptococcus pneumoniae*

Parasites

- *Balantidium coli*
- *Entamoeba histolytica*
- *Strongyloides* spp

*** Macacine herpesvirus 1 (Herpes B Virus, monkey B virus, herpesvirus simiae and herpesvirus B) is of specific concern when handling NHP material ***

- Herpes B virus has an approximately 70% mortality rate in humans when not immediately treated.
- Herpes B virus may be present in materials from macaque monkeys, including saliva, feces, urine, tissues or fluids. Therefore, cell cultures derived from infected monkeys may contain this virus.
- It is essential to handle all NHP material while wearing proper PPE and using correct containment practices. If an exposure should occur, emergency procedures must be implemented immediately.

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III. PERSONAL PROTECTIVE EQUIPMENT (PPE)

The following PPE is required to be worn when manipulating any NHP source material:

- A. Long pants and closed toed shoes: Shorts, skirts, and open toed shoes are prohibited.
- B. Lab coat: A washable, front-button lab coat or disposable lab coat/gown must be worn.
- C. Nitrile gloves: Disposable nitrile gloves (minimum thickness of 4mm) must be worn.
- D. Eye protection: Eye protection must be worn depending on the splash risk.



- If there is a **minimal splash risk**, such as when working inside a biosafety cabinet, closely fitting safety glasses should be worn.
- If there is a **significant splash risk**, such as working on an open bench, goggles/glasses with a face mask must be worn.
- If you are working with **live NHPs**, performing **LOW** risk activities, goggles OR a face shield must be worn. In addition, all ULAR PPE requirements must be followed.
- If you are working with **live NHPs**, and your risk assessment indicates that you will perform **MEDIUM** or **HIGH** risk activities, a combination of goggles/glasses with a full-face shield must be worn. For further advice please contact EHRS. In addition, all ULAR PPE requirements must be followed.
- Examples of eye protection:
 - Safety Glasses with the Penn logo, UVEX Genesis 19-130-2060 or UVEX Astro OTG 3001 #19-150-500 (Fisher Safety)
 - Hybrid safety glasses/goggles, 3-M Peltor Tactical Goggles 3RLZ3 (Grainger)
 - Chin-length face shield (wear with one of the above goggles or glasses), Fisherbrand full length face shield #S98127 (Fisher Scientific)



IV. PRACTICES AND PROCEDURES

Biosafety Level 2 (BSL-2) practices and procedures must be used when manipulating any NHP material. A detailed explanation of BSL-2 criteria can be found in the [CDC's Biosafety in Microbiological and Biomedical Laboratory \(BMBL\), 5th Edition](#). Some key practices include, but are not limited to the following:

- A. Biosafety Cabinet Use
The manipulation of all NHP materials that may create aerosols **MUST** be performed inside a certified biosafety cabinet. If a biosafety cabinet is not available, only procedures that will not create aerosols may be performed on an open bench. Adequate eye protection must be worn during all procedures on an open bench.

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- B. Reduction/Elimination of Glass and/or Sharp Objects
Whenever possible, work with non-glass and non-sharp objects to prevent cutaneous injury.
- C. Surface Disinfection
The biosafety cabinet or bench top surfaces must be disinfected when work has been completed. An appropriate surface disinfectant is a solution of bleach diluted 1:10 with water. Wipe down surfaces with this solution and follow with 70% ethanol to prevent corrosion.
- D. Waste Disposal
All research materials and PPE used when manipulating NHP materials must be disposed of through the infectious waste stream. Any objects that may poke through a bag (i.e. pipette tips, serological pipettes, syringes, needles, razors, glass, etc.) must be disposed of in a hard-sided, leak-proof sharps container. PPE and non-sharp objects may be placed in red/orange autoclavable bags. All waste is autoclaved before final disposal.
- E. Transport
To transport between laboratories, NHP materials must be placed in a leak-proof, closable secondary container labeled with the universal biohazard symbol.
- Transport of live animals must be performed in accordance with ULAR policy.
- Shipping of NHP materials must be in accordance with IATA regulations. ALL persons shipping regulated biological material must complete shipping training. [See WorkDay for training session information.](#)

V. EMERGENCY PROCEDURES

If an exposure to a mucous membrane (i.e. splash to eyes, nose, or mouth) occurs:

- Irrigate the exposed area with running water at an eyewash station for 15 to 20 minutes.

If a penetrating wound (i.e. cut, puncture, needle-stick, etc.) occurs:

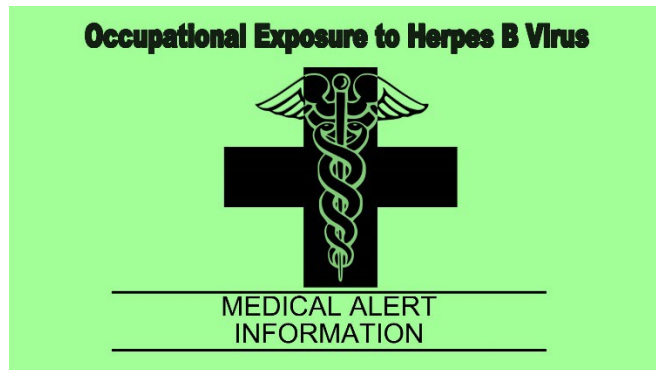
- Thoroughly wash the injured area with povidone-iodine, or chlorhexidine, or soap and water for 15 to 20 minutes.

Immediately report ALL exposures or possible exposures to:

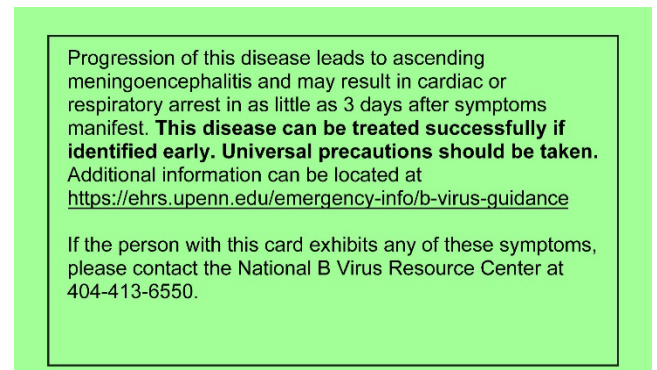
- Occupational Medicine (for Penn employees and non-university affiliates)
HUP Ravdin Building,
Second Floor
- Student Health (for Penn students)
ProMed Building, Suite 100
3535 Market St.
- Hospital of the University of Pennsylvania Emergency Department (ALL after work hours)
The Pavilion
1 Convention Ave.

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Green NHP Exposure Cards: Wallet-sized “Green Cards,” which describe procedures to follow in case of an exposure to NHP material, are available from ULAR. These cards should be carried by all researchers working with NHP material and should be presented to a health care professional if an exposure occurs or herpes B symptoms develop.



FRONT



BACK

INSIDE

Medical Alert Information

The person carrying this card has an occupational exposure to macaque monkeys or their tissues. Macaques are the natural host for B Virus (*Macacine herpesvirus*) which is transmissible to humans and may produce disease with any of the following symptoms:

- Generalized flu-like symptoms • Dizziness and/or weakness •
- Dyspnea • Diplopia and/or photophobia • Neuralgias and/or
- parasthesias • Severe persistent headache • Elevated temperature
- +/- vesicles at inoculation site • Pruritic rash • Conjunctivitis

First Aid

- **PENETRATING WOUNDS:**
Immediately scrub wound vigorously for 15 minutes with povidone-iodine. Use soap & water only if povidone-iodine is not available.
- **MUCOUS MEMBRANE EXPOSURE:**
Immediately irrigate area with rapidly flowing water for 15 minutes

AFTER WASHING REPORT IMMEDIATELY TO:

• Employees and Non-University Affiliates:	Occupational Medicine HUP Ravdin Building Second Floor
• Students:	Student Health Services ProMed Building 3535 Market, Suite 100
• After hours, ALL report to:	Emergency Department The Pavilion (1 Convention Ave)

Important Phone Numbers for Treating Physicians:

• Occupational Medicine	215-662-2354
• PAGER	215-524-8864
• Student Health Services	215-746-3535
• VHUP Emergency Services (ask for ULAR Vet on call)	215-898-3152
• Emergency Room Charge Nurse	215-662-3920
• Hospital Operator	215-662-4000
• EHRS (24 / 7)	215-898-4453