



## Zoonoses Associated with Old World Nonhuman Primates, including Macaques

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This information sheet is intended for Princeton University faculty, students and staff who conduct research with macaques. Researchers who have contact with marmosets should consult the information sheet: Zoonoses Associated with New World Nonhuman Primates

### Summary

Researchers and animal care staff should be aware of the potential for transmission of zoonotic diseases when handling macaques. Animal bites and scratches, broken skin contact with animal wastes and soiled equipment, and accidental ingestion of organisms can result in the transmission of zoonotic diseases.

**All researchers and husbandry staff who handle macaques, macaque body fluids and cell cultures derived from infected macaques or equipment that has come in contact with infected macaque body fluids, feces and urine must be familiar with precautions required to prevent transmission of Herpes B virus (*Cercopithecine Herpesvirus 1*).**

**Humans can spread diseases, such as measles (rubeola) or tuberculosis to macaques.**

Personnel who enter areas where macaques are housed or tested must participate in the Occupational Health Program for Animal Workers, which includes proof of rubeola immunity and annual TB testing.

### Zoonotic Agents of Concern

#### Herpes B

- All macaques are assumed to be capable of shedding Herpes B virus, even if they have no symptoms of the disease.
- Humans have become infected after exposure to infectious tissues or fluids of monkeys. The ocular, oral, or genital secretions of monkeys, as well as the central nervous system tissues and cerebrospinal fluid of monkeys are potentially infectious. Primary cell cultures derived from macaque kidneys are a potential source of virus.
- The virus is spread from macaques to humans through splashes of body fluid, such as saliva, conjunctival or genitourinary secretions to the eyes, nose and mouth; macaque bites and scratches; and broken skin contact with macaque body fluids or soiled equipment that has been in contact with macaques.
- Exposures can result in the transmission of the Herpes B virus which has a 70% mortality rate in humans if not treated immediately. Onset of disease can occur within 3 to 7 days and up to a month after exposure. Early symptoms are flu-like

and include fever, headache, and skin lesions at the site of exposure. Respiratory involvement and death can occur 1 day to 3 weeks after symptom onset.

## Prevention

**Wear personal protective equipment.** Disposable lab coat, gloves, surgical mask, face shield or safety glasses, gown, booties and bonnet are required when working in macaque housing and procedures areas or when handling soiled equipment from these areas.

Long pants and closed toed shoes must be worn under protective equipment.

**Hand washing** can help prevent transmission of zoonotic organisms. Wash your hands with warm water and soap after removing gloves and upon exiting the animal facility or procedure rooms.

**Disinfect** equipment and surfaces that have been in contact with macaques and their body fluids.

## Emergency Treatment of Exposures

**The following exposures require immediate first aid and medical follow-up:**

- Macaque bites or scratches/abrasions from the macaque or the soiled cage
- Punctures or lacerations by an instrument or needle contaminated by macaque secretions (saliva, secretions from mouth, mucous/genital membranes, conjunctiva)
- Splashes in the mouth, nose or eye (mucous membranes) with macaque secretions, including feces and urine

### **CLEAN IT - BEGIN FIRST AID WITHOUT DELAY!**

- **Splash to eyes, nose or mouth: Irrigate exposed area with running water at an eyewash station or using a drench hose for 15 minutes.**
- **Skin wound: Thoroughly wash injured area, using clean warm water and povidone-iodine impregnated brushes, available in monkey bite/scratch kits. Wash for 15 to 20 minutes.**

### **REPORT IT.**

- Occupational Health: 609-258-5035
- LAR Vet on-call: 609-258-0626
- Your supervisor

### **GET TREATED.**

- **Monday through Friday, 8:00 a.m. to 4:00 p.m.:** Proceed to Occupational Health, McCosh Health Center
- **After 4 p.m. and weekends:** You must proceed to the **Emergency Room at University Medical Center at Princeton** with the SOP and After Hours Protocol for Simian B Virus Exposure, from the Monkey Bite/Scratch Kit.

- Request transport from the Department of Public Safety if needed (911).

### FOLLOW-UP

- Contact Occupational Health (609-258-5035) the next business day regardless of whether you are faculty, staff, graduate student or undergraduate..
- Principal Investigator/Supervisor must notify [EHS Biosafety Officer](#)

Other macaque zoonotic agents of concern

Viruses	Bacteria	Parasites
Hepatitis A	<i>Campylobacter jejuni</i>	<i>Strongyloides spp.</i>
Poxviruses	<i>Shigella spp.</i>	<i>Trichostrongylus spp.</i>
Respiratory Syncytial virus	<i>Streptococcus pneumoniae</i>	<i>Balantidium coli</i>
Rotavirus	<i>Mycobacterium tuberculosis</i>	
Simian hemorrhagic fever virus	<i>Bordetella brochiseptica</i>	
Simian retrovirus D	<i>Haemophilus influenzae</i>	
Simian T-cell leukemia virus		
Simian Virus 40		

**Always tell your treating physician about your research.** Regardless of your symptoms, tell your physician about the work you do in the laboratory. Persons with weakened immune systems should seek advice from University Health Services practitioners on risks associated with exposure to zoonotic agents in the animal laboratory.

**University Health Services**  
 Student Health: 609-258-3141  
 Occupational Health: 609-258-5035

**Environmental Health and Safety**  
 Main Number: 609-258-5294

Cohen JI, Davenport DS, Stewart JA, Deitchman S, Hilliard JK, Chapman LE, B Virus Working Group. 2002. Recommendations for Prevention of and Therapy for Exposure to B Virus (*Cercopithecine Herpesvirus 1*) Clin Infect Dis. 35 (10): 1191-1203

Fleming, DO and Hunt DL, eds. 2006. Biological Safety: Principles and Practices, 4<sup>th</sup> ed. Washington, D.C: ASM.

Merck Veterinary Manual. 2014. Viral Diseases of Nonhuman Primates.

[http://www.merckmanuals.com/vet/exotic\\_and\\_laboratory\\_animals/nonhuman\\_primates/viral\\_diseases\\_of\\_nonhuman\\_primates.html](http://www.merckmanuals.com/vet/exotic_and_laboratory_animals/nonhuman_primates/viral_diseases_of_nonhuman_primates.html). Accessed February 4, 2015.

February 2022