

IACUC Occupational Health and Safety Program (OHSP)

Monmouth University
Office of the IRB and IACUC
McAllan Hall, Room 7

Zoonoses

Zoonoses are diseases of animals that are transmissible to humans. They may be a significant exposure hazard in some laboratories where animals are used for research. Fortunately, many laboratory animal species today are bred to be free of zoonoses that were once more common in these animals. However, there remain zoonotic agents associated with laboratory animals, some of which can be life-threatening. Field research with wild species also remains a clear source of zoonoses exposure. Prevention of exposure to these animal-related illnesses requires knowledge of the zoonoses related to the animals with which you will be working. In the sections that follow, the zoonotic agents listed for each animal species are those that may be present in the animals being used. If you are exposed through bite, scratch, aerosol droplet, mucosal secretion, feces or urine, there is the potential for you to become infected, and medical consultation through Monmouth University Health Services is highly recommended.

Zoonoses - Mice & Rats

Mice

Laboratory Mice:

Modern laboratory mice are bred to exclude all zoonotic agents. Only approved breeding facilities within the U.S.A. will be used as a source of laboratory mice. Other sources (e.g. foreign countries) would have to be tested during quarantine for a large number of infectious and zoonotic agents. Therefore, unless the laboratory mice are exposed to wild mice (those coming from the natural habitat outside the laboratory), there is limited concern for disease from these research mice. However, there is always concern about secondary infections that can occur with bites and scratches. Common skin, intestinal, and soil bacteria present on you or the animal can infect the scratch or bite wound and cause these secondary infections. Therefore, you should handle all mice with care and always cleanse any wound immediately with soap and water or antiseptic and seek medical consultation for severe wounds.

Wild Mice:

Wild mice or laboratory mice that have been exposed to wild mice may have the potential of carrying a variety of zoonotic bacteria and viruses that can be passed on to those handling them. Wild mice should not be used without appropriate screening.

Although use of mice only from authorized sources provides reasonable assurance that mice will be free of zoonotic infections, this does not guarantee infection-free mice. Therefore, because of the serious consequences of becoming infected, you must always follow good personal hygiene and animal handling procedures and use the provided PPE to protect yourself from exposure.

Mice that have originated from the wild, or have had contact with wild mice, or are from unauthorized sources could be infected with one or more of the illness agents described here:

HANTAVIRUS

Hantavirus is transmitted through inhalation of dried rodent feces and urine when such material is raised into the air from disturbed bedding or nesting material. Transmission can also occur through rodent bites and contamination of broken skin or mucous membranes. The infection progresses from flu-like symptoms to respiratory complications and has resulted in death over 50% of the cases, particularly when medical care was not quickly obtained. You can prevent exposure through the use of provided PPE (Personal Protective Equipment), good personal hygiene, and wet, properly ventilated handling of waste bedding material.

LYMPHOCYTIC CHORIOMENINGITIS (LCM) VIRUS

LCM virus is transmitted to humans by inhalation, broken skin or mucous membrane exposure to blood, urine, feces, and other body secretions from infected mice. The infection results in flu-like symptoms 1 to 3 weeks after exposure. More severe symptoms of meningitis and encephalitis can result. There is a special risk of exposure during pregnancy because the fetus can become infected. Because mice are well-screened and provided from virus-free sources, the potential for exposure in Monmouth University animal facilities is very limited. Again, use of proper PPE, such as disposable gloves and lab coat along with careful hand washing will further reduce the likelihood of exposure.

Rats

Modern laboratory rats are bred to exclude all zoonotic agents. Therefore, unless the laboratory rats are exposed to wild rodents (those coming from the natural habitat outside the laboratory), there is limited concern for disease from these research rats. However, there is always concern about secondary infections that can occur with bites and scratches. Common skin, intestinal, and soil bacteria present on you or the animal can infect the scratch or bite wound and cause these secondary infections. Therefore, you should handle all rats with care and always cleanse any wound immediately with soap and water or antiseptic and seek medical consultation for severe wounds

Historically, rats have been known to carry the bacteria that causes **Rat-Bite Fever**. However, these bacteria have not been found in laboratory rats for decades due to the special efforts of commercial suppliers to eliminate this bacteria from breeding colonies.

Zoonoses-Rabbits, Birds, and Fish

Rabbits

Modern laboratory rabbits contain few infectious pathogens. Of concern are scratches that can be inflicted with their strong hind legs and sharp claws or from bites. Secondary infection with common skin, intestinal, and soil bacteria present on you or the animal can result, so always cleanse wounds immediately with soap and water or antiseptic and seek medical consultation for severe wounds.

Historically, laboratory rabbits have been known to harbor the bacteria for human **Tularemia (Rabbit Fever)**. Although this zoonotic agent remains present in wild rabbit populations, modern laboratory rabbits are free of this illness bacteria.

Birds

The birds used in research colonies are either caught in the wild or acquired from established flocks. In general, birds are not supplied disease-free, and usually contain a number of microbial agents. Of zoonotic concern are the diarrheal bacteria, such as *Salmonella* that cause intestinal illness and the bacteria that causes psittacosis, which can cause a more severe type of infection

SALMONELLA

Salmonella bacteria is a common contaminate of fecal droppings and eggs. When ingested by humans, this bacteria has the potential for causing severe intestinal disease. Use of good personal hygiene measures, including effective and thorough hand washing along with the proper PPE, such as disposable gloves and lab coat, will greatly reduce the likelihood of infection when handling birds and materials in their environment.

PSITTACOSIS

The bacteria *Chlamydia psittaci* is the cause of **psittacosis**, and it is found most widely in large, imported psittacine birds (i.e. parrots, parakeets, cockatoos, macaws). Human infection is most often the result of exposure to these imported birds. The risk of exposure from domestic birds is very low. *However, because this bacteria is highly infectious, there is some potential that any bird or mammal may be infected.* Acute infection in animals causes such symptoms as reddening of the eyes (conjunctivitis), difficulty breathing pneumonia), swollen painful joints (arthritis), and reproductive problems. After the acute infection, those animals that survive enter a period without symptoms during which stress can cause the animal to shed the bacteria. (Stress can result from such things as the importation process or birds being handled in their new environment.) Humans can be infected when coming in contact with the bird's body secretions, or feces. In humans, the symptoms include fever, headache, muscle pain, chills, and may progress to pneumonia, liver, heart, and brain inflammation.

USDA regulations require that testing be performed on all psittacine birds imported from foreign countries during an initial 60 day quarantine period. Such birds are quarantined in specially ventilated rooms while testing is done and infected birds require elimination from the colony. This testing would be done before such birds were housed at Monmouth University facilities, so infected birds should not pose a significant exposure hazard. If you are handling birds, use of protective apparel and thorough hand washing will reduce the risk of any potential exposure.

Fish and Amphibians

Fish and amphibians used in research colonies are mostly wild-caught or raised on commercial farms. These animals often contain parasites and bacteria. Of zoonotic concern are gram negative bacteria that will cause secondary infection of contaminated wounds and breaks in the skin. These bacteria include **Aeromonas, Pseudomonas, Klebsiella, and Mycobacteria**. Use of proper PPE, such as disposable gloves, will help prevent contamination of skin surfaces. Likewise, thorough hand washing is very important to further reduce potential for infection.

Adapted from Health and Safety for Animal Workers, Princeton University

ZOONOSES TRAINING CERTIFICATE

This certifies that FILL IN YOUR NAME HERE
has completed Monmouth University's IACUC
Zoonoses online training on:

ENTER DATE HERE example: (Monday June,
26, 2006).

(Use your browser's "Print" button to print this certificate.)