

Center for Biomedical Research / IACUC Standard Operating Procedure - Guidelines

Veterinary Care

Veterinary medical care is an essential part of our animal care and use program and is required by the PHS Policy and Animal Welfare Regulations. CBR provides a complete program of veterinary care including: assessment of animal health; prevention; control; diagnosis and treatment of animal disease and injury; drug dosages, animal model selection, consultation with researchers on handling, restraint, anesthesia, analgesia, euthanasia; and monitoring of surgical procedures and post-surgical care. Consultations can be made over the phone, in person, or in your lab. This service is free of charge.

The veterinary-care is the responsibility of the CBR Attending Veterinarian and the facility supervisor.

It is the responsibility of the Attending Veterinarian and the CBR staff to provide the best possible animal care and ensure that all animals are handled in a humane manner and are cared for in a humane manner using proper nutrition and husbandry techniques.

A. Preventive Medicine

To prevent disease, CBR procures selected, pathogen-free animals. Every effort will be made to maintain separation of species to limit cross-species transmission of disease. CBR monitors animal health quality from different suppliers. To minimize the possibility of introducing disease into campus animal facilities, all arrangements for acquiring and housing live vertebrates must be made through CBR. Animals are monitored daily to ensure the animal's well-being.

B. Diagnosis, Treatment and Control of Disease

CBR personnel check all animals daily, including weekends and holidays, for signs of illness, injury or abnormal behavior. In cases where such observation will interfere with experimental objectives, prior arrangements must be made with CBR to ensure adequate monitoring of animals. Diagnosis of animal disease is the responsibility of the attending veterinarian. Whenever an illness or injury is discovered, it must be determined whether or not to euthanize the animal. Euthanasia shall be conducted according to the AVMA guidelines.

C. Health Monitoring.

At CBR, we follow quarantine procedures to assess the health of incoming animals and prevent the introduction of excluded pathogens from our colonies.

Health surveillance procedures aid in monitoring the status of colonies over time, identify outbreaks of agents that may affect health or research, and provide health reports to other institutions for animal exports.

For rodents and non-mammals, it's required that CBR reviews current health reports from any vendor or institution not on the approved vendor list prior to granting import. If animals do not meet health requirements, CBR will give investigators options on how to proceed with the request.

Mice and rats are the most common animals imported into the CBR that require quarantine. The information below is specific to these species.

Rodents: Quarantine

CBR requires mice and rats from **unapproved** vendors to be directly imported into CBR quarantine rooms regardless of their health report status.

Tests and treatments received upon arrival:

- Treatment with oral ivermectin (anti-parasitic delivered via water bottles) and oral fenbendazole (anti-parasitic delivered via chow). If animals cannot receive this treatment, prior approval must be requested.

Depending on evaluation by the Attending Veterinarian, additional testing may be required prior to bringing these animals into the animal holding rooms of CBR.

- Feces and fur swab collection to test for excluded agents. Samples determine active infections of excluded pathogens.
- Blood collection (~25 µl) from one animal per box upon arrival and again 2-3 weeks later. Samples determine previous exposure to any excluded pathogens.

Animals will stay in quarantine until all tests are returned and are negative. Total quarantine time is typically 2 weeks.

Mouse and rat quarantine timeline:

Arrival: Collection (feces, fur swab, blood)

Week 2: Collection (Blood)

Week 3: Release and transfer (Timing depends on test return and transfer availability).

While in quarantine:

- Experimental procedures cannot be performed and investigators will not have direct access to the animals.
- Upon request and with escort, investigators may enter the quarantine area to help unpack animals, set up breeding, or identify animals.
- After exiting the quarantine area, investigators may not visit any other rodents' rooms that day without changing clothes and thoroughly washing hands and arms.

Special service requests

Special service requests may be considered while animals are in quarantine. Approval of these requests is on a case-by-case basis and at the discretion of the quarantine veterinary team.

Common requests:

- Breeding services for lab staff that does not wish to enter quarantine. This is preferred by the CBR quarantine staff to limit foot traffic in these areas.
- Terminal procedures may be approved prior to the end of the quarantine period, although certain conditions must be met.
- Treatments may be provided that are necessary for animal health or maintenance outside of experimental need.

Rodent quarantine cost

It is difficult to provide a general cost estimate for the quarantine period due to unknowns in the quarantine timeline, number of cages, and health history of import animals.

Overall cost for a typical quarantine is based on the price of the diagnostic testing, technician time, and quarantine per diem costs.

Rodents: Ongoing health surveillance

In addition to the standard health monitoring, both rat and mouse colonies are enrolled in an ongoing health surveillance program.

Semi-annually CBR tests sentinel mice representing a subset of colony animals for infectious agents excluded from CBR colonies. Most excluded agents do not actually cause clinical disease and are undetectable without diagnostic testing. This testing program is imperative to the integrity of ongoing research for this reason.

CBR currently utilizes Idexx reference laboratories for serology and parasitology testing.

Excluded pathogens

As a reference, below we list excluded pathogens from rats and mice at the University of North Dakota CBR.

Excluded mouse agents

Viruses

- Mouse Parvovirus (MPV)*
- Minute Virus of Mice (MVM)*
- Mouse Hepatitis Virus (MHV)
- Mouse Rotavirus-A (EDIM)
- Theiler's Murine Encephalomyelitis Virus (TMEV, GDVII)
- Sendai Virus (SEND)
- Pneumonia Virus of Mice (PVM)
- Reovirus (REO)
- Mousepox (Ectromelia)
- Mouse Adenovirus Type 1&2 (MAV/MadV)
- Polyoma Virus (POLY)
- Lymphocytic Choriomeningitis Virus (LCMV)
- Mouse Cytomegalovirus (MCMV)

Bacteria

- Mycoplasma pulmonis (MPUL)
- Clostridium piliforme (CPIL, Tyzzer's Disease)
- Cilia-Associated Respiratory Bacillus (CARB)

Parasites and Fungi

- Fur mites: Myobia musculi, Radfordia affinis, Radfordia ensifera, Myocoptes musculinus
- Pinworms: Aspicularis tetraptera, Syphacia obelata, Syphacia muris
- Encephalitozoon cuniculi (ECUN)

Excluded rat agents

Viruses

- Rat Parvovirus (RPV-1)
- Rat Minute Virus (RMV)
- Toolan's H-1 Virus (H-1)
- Kilham's Rat Virus (KRV/RV)
- Sendai Virus (SEND)
- Rat Theilovirus (RTV)
- Sialodacryoadenitis Virus (SDA, rat coronavirus)
- Pneumonia Virus of Mice (PVM)
- Reovirus (REO)
- Lymphocytic Choriomeningitis Virus (LCMV)
- Mouse Adenovirus Type 1&2 (MAV/MadV)
- Hantaan virus (HANT)

Bacteria

- Mycoplasma pulmonis (MPUL)
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Parasites and Fungi

- Fur mites: *Myobia musculi*, *Radfordia affinis*, *Radfordia ensifera*, *Myocoptes musculinus*
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D. Emergency Veterinary Care

The care of laboratory animals is a 24 hour, 365 day a year responsibility. Any health problem noted by any animal user at any time, including evenings, weekends and holidays should immediately report to CBR Attending Veterinarian. The Attending Veterinarian should also be contacted to inform CBR of facilities malfunctions which appear to directly threaten animal health.