
1. PURPOSE

This Standard Operating Procedure (SOP) describes the basic procedures for routine care and husbandry of rodents.

2. RESPONSIBILITY

Animal care staff, facility manager.

3. MATERIALS

- 3.1. Cage cards
- 3.2. Rodent diet (within 6 months of the milling date)
- 3.3. Clean or sterilized water bottles or valves
- 3.4. Clean or sterilized cages with bedding, micro-barrier tops, and wire-bar lids
- 3.5. Clean or sterilized environmental enrichment devices
- 3.6. Disinfecting solution

4. PROCEDURES

- 4.1. Observation of animals and environment:
 - 4.1.1. Observe all rodent cages daily for illness, injury, and general condition, and to ensure they have sufficient food and water.
 - 4.1.2. Report any health or behavioral abnormalities to veterinary care staff.
 - 4.1.3. Observe environmental conditions at room and caging level (temperature, humidity, light, noise, hazard, etc.). Report any abnormal environmental conditions.
 - 4.1.4. Carcasses of animals found dead should be removed from cages promptly, identified, and placed in the freezer.
 - 4.1.5. Maintain a daily log of observations, environmental parameters, husbandry, and maintenance procedures.
- 4.2. Emergency and holiday care:
 - 4.2.1. Provide routine care and husbandry for all rodents on weekends and holidays.
- 4.3. Animal identification methods:
 - 4.3.1. Identify all cages with a cage card.
 - 4.3.2. Include, at a minimum, the following information:
 - 4.3.2.1. Investigator
 - 4.3.2.2. Protocol number
 - 4.3.2.3. Species
 - 4.3.2.4. Strain
 - 4.3.2.5. Source
 - 4.3.2.6. Sex
 - 4.3.2.7. Number of animals in the cage
 - 4.3.3. Identify individual animals as needed in accordance with Rodent Identification SOP.

- 4.4. Food and water:
 - 4.4.1. Feed animals to meet current Canadian Council on Animal Care (CCAC) recommendations for rodent nutrition.
 - 4.4.2. Food and water is provided *ad libitum* unless otherwise specified in a approved in an Animal Use Protocol (AUP).
 - 4.4.3. Food storage:
 - 4.4.3.1. Store feed off the floor on plastic or metal pallets or shelves, allowing sufficient space to visualize the floor under food storage, and, where possible, 4-6 inches away from walls, in a vermin-proof storeroom.
 - 4.4.3.2. Store open feed bags in leak-proof containers with tightly fitting lids.
 - 4.4.3.3. Store at room temperature and avoid extremes in humidity. Use feed within 6 months of milling date. Stack feed in a manner that allows easy reading of the milling date.
 - 4.4.4. Check automatic watering devices daily for proper operation and cleanliness.
 - 4.4.5. Replace empty bottles with clean ones rather than refilling them.
 - 4.4.6. Monitor water quality routinely to ensure that it is free of contaminants.
- 4.5. Breeding program:
 - 4.5.1. Refer to Breeding Colony Management SOPs.
- 4.6. Social and environmental enrichment:
 - 4.6.1. Group-house rodents whenever possible.
 - 4.6.2. Provide environmental enrichment devices for all rodents. Refer to Environmental Enrichment SOPs.
- 4.7. Animal import procedures:
 - 4.7.1. Quarantine or rederive rodents from unapproved vendors depending on the status of both the vendor and the facility where they will be housed. The veterinarian will determine the requirements for each shipment. Refer to Rodent Import SOP.
 - 4.7.2. Quarantine or rederivation of rodents from approved commercial vendors is not required.
- 4.8. Euthanasia and disposal of dead animals:
 - 4.8.1. Euthanize rodents as per Rodent Euthanasia SOP.
 - 4.8.2. Ensure that euthanasia is conducted by trained and experienced staff.
 - 4.8.3. Place carcasses in the appropriate receptacle for future disposal by incineration.
- 4.9. Vermin control
 - 4.9.1. Refer to Vermin Control Program SOP.
- 4.10. Environment and environmental control:
 - 4.10.1. Maintain room temperatures between 18 and 24° C.
 - 4.10.2. Maintain relative humidity between 30% and 70%.
 - 4.10.3. Maintain a daily log of room temperature and humidity.
- 4.11. Bedding:
 - 4.11.1. Use wood chips, shredded paper products, or chopped corn cobs as bedding materials. Cedar shavings are not recommended due to the harmful presence of aromatic hydrocarbons.
 - 4.11.2. Use enough bedding to keep the rodents clean and dry until the next scheduled change.
- 4.12. Lighting:
 - 4.12.1. Provide a regular diurnal lighting cycle.
 - 4.12.2. Lights are controlled by timers set at a photoperiod of 12 to 14 hours of light. Check the timer performance routinely.

4.13. Space requirements:

- 4.13.1. Provide cages that are appropriate in size for the number of rodents housed in them. Refer to CCAC recommendations.

4.14. Cleaning of cages:

- 4.14.1. Change cages at a frequency that ensures clean, dry bedding is present in the living and sleeping area of the cage, away from the soiled areas, and that maintains the air quality inside the cage within acceptable parameters as per CCAC recommendations.
- 4.14.2. Change cages at a frequency which promotes cleanliness without disturbing the cage environment unnecessarily to reduce the stress associated with cage cleaning and the potential impact on study data.
- 4.14.3. Frequency of cage changing will vary depending on cage size, caging system, type and number of occupants, type and amount of bedding, number of air changes per hour, etc.
 - 4.14.3.1. It is recommended to change ventilated cage bottoms at least every two weeks.
 - 4.14.3.2. It is recommended to change static cage bottoms at least once every week.
 - 4.14.3.3. Change cage bottoms containing wet or soiled bedding.
- 4.14.4. It is recommended to change cage components (grill, lid, water valve) at least every 4 weeks.

4.15. Cleaning and sanitation of housing room and equipment:

- 4.15.1. Weekly:
 - 4.15.1.1. Flush the floor drains.
 - 4.15.1.2. Change/clean prefilters in changing stations/biosafety cabinets
 - 4.15.1.3. Check light timers.
 - 4.15.1.4. Mop floors.
 - 4.15.1.5. Wipe down all surfaces such as sinks, doors, doorjambes and doorknobs, windows, cart tops, shelves, etc. with the disinfectant solution.
- 4.15.2. Monthly:
 - 4.15.2.1. Clean changing stations/biosafety cabinets: remove filters, vacuum, and drain.
 - 4.15.2.2. Clean room exhaust grills.
- 4.15.3. Annually:
 - 4.15.3.1. Wash racks.

4.16. Transportation:

- 4.16.1. Transport rodents as per Animal Transport and Use Outside of Animal Facilities SOP.

4.17. Waste Management:

- 4.17.1. Deposit non-regulated or non-infectious medical waste and soiled materials in dumpsters.
- 4.17.2. Regulated or infectious Medical Waste is processed by McGill University's Waste Management program.

5. SAFETY

- 5.1. Always wear required personal protective equipment.
- 5.2. Refer to Animal Related Injury SOP.
- 5.3. Preparation of disinfecting solution:
 - 5.3.1. Wear personal protective equipment when preparing and using disinfectant solution as per manufacturer's recommendations.
 - 5.3.2. Dilute according to manufacturer's recommendation.
 - 5.3.3. Clean surfaces prior to disinfection to remove any organic material.
 - 5.3.4. Apply disinfectant and allow for adequate contact time.

6. REFERENCES

6.1. Canadian Council on Animal Care ([CCAC](#)) [guidelines: Mice](#), August 2019.

SOP REVISION HISTORY

DATE	NEW VERSION
2019.11.20	4.5.1. Refer to Mouse Breeding Colony Management SOPs.
2019.11.20	4.16.2. Transport rodents within McGill University in either filter cages or unfiltered cages wrapped in a material which prevents animal allergens from escaping into the environment. Cages needed to be covered by opaque material. Refer to Animal Transport and Use Outside of Animal Facilities SOP.
2019.11.20	4.8.3. Dispose of dead animals by Place carcasses in the appropriate receptacle for future disposal by incineration.
2023.07.17	2. RESPONSIBILITY Animal care staff, facility supervisors, Facilities manager.
2023.07.17	3.1. Darwin Cage cards 3.2. Rodent diet (within 6 months of the milling date) 3.3. Clean or sterilized water bottles or valves 3.4. Clean or sterilized water valves 3.4. Clean or sterilized cages with bedding, micro-barrier tops, and wire-bar lids 3.6. Clean or sterilized micro-barrier tops and wire-bar lids 3.5. Clean or sterilized environmental enrichment devices 3.6. Disinfecting solution
2023.07.17	4.1. Observation of animals and environment: 4.1.1. Observe all rodents rodent cages daily for illness, injury, and general condition, and to ensure they have sufficient food and water, including weekends and holidays. 4.1.2. Report any health or behavioral abnormalities to veterinary care staff. 4.1.3. Observe environmental conditions at room and caging level (temperature, humidity, light, noise, hazard, etc.). Report any abnormal environmental conditions. 4.1.4. Carcasses of animals found dead should be removed from cages promptly, identified, and placed in the freezer. 4.1.5. Maintain a daily log of observations, environmental parameters, husbandry, and maintenance procedures.
2023.07.17	4.2.2. Make provisions for emergency care by providing both work and after hours contact information for Principal Investigators (PI's) and their staff. Provide special requests or instructions if needed.
2023.07.17	4.3.3. Identify individual animals as needed in accordance with Rodent Identification SOP. Examples of individual identification methods include: ear punching, ear tags, micro tattooing, or micro chips.
2023.07.17	4.4.1. Feed animals to meet current National Research Council (USA) Canadian Council on Animal Care (CCAC) recommendations for rodent nutrition.
2023.07.17	4.4.2.1. Store feed off the floor on plastic or metal pallets or shelves , allowing sufficient space to visualize the floor under the food storage , and, where possible , 4-6 inches away from walls, in a vermin-proof storeroom. 4.4.2.3. Maintain temperature and humidity controls in the storeroom. Store at room temperature and avoid temperatures above 21°C and extremes in humidity. Use feed within 6 months of milling date. Stack feed in a manner that allows easy reading of the milling date.
2023.07.17	4.4.5. Monitor water quality routinely to ensure that it is free of contaminants that could potentially expose animals to chemical or infectious agents. Refer to SOP for water quality monitoring requirements.
2023.07.17	4.5.2. House breeders in monogamous pairs, trios, or harem groups. 4.5.3. Remove the pregnant female from the harem group and put her in her own cage before giving birth. 4.5.4. Wean litters before the next litter is born to prevent overcrowding in the cage.
2023.07.17	4.7.1. Quarantine or rederive rodents from unapproved vendors depending on the status of both the vendor and the facility where they will be housed. The veterinarian will determine the requirements for each shipment. Refer to Rodent Import SOPs.
2023.07.17	4.8.1. Euthanize rodents by isoflurane/CO2 inhalation or overdose of anesthetics. Refer to as per Rodent Euthanasia SOP.
2023.07.27	4.14.1 Change cages at a frequency that ensures clean, dry bedding is present in the living and sleeping area of the cage, away from the soiled areas, and that maintains the air quality inside the cage within acceptable parameters as per CCAC recommendations. 4.14.2. Change cages containing wet or soiled nesting material. 4.14.3. Change cages at a frequency which promotes cleanliness without disturbing the cage environment unnecessarily to reduce the stress associated with cage cleaning and the potential impact on study data. 4.14.4. Frequency of cage changing will vary depending on cage size, caging system, type and number of occupants, type and amount of bedding, number of air changes per hour, etc. 4.14.4.1. It is recommended to change ventilated cage bottoms at least every two weeks and. 4.14.4.2. It is recommended to change static cage bottoms at least once every week at a minimum 4.14.2. Change cages more frequently if needed to keep the animals clean and dry and provide a healthy environment. 4.14.3. Supply fresh bedding with each cage change with the exception of the sentinel cages. Please refer to Sentinel Husbandry SOP.
2023.07.17	4.15.2.1. Change the micro isolator tops.
2023.07.17	4.16.1. Transport rodents being shipped outside of McGill University in filtered commercial rodent transport boxes. 4.16.2. Transport rodents within McGill University in filter cages. Cages needed to be covered by opaque material. Refer to as per Animal Transport and Use Outside of Animal Facilities SOP.
2023.07.17	5.1 Working with rodents can trigger related allergies. Check with the facility supervisor regarding requirements for Always wear required personal protective equipment and refer to SOP.
2023.07.17	5.3.1. Wear personal protective equipment when preparing and using disinfectant solution as per manufacturer's recommendations.

2023.07.17	Examples of enrichment include, but are not limited to, the following: loose paper strands such as Enviro-Dri®, cellulose-based shelters, PVC pipe, Nestlets®, corn husks, autoclaved blocks of wood, Nylabones®. Refer to Environmental Enrichment SOPs.
2023.07.17	5.15.3. Bi Annually:
2023.07.17	6. REFERENCES 6.1. Canadian Council on Animal Care (CCAC) guidelines: Mice, August 2019.
2023.08.07	4.4.2. Food and water is provided <i>ad libitum</i> unless otherwise specified in a approved in an Animal Use Protocol (AUP).
2023.08.07	4.14.2. Change cage bottoms containing wet or soiled nesting material bedding .
2023.08.07	4.14.4. It is recommended to change cage components (grill, lid, water valve) at least every 4 weeks.
2023.08.07	4.15.2.1 4.15.1.5. Wipe down all surfaces such as sinks, doors, doorjams and doorknobs, windows, cart tops, shelves, etc. with the disinfectant solution.
2023.08.07	4.15.3.1. Wash all walls with disinfectant solution.