RODENT HEALTH MONITORING PROGRAM

1. PURPOSE

The intent of this Standard Operating Procedure (SOP) is to describe the health monitoring program for rodent colonies.

2. RESPONSIBILITY

Animal care staff, facility manager, veterinarian, veterinary care staff.

3. CONSIDERATIONS

Routine health monitoring aims to detect the presence of infectious agents in rodent colonies. Along with bioexclusion practices and quarantine procedures, health monitoring facilitates movement of animals between McGill facilities to accommodate the needs of collaborative research while protecting resident colonies from infectious contamination.

PCR-based testing methods should be prioritized for routine health monitoring of rodents as they improve infectious agent detection.

3.1. Tests will be performed to monitor pathogens as established by the facility veterinarian, based on the bioexclusion level of the facility or housing room and the corresponding list of excluded pathogens.

3.2. Sample populations housed in the animal facility for 8 weeks or more.

3.3. Testing frequency:

- 3.3.1. For Bioexclusion Levels 1 and 2 collect samples for health monitoring twice per year.
- 3.3.2. For Bioexclusion Levels 3 and 3+ collect samples for health monitoring three to four times per year.
- 3.3.3. For Bioexclusion Level 4 collect samples for health monitoring three to four times per year. Consider staggering sample collection as to have monthly results.

3.4. Health monitoring reports

- 3.4.1. The facility veterinarian reviews all health monitoring reports.
- 3.4.2. If there are any health status problems, the veterinarian will contact the facility manager and investigators concerned. The veterinarian will determine the follow-up actions, taking into consideration the pathogen in question, the species involved, the number of cages affected, etc.
- 3.4.3. Results must be within the last 4-6 months, depending on the bioexclusion level, to allow transfer of animals (for facility-specific restricted pathogens).

4. SAMPLING PROCEDURES

4.1. Environmental sampling of individually ventilated caging (IVC) system rack exhaust plenums – Exhaust Air Duct (EAD) samples:

- 4.1.1. To avoid sample contamination, always wear gloves during the sample collection process and change gloves between samples. Wearing full personal protective equipment is recommended to limit exposure to rodent allergens.
- 4.1.2. Use one of these two methods to sample IVC system:
  - 4.1.2.1. Collect filter material placed in the rack exhaust plenum.
    - 4.1.2.1.1. Filter material must be in place within the IVC system rack exhaust plenum for a minimum of 4 weeks before sampling.
    - 4.1.2.1.2. Collect filter, curl dirty side in, and place in a 50 mL conical tube.
    - 4.1.2.1.3. Filters are preferably submitted as a single sample. When required, a maximum of 2 filters can be pooled and submitted in one vial as a single sample.

4.1.2.2. Swab the areas of the rack exhaust plenums where dust tends to aggregate or is concentrated, e.g., the end of horizontal exhaust plenums.

4.1.2.2.1. Sample racks after cages have been in place within the IVC system rack exhaust plenum for a minimum of 4 weeks before swabbing.

4.1.2.2.2. Use the adequate swab, i.e., sticky swab.

4.1.2.2.3. Clip the swab head and place in the collection vial/tube.

4.1.2.2.4. Up to 10 swabs can be pooled and submitted in one vial as a single sample.

4.1.3. Swabs or filters from a maximum of two racks can be pooled and submitted in one vial as a single sample.

4.1.4. For each EAD sample, include, in two additional vials, specimens from index animals:

4.1.4.3. Select 10 random cages (preferably weanlings) per sample.

4.1.4.4. Collect one fresh fecal pellet with no bedding material from one animal per cage selected.

4.1.4.4.1. Up to 10 fecal pellets can be submitted in the same vial/tube.

4.1.4.5. Collect fur/skin swab from at least two sites (head between ears, back/rump, inguinal area, perianal area)

4.1.4.5.1. Sample at least one animal per cage. One swab can be used to sample more than one mouse, e.g., all the mice in one cage.

4.1.4.5.2. Use the adequate swab, i.e., sticky swab.

4.1.4.5.3. Clip the swab head and place in the collection vial/tube.

4.1.4.5.4. Up to 10 swabs can be pooled and submitted in one vial/tube.

4.1.4.6. Do not pool swabs and feces in the same vial/tube.

4.2. Where there are no IVC racks for EAD sampling, collection media (filter material) exposed to soiled bedding can be used for sampling and testing.

4.2.1. Each collection box and media can be used to sample up to 100 cages.

4.2.2. Exposure:

4.2.2.1. At the time of cage change, transfer approximately one tablespoon of soiled bedding from the dirtiest section of every cage into the collection box. Be sure to obtain the bedding from the area where animals are urinating and defecating.

4.2.2.2. Once bedding has been sampled from all cages monitored, add the collection media to the box using clean forceps.

4.2.2.3. Secure the lid. Agitate the collection box for 15-20 seconds using a shaking and rotating motion.

4.2.2.4. Repeat the exposure using the same collection media at every cage change.

4.2.2.5. At the end of the health monitoring period, place the collection media in a 50 mL conical tube .

4.3. Consider sampling Biological Safety Cabinets (BSCs) or other common equipment used with live rodents, e.g., imaging or anesthetic equipment, in housing and procedure areas:

4.3.1. Follow the directions outlined in 4.1.2.2. to collect dust from the dirtiest/dustiest areas of the equipment.

5. TESTING PANELS AND AGENTS MONITORED

5.1. Sampling and panels for mice:

BIOEXCLUSION LEVEL	1 & 2	3 AND 3+	4
Intermediate Testing	PCR Panel 1	PCR Panel 1	PCR Panel 3
Yearly Testing	PCR Panel 1	PCR Panel 2	PCR Panel 3

5.2. Agents monitored for mice:

PANEL	AGENTS INCLUDED
PCR Panel 1	Mouse coronavirus (MHV) Mouse parvoviruses (MPV1, MPV2, MPV5, MVM, NS-1) Mouse rotavirus (EDIM) Mouse Theilovirus (TMEV, GDVII) Murine norovirus (MNV) - optional Corynebacterium bovis (immunodeficient mice) Fur mites (Myobia, Myocoptes, Radforia) Pinworms (Aspiculuris, Syphacia)
PCR Panel 2	Mouse Adenovirus (MAV-1 & MAV-2) Ectromelia (Mousepox) Lymphocytic Choriomeningitis Virus (LCMV) Mouse coronavirus (MHV) Mouse parvoviruses (MPV1, MPV2, MPV5, MVM, NS-1) Murine Chapparvovirus (MuCPV)/Mouse Kidney Parvovirus (MKPV) (3+) Mouse rotavirus (EDIM) Mouse Theilovirus (TMEV, GDVII) Murine norovirus (MNV) Pneumonia Virus of Mice (PVM) Reovirus Sendai virus Bordetella bronchiseptica CAR Bacillus Citrobacter rodentium Clostridium piliforme (Tyzzer's) Corynebacterium kutscheri Corynebacterium bovis (3+) Helicobacter spp. Klebsiella spp. Mycoplasma pulmonis Rodentibacter spp. Pseudomonas aeruginosa Salmonella Streptobacillus moniliformis Streptococcus pneumonia Beta Hemolytic Streptococcus groups A,B,C,G Fur mites (Myobia, Myocoptes, Radforia) Pinworms (Aspiculuris, Syphacia) Pneumocystis (3+) Spironucleus muris

PANEL	AGENTS INCLUDED
PCR Panel 3	Mouse Adenovirus (MAV-1 & MAV-2) Ectromelia (Mousepox) Lymphocytic Choriomeningitis Virus (LCMV) Mouse coronavirus (MHV) Mouse parvoviruses (MPV1, MPV2, MPV5, MVM, NS-1) Murine Chapparvovirus (MuCPV)/Mouse Kidney Parvovirus (MKPV) (3+) Mouse rotavirus (EDIM) Mouse Theilovirus (TMEV, GDVII) Murine norovirus (MNV) Pneumonia Virus of Mice (PVM) Reovirus Sendai virus Bordetella bronchiseptica Bordetella pseudohinzii Campylobacter CAR Bacillus Citrobacter rodentium Clostridium piliforme (Tyzzer's) Corynebacterium kutscheri Corynebacterium bovis (3+) Helicobacter spp. Klebsiella spp. Mycoplasma pulmonis Rodentibacter spp. Proteus mirabilis Pseudomonas aeruginosa Salmonella Staphylococcus aureus Streptobacillus moniliformis Streptococcus pneumonia Beta Hemolytic Streptococcus groups A,B,C,G Cryptosporidium Demodex Entamoeba Fur mites (Myobia, Myocoptes, Radforia) Giardia Pinworms (Aspiculuris, Syphacia) Pneumocystis (3+) Spironucleus muris Tritrichomonas

5.3. Sampling and panels for rats:

BIOEXCLUSION LEVEL	1 & 2	3
Intermediate Testing	PCR Panel 1	PCR Panel 1
Yearly Testing	PCR Panel 1	PCR Panel 2

5.4. Agents monitored for rats:

PANEL	AGENTS INCLUDED
PCR Panel 1	Sialodacryoadenitis virus/Rat coronavirus (SDAV/RCV) Rat parvoviruses (RPV, H-1, KRV, RMV) Theilovirus (RTV) Helicobacter spp. Pneumocystis spp. Fur mites (Myobia, Myocoptes, Radforia) Pinworms (Aspiculuris, Syphacia)
PCR Panel 2	Sialodacryoadenitis virus/Rat coronavirus (SDAV/RCV) Rat parvoviruses (RPV, NS-1, KRV, RMV) Pneumonia virus of mice (PVM) Reoviruses Theilovirus (RTV) Sendai virus Bordetella bronchiseptica CAR Bacillus Citrobacter rodentium Clostridium piliforme (Tyzzer's) Corynebacterium kutscheri Helicobacter spp. Klebsiella spp. Mycoplasma pulmonis Pneumocystis spp. Rodentibacter spp. Pseudomonas aeruginosa Salmonella Streptobacillus moniliformis Streptococcus pneumonia Beta Hemolytic Streptococcus groups A,B,C,G Entamoeba Fur mites (Myobia, Myocoptes, Radforia) Pinworms (Aspiculuris, Syphacia) Spironucleus muris

SOP REVISION HISTORY

DATE	NEW VERSION
2025.03.25	Significant changes made to all sections of this SOP.