STANDARD OPERATING PROCEDURES

DIVISION OF COMPARATIVE MEDICINE
UNIVERSITY OF SOUTH FLORIDA

TITLE: **Rodent Health Surveillance**
SCOPE: All Animal Care Personnel
RESPONSIBILITY: Veterinarians, All Animal Program Personnel
PURPOSE: To Establish the Proper Guidelines for Monitoring Health Status of Rodent Populations

I. PURPOSE

1. To define the microbial status of rodent colonies, surveillance is conducted for sub-clinical, clinical diseases and opportunistic agents that could jeopardize the validity and reproducibility of research data, complicating its interpretation.

II. RESPONSIBILITY

1. The veterinarians oversee all aspects of animal health and are assisted by all program staff.

2. The Assistant Director is responsible for ensuring that all practices are implemented by Facility Managers.

3. The Facility Manager is responsible for ensuring that all technical and animal care staff are adequately trained and experienced in rodent health surveillance procedures.

4. The Assistant Director is responsible for coordinating these rodent health procedures, submitting samples for evaluation, recording results, and reporting findings to the Director or designee.

III. PROCEDURES

1. **At the defined intervals established below, current rodent inventories are sampled by room using an exhaust air dust (EAD) collection method and PCR testing:**
    a. Tecniplast Interceptor system collects exhaust debris moving from cages to the exhaust filtration area. **See SOP 429 for Interceptor use.**

2. **EAD sample collection methods can be found at-** https://www.idexxbioanalytics.com/edxsop

3. Veterinarians and technical staff submit samples for diagnostic laboratory evaluation on an electronic version of **CMDC# 261** entitled ***IDEXX Sample Submission*** form to the Assistant Director. If submitting specimens to the Assistant Director or directly to IDEXX, the veterinarian and technical staff making the submission must include identifying details on the submission form, including building and room number.

4. The Assistant Director reports findings concerning each surveillance evaluation to facility managers and veterinarians for interpretation and/or resolution as needed.

5. Results of surveillance evaluations are maintained by the Assistant Director.

6. Place two (2) Interceptor filter cards in the air handler units (AHU) for mice at the beginning of each quarter. Place only one (1) interceptor card in the AHUs for rats.

7. The Interceptor on the Left (facing the AHU) should remain in place for 6 weeks and is used to assess *Corynebacterium bovis* by PCR in mice only.

8. The Interceptor on the Right (facing the AHU) should remain in place for 12 weeks and is used to assess the agents listed in the table below quarterly during the months of February, May, August, and November.

9. Two (2) new Interceptor cards are placed in the AHUs for mice, and one (1) in AHUs for rats, at the time the Right Interceptor card is removed for quarterly sampling and assessments repeated as described in Items #7 and 8 above.

AGENT	SAMPLE	TEST	FEB	MAY	AUG	NOV
Mouse						
MHV	EAD	PCR	x	x	x	x
MPV 1-5	EAD	PCR	x	x	x	x
MVM	EAD	PCR	x	x	x	x
TMEV	EAD	PCR	x	x	x	x
EDIM	EAD	PCR	x	x	x	x
Fur mites (*Myocoptes, Myobia, Radfordia*)	EAD	PCR	x	x	x	x
Pinworms (*Aspiculuris, Syphacia*)	EAD	PCR	x	x	x	x
Helicobacter	EAD	PCR		x*		x*
MNV	EAD	PCR		x*		x*
Sendai	EAD	PCR				x
Mycoplasma pulmonis	EAD	PCR				x
PVM	EAD	PCR				x
Reo3	EAD	PCR				x
LCMV	EAD	PCR				x
Ectromelia	EAD	PCR				x
MAV1	EAD	PCR				x
MAV2	EAD	PCR				x
Polyomavirus	EAD	PCR				x
Corynebacterium bovis	EAD	PCR	x	x	x	x
***Additional agents excluded at the SRB, ALZ, MDD, BPB, and IDRB facilities**						

AGENT	SAMPLE	TEST	FEB	MAY	AUG	NOV
Rat						
RCV	EAD	PCR	x	x	x	x
Parvo (RPV, RMV, KRV, H-1)	EAD	PCR	x	x	x	x
Fur mites (*Myocoptes, Myobia, Radfordia*)	EAD	PCR	x	x	x	x
Pinworms (*Aspiculuris, Syphacia*)	EAD	PCR	x	x	x	x
RTV	EAD	PCR		x		x
Sendai	EAD	PCR				x
PVM	EAD	PCR				x
Mycoplasma pulmonis	EAD	PCR				x

10. Immunodeficient mice are susceptible to opportunistic and commensal bacteria, transmission of which may occur by direct contact, via fomites including gloved hands, or via cell lines. The presence of opportunistic bacteria can be verified by PCR testing of animals (i.e., skin swabs) or the

environment (e.g., Interceptor filters, IVC exhaust plenums). Husbandry procedures in accordance with **SOP 413** entitled ***Isolation Rodent Husbandry and Use*** must be adhered to when handling immunodeficient mice.

11. When presence of an excluded pathogen is detected by PCR testing, measures must be taken to contain and prevent further dissemination of the agent. The following steps should be taken, in order.

    a. Access to the positive room must be limited to Comparative Medicine staff and research staff with essential ongoing studies, but there should be no animal movement in or out of the room. A strict clean-to-dirty traffic pattern must be followed, such that the potentially contaminated room is visited last in the day by anyone entering it. Deviations may be considered, but must be approved by a veterinarian.
    b. The diagnostic lab should be asked to retest the apparent positive EAD finding.
    c. A fresh swab of the exhaust plenum should be collected and submitted from each positive rack for retesting.
        i. If both the EAD retest and the plenum swab come back negative, then the room can be reopened and considered clean with the approval of a veterinarian
        ii. Rack exhaust plenums that are positive should be followed up by the testing of fecal pellets, pooled from each cage by row, with each cage noted as to row position. Lab staff should be asked not to move cage positions on the rack until resolution. Veterinarians should assist with specimen collections and cage notations.
    d. If the fecal samples test negative, cages should be transferred to a new, clean rack and two fresh EADs placed, one to be tested in 6 weeks, the other in 12 weeks, as per the normal protocol. A determination will be made by the veterinarian as to how traffic in the room will be handled based on the pathogen in question.
    e. If a fecal sample tests positive for the pathogen, the next steps will be directed by the veterinarian based on a number of factors, such as: which pathogen is in question, health status of the room, ongoing research affected, timeline of studies, and population of the room. This may include:
        i. Depopulation of the affected animals
        ii. Rederivation of affected colonies
        iii. Decontamination of racks, trolleys and equipment in the affected room
        iv. Decontamination of the room using vaporized hydrogen peroxide in accordance with SOP 1016 Hydrogen Peroxide Vapor Decontamination and SOP 1162 Bioquell Z-2 Hydrogen Peroxide Vapor Generator System
        v. Follow-up retesting of the room and occupants.

12. Additional health evaluations may be conducted upon request from the research staff (e.g., Gene Targeting Core-created mice prior to release) at the discretion of the veterinarians or in response to suspect exposure to infectious agents. Additional health evaluations may involve the use of sentinel animals and/or colony representatives. Use of imported germ plasm by the Gene Targeting Core must be received in accordance with **SOP 424** and result in a request for health characterization of the produced mice prior to release to the general population.

13. I**DEXX Panels, Schedules and Agents**
    a. **Surveillance Mouse Panels** (using the **Right** Interceptor filter)

    <u>USF EAD Surveillance Mouse Panel 1</u> (**Feb/Aug** all facilities)
    - MHV, MPV1-5, MVM, TMEV, EDIM, Pinworms *(Aspiculuris, Syphacia),* Fur mites *(Mycoptes, Myobia, Radfordia) and Corynebacterium bovis.*

    <u>USF EAD Surveillance Mouse Panel 2</u> (**May** all facilities)

- MHV, MPV1-5, MVM, TMEV, EDIM, MNV, Pinworms *(Aspiculuris, Syphacia),* Helicobacter, MNV, Fur mites *(Mycoptes, Myobia, Radfordia), Corynebacterium bovis.*

USF EAD Surveillance Mouse Panel 3 (**Nov** all facilities)

MHV, MPV1-5, MVM, TMEV, EDIM, Sendai, Mycoplasma pulmonis, PVM, Reo3, LCMV, Ectromelia, MAV1, MAV2, Polyomavirus, MNV, Pinworms *(Aspiculuris, Syphacia),* Helicobacter, Fur mites *(Mycoptes, Myobia, Radfordia) Corynebacterium bovis.*

b. **Surveillance Rat Panels** (using the **single** Interceptor filter)

USF EAD Surveillance Rat Panel 1 (**Feb & Aug** all facilities)

- RCV, Parvo (RPV, RMV, KRV, H-1), Pinworms *(Aspiculuris, Syphacia),* Fur mites *(Mycoptes, Myobia, Radfordia)*

USF EAD Surveillance Rat Panel 2 (**May** all facilities)

- RCV, Parvo (RPV, RMV, KRV, H-1), RTV, Pinworms *(Aspiculuris, Syphacia),* Fur mites *(Mycoptes, Myobia, Radfordia).*

USF EAD Surveillance Rat Panel 3 (**Nov** all facilities)

- RCV, Parvo (RPV, RMV, KRV, H-1), RTV, Sendai, PVM, Mycoplasma pulmonis, Pinworms *(Aspiculuris, Syphacia),* Fur mites *(Mycoptes, Myobia, Radfordia).*

c. **Custom PCR Panels**

USF Gerbil PCR EAD Panel (as needed)

- Fecal: Pinworms (Aspiculuris, Syphacia), Helicobacter spp, C. piliforme, E. muris, T. muris, S. muris, G. muris, LCMV, MHV

USF Guinea Pig PCR Panel (as needed)

- Fecal: GPAV, GPCMV, Helicobacter

d. **Custom PCR Panels for Spiny Mice-** Spiny mice are evaluated by PCR by pooling up to 10 fecal pellets collected from the cages within the room. By collecting a single pellet from each cage, up to 10 cages from within the same room can be pooled for testing

USF Spiny Mouse PCR Panel 1 (**May, Nov)** (using pooled fecal samples)

- MAV 1, MAV 2, MHV, MPV, MVM, EDIM, RCV/SDAV, RPV, TMEV, M. pulmonis, Helicobacter, Ectro, LCMV, MCMV, PVM, Polyoma, REO3, Pinworms, Fur Mite

USF Spiny Mouse PCR Panel 2 (**Feb, AUG**) (using pooled fecal sample)

- MPV, MVM, EDIM, RCV/SDAV, RPV, Helicobacter, Pinworms, Fur Mite

Approved: **Date:**