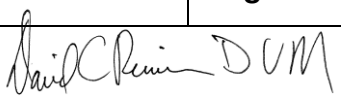
RUTGERS UNIVERSITY Office for Research **CMR STANDARD OPERATING PROCEDURE**		
TITLE: Rodent Health Surveillance Program – Non-Sentinel Animal		
SOP Category: Veterinary	**CMR SOP #: 7.24**	**Page: 1 of 6**
Effective Date: 09/03/2024	**Approval:** 	
Revisions: New 2024		

SCOPE:

This document describes the procedures to be followed when performing non-sentinel animal rodent health surveillance. This SOP applies to all Animal Care Staff (ACS), ACS Supervisors (ACSS), Veterinary Staff (VS) at the Rutgers University facilities.

OBJECTIVE:

The program is designed to monitor the health status of rodent colonies and detect clinical and subclinical infections that could potentially compromise animal welfare, jeopardize the validity and reproducibility of research data, or have zoonotic concerns.

PROCEDURES:

Health Monitoring Program Overview

The CMR health monitoring program utilizes sentinel animal free Polymerase Chain Reaction (PCR) based methods for the detection of pathogenic and opportunistic agents (viral / bacterial / parasitic / fungal). Monitoring is performed three times per year (every 4 months). Multiple sampling methods may be employed for sample collection depending on the type of caging system in use. Alternatively, animal-based monitoring utilizing serial soiled bedding exposure to sentinel mice with periodic blood/pelt/feces sampling or non-invasive collection of feces and pelt swabs from colony animals may be use at the discretion of the Director or A.D of Vet services. Serological antibody testing is used for blood samples. PCR is used for testing on all non-blood samples.

Testing Procedures

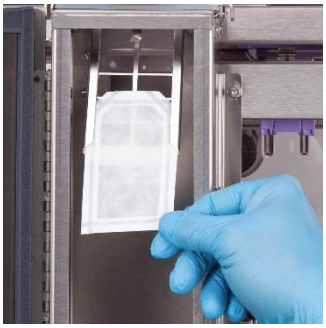
Exhaust Air Dust (EAD®) – Utilizes collection of cage dust deposited within the rack level exhaust system. This method is deployed on individually ventilated cage (IVC) rack system equipped with direct rack level exhaust fans or direct building level exhaust. Two methods may be used:

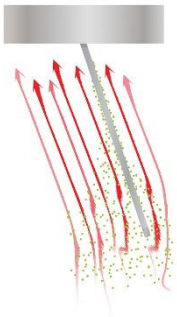
1) Filter media (ex. Sentinel E.A.D., Sentinel 2, Interceptor), is placed within the racks exhausted air flow pathway to accumulate dust from all cages on the rack over time. On conclusion of each exposure period, the media sheet is collected

and fresh a media sheet is installed to initiate each subsequent monitoring period.

Allentown IVC - Sentinel E.A.D.: Presentation collar and media placed at the top of the vertical exhaust plenum

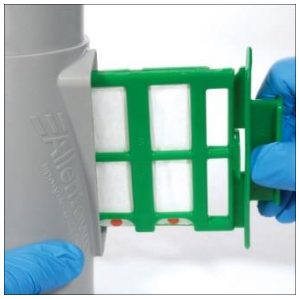
Sentinel™ EAD®
US Patent 10,575,495 B2



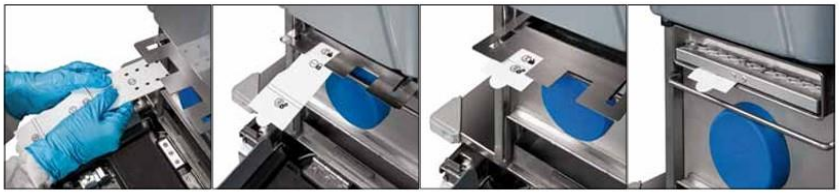


Allentown IVC - Sentinel 2™: Presentation sleeve with media casset is placed either above the vertical exhaust plenum or before the exhuast blower fan.

Sentinel2™
US Patent 11,510,391 B2
Canadian Patent 3,101,445



Tecniplast IVC – Interceptor: Filter media positioned under the tower unit exhaust filter.



NOTE: the Interceptor filter media MUST be advanced (pushed) forward out of the protective sleeve into the direct air flow following insertion into metal plate or directly below the exhaust filter plate.

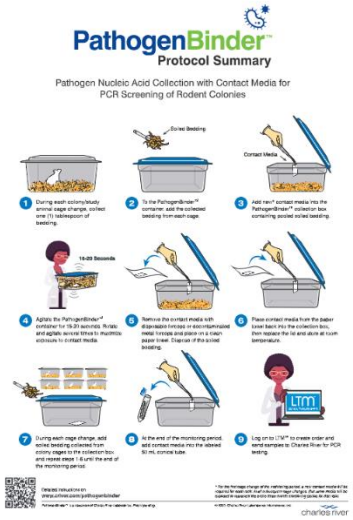
2) Swabs of dust deposited on the horizontal and vertical exhaust plenums may be substituted for direct media exposer.

Soiled Bedding debris exposure – (ex. Pathogen Binder™) – Utilizes binding of dust and debris to a media sheet by direct exposure with soiled contact bedding. This method is deployed where animals are housed on non-exhausted ventilated racks or where non-ventilated static lidded and open cages systems are used. Following the exposure period, media sheet is collected and the Pathogen Binder™ shake box is washed at 180 °F. The shake box is returned to the same assigned room and rack or as directed by the Health Monitoring Program coordinator or facility supervisor. A fresh new media sheet is placed within the shake box at the start of each exposure period.

Method:

During each cage change interval, approximately one disposable medicine cup (30ml) of fecal and urine soiled bedding is collected from all colony cages on the rack and deposited into the assigned Pathogen Binder™ container. The container is sealed in preparation for shaking. The preplaced media sheet is exposed to soiled bedding through vigorous shaking for 15 to 20 seconds. On conclusion of exposure session, the contact media is retrieved from the soiled bedding, placed on the inner surface of the box lid while the soiled bedding contents of the box are disposed. The filter media is returned to the same box, the lid is sealed, and the box returned to the assigned holding location. At all subsequent cage change events, the same media sheet will be exposed through the entire four-month monitoring period for that rack.

Follow QR code link for Detailed Pathogen Binder Instructions



Direct Animal Sampling – Utilizes collection of fur/pelt swabs, oral swabs, and fresh feces from at least one representative animal per cage. Multiple animals within a single cage may be sampled with samples being pooled or multiple cages may be sampled and pooled with up to 10 samples per submission.

Media Collection and Processing:

On completion of a minimum of 3 months exposure or as scheduled, filter media is collected and placed within a sterile 50 ml screw top conical tube or plastic sample bag specifically for Interceptor media. Each sample tube or interceptor sleeve is labeled with the appropriate room number, rack ID/designation/serial number or tower serial number, date of collection and name of researcher's lab occupying the rack. Samples are presented to the Health Monitoring program Coordinator who inventories the samples and completes the diagnostic lab's online sample submission form.

https://ltm.criver.com/LTMCommonUI/Login.aspx

Testing Program:

Mice:

For racks housing immunocompetent lines (IC): the Rutgers Custom IC PRIA Quarterly profile will be performed two periods per year and the Rutgers Custom IC PRIA Annual profile +/- addition of zoonotic will be performed once annually.

For all racks housing immunodeficient lines (ID) and for all GESR racks (CHI D Suite): Rutgers Custom ID PRIA quarterly profile will be performed two periods per year and the Rutgers Custom ID PRIA Annual profile +/- addition of zoonotic will be performed once annually.

Rats:

For all racks housing immunocompetent and immunodeficient rats: the Rutgers Custom IC PRIA Quarterly profile with add on *C. bovis* and Pneumocystis will be performed two periods per year and the Rutgers Custom IC PRIA Annual profile with add on *C. bovis* and *Salmonella* will be performed once annually.

Example Testing Schedule

Testing period	**Period 1** **February-March**	**Period 2** **July-August**	**Period 3** **October-November**
PCR Panel	IC Quarterly or ID Quarterly	IC Annual or ID Annual	IC Quarterly or ID Quarterly
Required Sample Type	EAD filter media, Pathogen Binder filter media, Direct animal samples, Direct rack dust swabs	EAD filter media, Pathogen Binder filter media, Direct animal samples, Direct rack dust swabs	EAD filter media, Pathogen Binder filter media, Direct animal samples, Direct rack dust swabs

Testing Pannels:

Mouse

Rutgers Custom **IC PRIA quarterly*** profile agent list: Viral: MPV, MNV, MHV, MRV/EDIM, TMEV/GDVII, MuCPV/MKPV Bacterial: *Helicobacter, Mycoplasma pulmonis Corynebacterium bovis*. Parasitic/Protozoal/Fungal: Fur Mites (*Myobia, Myocoptes, Radfordia*), Pinworms (*Aspiculuris, Syphacia*)

Rutgers Custom **IC PRIA Annual*** profile agent list includes the Rutgers Custom **IC PRIA quarterly** profile with the addition of the following agents: Viral: Adenovirus (type 1 & 2) Reovirus (types 1,2,3,4), Pneumonia virus of mice, Sendai virus, Ectromelia, LCMV, Hantavirus, LDV,polyomavirus . Bacterial: (+/- *Campylobacter, Salmonella and Strep moniliformis* at Directors discretion). Parasitic/Protozoal/Fungal, *Cryptosporidium, Pneumocystis*

Rutgers Custom **ID PRIA quarterly** profile agent list: Viral: MPV, MNV, MHV, MRV/EDIM, TMEV/GDVII, Reovirus, MuCPV/MKPV. Bacterial: *Helicobacter, Mycoplasma pulmonis, Rodentibacter (pneutropicus & heylii), Pseudomonas aeruginosa, Corynebacterium bovis, Staph aureus, Strep pneumoniae, Klebsiella (pneumoniae and oxytoca), Proteus mirabilis*. Parasitic/Protozoal/Fungal: Fur Mites (*Myobia, Myocoptes, Radfordia*), *Demodex*, Pinworms (*Aspiculuris, Syphacia*), *Pneumocystis*

Rutgers Custom **ID PRIA Annual** profile agent list includes the Rutgers Custom **ID PRIA quarterly** profile with the addition of the following: Viral: Adenovirus (type 1 & 2), Pneumonia virus of mice, Sendai virus, Ectromelia, LCMV, Hantavirus, LDV, polyomavirus. Bacterial: *Beta-hemolytic Streptococcus groups (A, B, C, G) Chlamydia muridarum*. Parasitic/Protozoal/Fungal: *Giardia, Spironucleus, Cryptosporidium.*

*****There are two established levels for mouse IC PRIA panels. Level one (1) includes MNV and *Helicobacter* and is to be used for monitoring those areas/rooms that actively excludes these agents and level two (2) for use in monitoring all areas/rooms where these agents are not excluded.

RATS:

Rutgers Custom **IC PRIA Quarterly** profile agent list: Viral: Rat parvoviruses (H-1, KRV, RPV, RMV), Rat coronavirus (RCV, SDAV), Rat theilovirus (RTV), Adenovirus type 1 & 2 (MAV-1 & MAV-2). Bacterial: *Helicobacter, Mycoplasma pulmonis, Corynebacterium bovis*. Parasitic/Protozoal/Fungal: Fur Mites (*Myobia, Myocoptes, Radfordia*), Pinworms (*Aspiculuris, Syphacia*), *Pneumocystis*

Rutgers Custom **IC PRIA Annual profile** includes the Rutgers Custom **IC PRIA Quarterly** profile with the addition of the following agents: Viral: Reovirus (type 1, 2, 3,

4), Murine orthopneumovirus (Pneumonia virus of mice/PVM), Sendai virus, Ectromelia (mousepox), Lymphocytic choriomeningitis virus (LCMV), Old World hantavirus (Seoul). Bacterial: *Strep. Moniliformis, Corynebacterium bovis, Bet-hemolytic strep* (Grp. B, C and G), (+/- *Campylobacter and Salmonella* at Directors discretion)**.**

Positive Test Results:

- The Attending Veterinarian and VS must be notified as soon as possible in the event of any positive test results for an excluded pathogen.
- While subsequent steps vary by facility, all positive test results initially require resubmission of that test sample(s) to confirm positive results. See SOP 7.13 Infectious Disease Outbreak Management.

Archiving Test Results:

- All results are archived and made available through the Laboratory Testing Management (LTM™) Software through Charles River Laboratories.

REFERENCES:

SOP 7.13 Infectious Disease Outbreak Management

Pathogen Binder™ technical Sheet – https://criver.widen.net/s/w9fjqhks6p/rm-ts-pathogen-binder

Pathogen Binder™ Protocol Summary – 9 STEP Wall Poster https://criver.widen.net/s/v6wbhmkpwb/rm_22_pathogenbinder-wallposter_a3

Allentown Sentinel and Sentinel 2 technical Sheet - https://documents.allentowninc.com/Sentinel_Datasheet_US_v11.pdf

Allentown Sentinel and Sentinel 2 instructional video - https://www.allentowninc.com/asset/player/?asset=7ec26963-318d-4e07-8219-f59b92355f8c&campaign=701F0000000qoQE

Tecniplast Interceptor technical Sheet – https://www.tecniplast.it/usermedia/en/PRODUCTS/housing-cages/interceptor/WhitePaper.pdf

Tecniplast Interceptor instructional video https://www.youtube.com/watch?v=u9XP5J9nhC0