I. PURPOSE
   A. To provide standards for direct ectoparasite surveillance within our rodent colonies, focusing on fur mites.

II. DEFINITIONS
   A. Ectoparasite- A parasite that lives on the surface of a host organism

<table>
<thead>
<tr>
<th>Fur Mite Species</th>
<th>Life Cycle</th>
<th>Morphology</th>
<th>Species Infected</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Myocoptes musculinus</em></td>
<td>8-14 days</td>
<td>3rd and 4th legs heavily chitinized; Eggs occupy ½ of abdomen</td>
<td>Mice</td>
</tr>
<tr>
<td><em>Myobia musculi</em></td>
<td>21-23 days</td>
<td>Single claw on 2nd digit</td>
<td>Mice and Rat</td>
</tr>
<tr>
<td><em>Radfordia affinis</em></td>
<td>Similar <em>M. musculi</em></td>
<td>Two claws on 2nd digit (unequal length)</td>
<td>Mice and Rat</td>
</tr>
<tr>
<td><em>Radfordia ensifera</em></td>
<td>Similar <em>M. musculi</em></td>
<td>Two claws on 2nd digit (equal length)</td>
<td>Rat</td>
</tr>
</tbody>
</table>

B. Sentinel animal – An animal deliberately placed in a particular environment to detect the presence of an infectious agent.

C. Flock swab – A sticky cotton applicator used to swipe against caging for ectoparasite PCR testing. Order information: Fisher, #23-600-951

D. RHST- Rodent Health Surveillance Team

E. PCAR- Pathology Cores for Animal Research

III. RESPONSIBILITY
   A. RHST
      1. Perform fur pluck on all mice/rats imported through quarantine or exported from our facility.
      2. Contact appropriate individuals when positive animals are identified (Appendix III).
   B. PCAR
      1. Examine fur pluck slides for evidence of fur mite infestations (mites or eggs).
2. Contact the area veterinary resident if confirmation is needed for identification and speciation of fur mites.

3. Provide results to the RHST.

C. Veterinary Resident

1. Review slides when needed to confirm outbreak and/or speciate fur mites.

2. If positive animals identified, follow the Rodent Outbreak flowchart (Bluestorage: ULAM\ULAM_RESIDENT\Outbreak Documents).

IV. PROCEDURES:

A. Surveillance Methods

1. Fur Pluck Method:

   a. Collection procedure:
      i. Use one microscope slide per animal. Label slide with animal location (PI, room, rack, slot) and collection date.
      ii. Place either a line of resin (preferred) or a drop of mineral oil on the slide.
      iii. Using hemostats or forceps, pluck hair from each of the five designated regions of the rodent (Appendix I).
      iv. Place the hair within the resin or mineral oil.
      v. Place a coverslip over the samples (Appendix IV), applying pressure to dissipate bubbles, if necessary.

   b. PCAR staff: Scan the slides for evidence of fur mites or eggs (Appendix II).
      i. Consult the area veterinary resident for assistance with identification and speciation, if needed.
      • Only pursue mite speciation if the mite is not one of the four common fur mite species (see Definitions section)

2. PCR Method:

   a. Collection procedure:
      i. Using a flock swab, swipe all four cage sides, just above the level of the bedding, in one smooth motion.
      • A maximum of 10 swipes can be taken per flock swab.
      ii. Place dirty swab into a labeled Eppendorf tube (Fisher #02-681-374) and break the stick, allowing the tube to close.
iii Record the building, room number, rack number, principal investigator, and date on the Eppendorf tube label and submit to PCAR.

b PCAR staff: Submit the swabs to the appropriate diagnostic laboratory.

B. Importation and Exportation Surveillance

1. Importation
   a All mice and rats arriving at our institution receive prophylactic ivermectin treatment. Collect fur plucks 1-2 weeks prior to scheduled quarantine release date.
   b Reference the “Rodent Import and Quarantine Procedures” SOP for more information.

2. Exportation
   a Fur pluck test all mice and rats leaving our institution, regardless of receiving institution standards.

C. Reporting (Appendix III)

1. PCAR staff: Report results as either positive or negative for each slide or PCR sample.
   a A positive slide indicates that 1 or more eggs or mites were observed.
   b A negative slide indicates that eggs or mites were not present on that slide.

2. Report mite speciation for non-standard fur mite species on slides only. Always report speciation of PCR samples.

3. PCAR staff: Send results to the RHST.

D. Results

1. Positive results
   a Follow the procedures outlined in the “Fur Mite Outbreak and Treatment Procedures for Rats and Mice” SOP.
   b RHST staff:
      i If animal(s) were bound for exportation, contact the receiving institution and report the health status.
      ii If animal(s) were imported, additional treatment modalities may be recommended to the PI by the area faculty veterinarian and resident. Reference the “Rodent Import and Quarantine Procedures” SOP for more information.

V. RELATED DOCUMENTS

A. “Fur Mite Outbreak and Treatment Procedures for Rats and Mice” SOP
B. Rodent Outbreak Flowchart
C. “Rodent Import and Quarantine Procedures” SOP
D. “Environmental Fur Mite Sampling & Testing Procedures” SOP

VI. APPENDICES
A. Fur pluck regions
B. Fur mite images
C. Reporting flowchart
D. Fur pluck resin slide preparation
A. Appendix I – Fur Pluck Regions
B. Appendix II – Fur Mite Images

A. *Myocoptes musculinus*

B. *Myobia musculi*

C. *Radfordia affinis*

A. Eggs on hair shaft
C. Appendix III – Reporting Flow Chart

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C. Appendix III – Reporting Flow Chart

Fur Pluck Testing Results

PCAR contacts RHST with results

Positive

Importation

RHST contacts quarantine veterinary resident

Quarantine faculty veterinarian and resident coordinate treatment plan with PI

Exportation

RhST contacts receiving institution

Follow “Fur Mite Outbreak and Treatment Procedures for Rats and Mice” SOP

No further action

RHST contacts area veterinary resident
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D. **Appendix IV – Fur Pluck Resin Slide Preparation**

Line of resin placed on slide

Rolling coverslip over resin