Revised FELASA Recommendations for the Health Monitoring of Rodent and Rabbit Colonies

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Previous FELASA Recommendations for the Health Monitoring of Rodent and Rabbit Colonies

Kraft et al. (1994):
Recommendations for health monitoring of mouse, rat, hamster, guineapig and rabbit breeding colonies.
Lab Anim 28, 1-12

Rehbinder et al. (1996):
FELASA recommendations for the health monitoring of mouse, rat, hamster, gerbil, guineapig and rabbit experimental units.
Lab Anim 30, 193-208

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Lab Anim 28, 1-12

Rehbinder et al. (1996):
FELASA recommendations for the health monitoring of mouse, rat, hamster, gerbil, guineapig and rabbit experimental units.
Lab Anim 30, 193-208

Nicklas et al. (2002):
Recommendations for the health monitoring of rodent and rabbit colonies in breeding and experimental units.
Lab Anim 36, 20-42

These recommendations will be under periodical review and amendments will be published as necessary.

Lab Anim OnlineFirst, published on February 4, 2014 as doi:10.1177/0023677213516312

Working Party Report

FELASA recommendations for the health monitoring of mouse, rat, hamster, guinea pig and rabbit colonies in breeding and experimental units

FELASA working group on revision of guidelines for health monitoring of rodents and rabbits: M Mähler (Convenor)[1,2], M Berard[3,4], R Feinstein[5,6], A Gallagher[7,8], B Illgen-Wilcke[9,10], K Pritchett-Corning[11,12,13] and M Raspa[14,15]

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Revised FELASA Recommendations: Contents

- Introduction
- General considerations in the design of an HM programme
- Choice of agents
- Animals for testing and sampling
- Assays and interpretation
- Health monitoring report
- References

Appendices (as supplementary information provided online)

Appendix 1: Comments on agents (incl. bibliography)

Appendix 2: Calculation of the number of animals to be monitored ("ILAR formula")

Appendix 3: Example of a health monitoring programme description

Revised FELASA Recommendations – What ‘s New?

- Link to the FELASA accreditation of HM programmes and testing laboratories (Nicklas et al. 2010)
- Emphasis on the role of a "person with sufficient understanding" in HM (preferably of FELASA Category D or equivalent) / flexibility for individual and local needs
- Update of relevant agents and testing frequencies

Table 3. Recommended infectious agents to monitor and frequencies of monitoring for laboratory mice (*Mus musculus*).

	Every 3 months	Annually
Viruses		
Mouse hepatitis virus	x	
Mouse rotavirus	x	
Murine norovirus	x	
Parvoviruses:		
Minute virus of mice	x	
Mouse parvovirus	x	
Theiler's murine encephalomyelitis virus	x	
Lymphocytic choriomeningitis virus		x
Mouse adenovirus type 1 (FL)		x
Mouse adenovirus type 2 (K87)		x
Mousepox (ectromelia) virus		x
Pneumonia virus of mice		x
Reovirus type 3		x
Sendai virus		x

Table 3. Recommended infectious agents to monitor and frequencies of monitoring for laboratory mice (*Mus musculus*).

	Every 3 months	Annually
Bacteria		
Helicobacter spp.	x	
If positive, speciation for *H. hepaticus*, *H. bilis* and *H. typhlonius* is recommended		
Pasteurella pneumotropica	x	
Streptococci β-haemolytic (not group D)	x	
Streptococcus pneumoniae	x	
Citrobacter rodentium		x
Clostridium piliforme		x
Corynebacterium kutscheri		x
Mycoplasma pulmonis		x
Salmonella spp.		x
Streptobacillus moniliformis		x
Parasites		
Endo- and ectoparasites (reported to the genus level)	x	

Table 3. Recommended infectious agents to monitor and frequencies of monitoring for laboratory mice (*Mus musculus*).

Additional agents*
Viruses:
Hantaviruses
Herpesviruses (mouse cytomegalovirus, mouse thymic virus)
Lactate-dehydrogenase elevating virus
Polyomaviruses (mouse polyomavirus, K virus)
Bacteria and fungi:
Cilia-associated respiratory bacillus
Klebsiella oxytoca, Klebsiella pneumoniae
Other *Pasteurellaceae*†
Pneumocystis murina
Pseudomonas aeruginosa
Staphylococcus aureus
Others as necessary

All agents listed should be reported if found in diagnostic examinations irrespective of when they are found.

*Testing for these agents is optional and should be pursued if there is a specific need. Frequency of testing will depend on local circumstances.

†We acknowledge that the inclusion of the *Pasteurellaceae* family is controversial. Screening for the family can be conducted should the facility wish, and the difficulty of some commercial kits to correctly identify *Pasteurella pneumotropica*, as well as the fluidity of the correct phenotypic classification, should also be acknowledged.

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- Role of opportunistic agents

Opportunistic Agents

- Various microorganisms that do not usually cause clinical signs in immunocompetent animals may cause disease in immuno-deficient animals or in animals whose resistance is lowered.
- Genetically-modified rodents may have unanticipated phenotypes, including overt or subtle immunomodulation.
- It may therefore be necessary to monitor such animals for opportunistic agents or commensals.
- As almost any organism can be an opportunist, provided it finds a suitable host or favourable circumstances, it is impossible to define a complete list of opportunistic agents for which animals should be monitored.

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- Update of relevant agents and testing frequencies
- Role of opportunistic agents
- Greater consideration of sentinel animals and containment housing

Sentinels

are animals obtained from a breeding colony of known pathogen status that are placed together with animals of the same (or another) species to aid in evaluation of their microbiological status.

Use

- **experimental units**
- **small populations (e.g. IVCs, isolators)**
- **immunodeficient animals (insufficient antibody production)**
- **genetically-modified animals (often irreplaceable, immuno-deficiency?)**

Sentinels

are animals obtained from a breeding colony of known pathogen status that are placed together with animals of the same (or another) species to aid in evaluation of their microbiological status.

Criteria for selection

- **microbiological quality (cave: immunodeficient animals)**
- **immunological competence**
- **strain/stock (differences in susceptibility)**
- **age: young adults**

Sentinels

are animals obtained from a breeding colony of known pathogen status that are placed together with animals of the same (or another) species to aid in evaluation of their microbiological status.

Housing

- **a minimum of 6 weeks in the unit to be monitored**
- **in different cages on several racks, preferably on bottom shelves**
- **open cages (no filter tops!)**
- **use soiled bedding (at least 50%), feeding devices and drinking bottles from other cages**
- **handle and change cages with sentinels at last**

Options of Using Sentinels (in IVCs)

Contact sentinels – Keeping sentinels in the same cage as animals to be monitored

Bedding sentinels – Keeping sentinels on used bedding from several cages of the animals to be monitored

Exhaust air sentinels – Keeping sentinels in cages filled with the exhaust air of the cages of animals to be monitored

Cave: Not all agents can be easily transferred via soiled bedding (e.g. LCMV, Sendai virus, *Pasteurella pneumotropica*) or via exhaust air (*Helicobacter* spp., mouse rotavirus, MPV)!

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- Greater consideration of test methods and results interpretation

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- HM report vs. laboratory report

HEALTH MONITORING REPORT

Unit number/name: Date of report issue:

Species: Housed strains/stocks:

Housing type:

Health monitoring is conducted in accordance with FELASA recommendations. Further information about the overall health monitoring programme is available on request or at the following website: [place URL here]

	Test frequency	Date of last results	Last results	Testing laboratory	Test method	Historical results (ideally from inception, at least ≤ 18 months)
Viruses						
[Agents listed in alphabetical order]			[Number of positive animals/ number examined]			
Bacteria and fungi						
[Agents listed in alphabetical order]						
Parasites						
[Agents listed in alphabetical order]						
Anatomopathology						
Gross examination(s)			[Lesions were/ were not observed in the animals examined]			
Histopathology of significant gross lesions						

Comments: [e.g. notations about treatment or other significant information]

This document (electronically) signed by laboratory personnel.

Name & contact details of the person responsible for the health monitoring programme design.

Figure 1. A sample health monitoring report. Other formats are acceptable if the information is presented clearly and simply.

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- Greater consideration of test methods and results interpretation
- HM report vs. laboratory report
- Update of literature references


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