

Standard operation procedure: Housing of mice and rats at KPM

SOP nbr: 3-01

Created: 03.03.2014

Revised: 08.12.2022

Valid to: 10.01.2024

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HOUSING OF MICE AND RATS AT KPM INCLUDING GM ANIMALS

1.0 PURPOSE

- 1.1 To ensure that the law and regulations for housing of animals are followed
- 1.2 To ensure that HSE is maintained
- 1.3 To ensure good animal welfare
- 1.4 To ensure that the animals are housed under conditions in accordance with the demands of the experiment

2.0 DIVISION OF RESPONSIBILITY

- 2.1 The section of comparative medicine (KPM) is responsible for ensuring that the animals housed at KPM (the Barrier, MDU and the Conventional Unit) are housed according to regulations.
- 2.2 An «HSE declaration and risk assessment for animal experiments» must be filled out by the user in relation to the FOTS- application. Personnel with special screening responsibility (PMSK) must inform the HSE coordinator when needed.
- 2.3 The user, named veterinarian, PMSK, room manager and the operations coordinator exchange information about the experiment and plan strategies for the housing of animals. The HSE coordinator is included when needed.
- 2.4 The user must ensure that animals are housed under the correct FOTS project at all times.
- 2.5 User must continuously update KPM about important information regarding the experiment and animal welfare.
- 2.6 User is responsible for updating all cage cards as soon as the animal are in experiment the card should have information like; the most essential, expected side effects, the date for startup, who to contact etc. The room manager shall follow up deviations from this and request sufficient information.
- 2.7 KPM is responsible for changing the cages, carrying out daily inspections, for making sure that the cages are sufficiently clean, that the animals are healthy, that the animals have the proper environmental enrichment and enough food and water. Deviation from this might be implemented when special HSE considerations must be taken.
- 2.8 The user is responsible for making sure that the animals have enough food and water for the coming day when cages are placed back in the animal room after use in the lab. The user must make sure that the animals are in a good condition before leaving them.



3.0 PROCEDURE

Preparation before housing animals

- 3.1 An «HSE declaration and risk assessment for animal experiments» ([hse-declaration-and-risk-assessment-for-animal-experiments.pdf \(uio.no\)](#)) must be filled out by the user in relation to the FOTS-application. PMSK must inform the HSE coordinator when needed. Animals during experiments that involve the use of toxic substances and which entail quarantine time must be housed in DU-008A (Tox room). All experiments involving the use of radioisotops must take place at the PET/CT lab. These experiments must not start until the go-ahead has been given by KPM. Separate guidelines for supervision apply to these experiments. (Animals to be housed in DU-008A should not be moved to DU-008A until three days before the start of the experiment. The animals should be moved back to the animal room they came from immediately after the quarantine period is over.)
- 3.2 The user, named veterinarian, PMSK, room manager and the operations coordinator exchange information about the experiment and plan strategies for the housing of animals. The HSE coordinator is included when needed.
- 3.3 The user must ensure that animals are housed under the correct FOTS project. PMSK must approve all transfers of animals between projects, including various projects within a group.
- 3.4 When receiving animals, the order in Science Linker (SL) must be checked for specific preferences regarding housing before the animals are unpacked. Each research group should, as far as possible, keep its animals in one animal room.
- 3.5 Staff at KPM shall have been thoroughly trained in the section's procedures and shall follow up the animals when performing supervision and cage change.

Racks and cage cards

- 3.6 Racks must be connected correctly to each other and to the ventilation unit. Make sure the settings on the ventilation unit are correct. All employees must have undergone thorough training in the use of equipment.
- 3.7 In the case of ISO cages and ISO racks, special training must be given before these are used. ISO cages are used for newly arrived mice in the Barrier and for mice that have, or are suspected of having, an infection.
- 3.8 Females have pink cage cards and males have blue cards. Breeding cages have yellow cage cards with a white behind the yellow for making notes. The user must provide information about special phenotypes and requirements for environmental enrichment for breeding and holding cages. Sentinels have white cage cards.
- 3.9 Red cage cards should only be used in special cases, where extra attention is required, for example for immunosuppressed animals. An explanation must be provided under "Notes".
- 3.10 Green cage cards are for animals being used in experiments. All cages with animals planned for use in an experiment must be marked as "Experimental" by the user in SL. Information regarding the experiment must be added by the user to "Notes" on the cage card in SL. The information must include start date, a short description of the experiment, any expected complications, special phenotypes, special dietary needs, special requirements for enrichment, treatment and the name and phone

number of the contact person. Different groups (e.g. control/non-control) can be marked using "Cage purpose". Print out the cage card and attach to a green cage card reserved for animals in experiments.

- 3.11 Always read carefully all the information about the animals and the experiment on the cage cards, where important information regarding the housing of the animals will also be given. All information on the cage card must correspond to the contents of the cage and to SL.

Grouping of animals

- 3.12 Mice and rats should always be housed in groups. Males commonly used in breeding (stud males) must be housed alone between breeding. Adult male mice can be housed alone as long as they do not show any symptoms of stress. Stressed animals must be terminated. Single males and females in a litter should be terminated, as they should not be housed alone. See SOP 5-03 Weaning of pups in mouse and rat breeding at [KPMs webpage](#).
- 3.13 Animals are to be housed as follows: GM500: max. five mice, GM900: max. eleven mice, GR900: max. four rats, GR1800: max. seven rats. (see overview attachment) When separating a litter, pups must be separated into the same cage according to gender (not split up into several cages), except for male mice from lines known to fight a lot. The latter should be placed in GM500 cages (max. four mice) to reduce the risk of fighting.
- 3.14 Adult rats over 600 grams must be housed in GR1800- cages but be observant about water intake. It has been observed that rats who went from 900- cage to 1800- cage has problem with drinking from the bottles. If you observe drinking problems in rats, you change the bottle to a bottle with a ball, put on a note and register water intake on the bottle. If the rat is visibly dehydrated, a Petri dish with water should be offered.
- 3.15 Newly separated rats can also be kept in 1800 cages, but must have access to bottles with long tops and wet food until they are large enough to drink themselves (see "Housing mice and rats" below). NB! Water bottles with a ball in the cap must be removed and sent separately to the laundry (marked "With bullet"), due to the bottle cleaner not being able to handle these.
- 3.16 Mice breeding is set up in GM900 cages with one to two females and one male (duo/trio). GM500 cages are permitted for temporary mouse breeding, where one male and one female are put together and the male is taken out before birth. Rat breeding is set up as a duo or trio in GM1800 cages. GR900 cages are permitted for temporary rat breeding, where one male and one female are housed together and where the male is taken out before birth.
- 3.17 Harembreeding is prohibited at KPM, IMB. Exceptions can be made by consulting with PMSK.
- 3.18 Cages with dams with pups (rats) should be given a note with the separation date for the pups (day 21 after birth). The pups must not be housed together with the dam beyond this date.

Bottle types and environmental enrichment

- 3.19 All cages, environmental enrichment, food and water used for the animals must be autoclaved.
- 3.20 GM500 cages are equipped with a small water bottle (250 ml). Do not give the GM500 cages a large bottle (300 ml) since these bottles are too large for the rack. GM/GR 900 cages should have two large water bottles (300 ml). GR1800 cages must have two large water bottles (300 ml). Ensure that animals have enough water to last to the next day. The bottle shall never have less than 100ml.

- 3.21 Make sure that the food basket in GM500 and GM900 cages is properly positioned, otherwise mice might get caught in the basket. Do not pile up the food in the basket so that it gets in the way of the vents in the lid. Make sure that animals always have enough food to last to the next day.
- 3.22 Make sure that the layer of bedding in the cages does not exceed 2 cm in thickness. Environmental enrichment must consist of at least a tunnel/ igloo and paper. Chewing sticks are only placed in the cages of animals known to use chewing sticks. More paper should be provided when needed. Breeding cages and recently weaned pups should have sufficient, but not too much, paper. Sentinels and holding cages can be given a running wheel as long as the cage card does not say "No running wheel".

4.0 HEALTH, SAFETY AND ENVIRONMENT (HSE)

- 4.1 An «HSE declaration and risk assessment for animal experiments» must follow the FOTS application and HSE- concerns must be followed up.
- 4.2 Everyone must have adequate training and wear proper clothing and protective gear.
- 4.3 Everyone who handles animals must have adequate training and practice in order to ensure that the animals are handled properly.

5.0 EQUIPMENT AND MAINTENANCE

- 5.1 Autoclaved GM500, GM/GR900 and GM1800 cages
- 5.2 Racks and ventilation units
- 5.3 Autoclaved water bottles, 250 ml, 300 ml and 300 ml with ball in the cap
- 5.4 Autoclaved food and environmental enrichment
- 5.5 Science Linker
- 5.6 Cage cards

6.0 HISTORY OF EDITING

- 6.1 24.10.2010: SOP drawn up for separation in the old department
- 6.2 15.11.2012: SOP drawn up for separation in a new template. This must be edited when the database for the new department has been chosen
- 6.3 03.03.2014: Revised SOP for number of animals per cage etc.
- 6.4 26.06.2018: More comprehensive editions (Frøydis Kilmer)
- 6.5 05.08.2020: comprehensive editions (Frøydis Kilmer)
- 6.6 15.06.2021: added information that all GR1800 cages should have water bottles with a ball in the cap (Frøydis Kilmer)
- 6.7 28.10.2021: Information on "HSE declaration and risk assessment for animal experiments" and the housing of animals in experiments with toxic substances and radioisotopes added. Section 2.6: Follow-up from the room manager added. Punkt 3.3: PMSK must approve transfer between projects. (Frøydis Kilmer)
- 6.8 24.11.2022: changed name of the SOP to clarify this SOP also means GM animals. (H. Tandberg and K. Zelewska)

6.9 8.12.2022: small adjustments to the SOP when revised. (H. Tandberg)

7.0 REFERANCES

7.1 Regulation on animal experiments, last revised FOR-2010-08-06-1147

7.2 APPENDIX A to the European Convention for the Protection of Vertebrate Animals used for Experimental and other Scientific Purposes. Guidelines for the accommodation and care of animals

7.3 DIRECTIVE 2010/63/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 22 September 2010 on the protection of animals used for scientific purposes

Housing of mice and rats

Mice

GM500 cages	GM900 cages
1-5 mice	max 11 mice

Rats

Weight	GM900 cages	GM1800 cages
< 200 g	2-4 rats	max 7 rats
200-300 g	2-3 rats	max 7 rats
300-400 g	2 rats	max 5 rats
400-600 g	2 rats	max 4 rats
> 600 g	Not allowed	max 3 rats