

## BREEDING COLONY MANAGEMENT

### 1 Policy Statements

As stated in the NACLAR Guidelines 2022, PIs must:

- not generate a new animal line using genetic modification if a similar, suitable animal model is available to the PI or a relevant *in vitro* method can be used to achieve the aims of the project;
- ensure that the IACUC is kept informed about the impact of the genotype on animal well-being as well as mortality, morbidity and population health. Procedures used for creating and breeding these animals must be regarded as part of a project and must be included in the protocol application to the IACUC;
- use methods to support and safeguard the well-being of the animals involved;
- maintain records of the number of animals used to create and maintain the new animal line, and the lineage and clinical health of the animals; and
- ensure that Annual Breeding Reports are provided to the IACUC, including:
  - regular monitoring of new animal line; and
  - a final report on the generation of the new animal line.

PI should have a plan for systematic characterization of phenotypes to facilitate assessment of their possible utility and timely decisions on disposition or retention.

The IACUC must establish mechanisms to monitor and document the number of animals acquired and used in approved activities.

### 2 Definitions

|                                                            |                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Animal</b>                                              | All live fish, amphibians, reptiles, birds, non-human mammals and cephalopods.                                                                                                                                                                                                                                                                                                         |
| <b>Animal Identification</b>                               | The process of assigning a unique and verifiable marker to ensure accurate tracking, management, and record-keeping of animals throughout their lifecycle. Common identification methods include tattoos, neck-bands, individual tags, electronic numbering devices, physical marks, or labels affixed to the animal's housing (e.g. cage, tanks, container, pen, yard, or enclosure). |
| <b>Attending Veterinarian (AV)</b>                         | A veterinarian employed or contracted by an institution, on a full-time or part-time basis, with relevant training or experience in laboratory animal science and medicine to provide adequate veterinary care to the animals in the research facility of the licensee.                                                                                                                |
| <b>Genotype</b>                                            | The two alleles present at a specific locus in the genome.                                                                                                                                                                                                                                                                                                                             |
| <b>Institutional Animal Care and Use Committee (IACUC)</b> | The Committee, constituted by an institution, responsible for the oversight and evaluation of all aspects of the institution's animal care and use programme.                                                                                                                                                                                                                          |
| <b>Phenotype</b>                                           | The observable characteristics or traits of an organism, resulting from the interaction of its genes (genotype) and the environment.                                                                                                                                                                                                                                                   |

|                                    |                                                                                                                                                   |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Principal Investigator (PI)</b> | A person who proposes and/or has IACUC approval to conduct a protocol involving the use of animals, and has overall responsibility of a protocol. |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|

### 3 Scope

This policy applies to all animals covered under NUS Animal Care and Use Programme.

### 4 Guidelines

The purpose of this policy is to describe:

1. Conditions under which a separate IACUC Breeding Colony Application is necessary.
2. Information that needs to be included in breeding records.
3. Reporting animal numbers in breeding protocols to IACUC.

#### 4.1. Conditions under which a separate IACUC Breeding Colony Application is necessary

A breeding colony maintained to supply animals to multiple IACUC approved projects shall have an independent IACUC approval and a separate IACUC protocol number.

Animals under a breeding protocol must not be used for any experimental manipulations before they are transferred to an approved experimental protocol.

The IACUC will authorize animal use based on the estimated number of offspring expected to be produced from the breeding colony. The strains used must be consistently reflected in both the breeding and research protocols. Additionally, the projected number of desired offspring must be aligned across both protocols, with a permissible variance of no more than 5% or a maximum of 50 animals—whichever is lower.

It is the responsibility of the PI to maintain accurate breeding records based on the requirements listed below.

#### 4.2. Information that needs to be included in breeding records For the Maintenance of Breeding Record, the minimum requirements are:

1. The species and strain designation (e.g., C57BL/6, B6D2F1, etc.)
2. Animal identification (breeding animals should have unique identifiers that are not repeated in subsequent generations)
3. Breeder date of birth (DOB)
4. Breeder mating date; Offspring date of birth, and date of weaning for rodents
5. Procedure(s) animal undergo e.g. identification, genotyping, sample collection, etc.
6. Generation used for Breeding Routine replacement of wild type breeder from vendor (appropriate genetic management) is strongly recommended (at least every 10 generations) to prevent genetic drift/ sub strain.
7. Tracking animal number of all colony offspring including:

- Number of breeders used
- Number of offspring born (both desired and undesired)
- Male and Female
- Animals weaned
- Animal disposition:
- Animals transferred:
  - Used in studies (transferred to research protocol), or
  - To other protocol/investigator

All transfers for animals housed in CM vivarium must be done through CM by submitting a transfer request and following the process in accordance with [CM SOP 701 Internal Transfer of Animals](#). This applies to all transfers, including those between protocols under the same PI, and across different locations – whether a different room or a different facility. For transfers involving the DBS or SJINML facilities, PI should consult the respective facilities managers.

The animals transferred to an experimental protocol should be reported as used under the experimental protocol, not the breeding protocol.

- Animal/ offspring retained/held, including for colony maintenance, or breeder replacement
  - All animals that have died, or are euthanized/ culled for any reason (e.g. including undesired genotype, sex, phenotype, poor doers, etc.)
8. PI can refer to Appendix A for examples of breeding records. Free colony management system is also available, for example by The Jackson Laboratory – Jax Colony Management System (JCMS) - <https://www.jax.org/research-and-faculty/resources/jax-colony-management-system>
9. Clinical status of animals in which the genetic material has been manipulated experimentally must be monitored for unusual or unexpected adverse effects. Adverse events, unexpected outcomes or unpredicted phenotypes must be reported to the AV and the IACUC. Details of monitoring for unexpected adverse effects arising from the genetic modification must be provided.

#### 4.3. Reporting animal numbers in breeding protocols to IACUC.

PI must report all animals annually in the appropriate categories as provided in the Guidelines. At the end of each calendar year, PI are required to report to IACUC via the Annual Breeding Protocol Review (ABPR) form the number of animals used, transferred to protocols or held in his/her breeding protocol(s) for the calendar year. PI breeding rodents and fishes are required to fill up Appendix 1 and 2 of the ABPR form respectively.

## 5. References

1. [Guidelines on the Care and Use of Animals for Scientific Purposes. National Advisory Committee for Laboratory Animal Research. 2022](#)
2. AALAS Module - Breeding Colony Management

1. ensure policies are in compliance with the NAELAR Guidelines 2022 and the updated Animals and Birds (Care and Use of Animals for Scientific Purposes) Rules 2004; and
2. up-to-date with current practices

Dr Chew Li Li

3 January 2023

IACUC

Changes made to add:

1. Policy statements; and
2. "Animals under a breeding protocol must not be used for any experimental manipulations before they are transferred to an approved experimental protocol." under "Purpose (1) Conditions under which a separate IACUC Breeding Colony Application is necessary"; and
3. subheading "(2) Information that need to be included in breeding records" under "Purpose"; and
4. "Number of breeders used", provided information for animal transfer in DBS and SJINML facilities and added "The animals transferred to an experimental protocol should be reported as used under the experimental protocol, not the breeding protocol" under "Purpose (2) Information that need to be included in breeding records" point 7; and
5. "Clinical status of animals in which the genetic material has been manipulated experimentally ..... unexpected adverse effects arising from the genetic modification must be provided" under "Purpose (2) Information that need to be included in breeding records" point 9; and
6. "PI must report all animals annually in the appropriate categories as provided in the Guidelines" under "Purpose (3) Reporting animal numbers in breeding protocols to IACUC"
7. under section 5, updated to "Guidelines on the Care and Use of Animals for Scientific Purposes. National Advisory Committee for Laboratory Animal Research. 2022"

IACUC Designated  
Reviewers

17 November 2025

Dr Chew Li Li

Ms Keh Lee Hwei

**P207.02** Revisions to:

1. update policy format to the latest version.
2. The policy title was changed from 'Policy for Rodent Breeding Colony' to 'Breeding Colony Management' to cover both rodents and fishes.
3. Changes made to paragraph 4.1 to reflect the broader scope.
4. Changes made to paragraph 4.2 for clarity on the animal transfers.

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## Appendix A

### Proposed rodent breeding records for cage card

**Table 1: Paired Breeding cage: one male will be housed with one female in a cage labeled with a card.**

[illegible]

**Table 2: Trio Breeding cage: one male will be housed with two females in a cage labeled with a card.**

[illegible]

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Breeding record on file

**Table 3: Records of each offspring weaned for rodents**

| ID | Sex | DOB | Genotype | Parents ID |   | Disposition<br>(e.g<br>transferred to<br>protocols/<br>Euthanized |
|----|-----|-----|----------|------------|---|-------------------------------------------------------------------|
|    |     |     |          | ♂          | ♀ |                                                                   |
|    |     |     |          |            |   |                                                                   |
|    |     |     |          |            |   |                                                                   |
|    |     |     |          |            |   |                                                                   |
|    |     |     |          |            |   |                                                                   |
|    |     |     |          |            |   |                                                                   |
|    |     |     |          |            |   |                                                                   |

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