

**University of Cincinnati
Animal Care and Use Program**

Rodent Colony Management Guidelines

These guidelines are to assist Animal Care and Use personnel in basic care and breeding procedures for mice and rats.

Questions

1. Contact [LAMS Husbandry](#) for questions related to animal housing and weaning processes.
2. Contact [LAMS Veterinary](#) for questions related to animal health, poor breeders, or animals too small to wean.
3. Contact [IACUC office](#) for questions related to IACUC protocol, exceptions, do not disturb and extended weaning approvals, offspring reporting, or animal welfare concerns.

Definitions

1. **Dam** – female parent
2. **Sire** – male parent
3. **Dystocia** – abnormal or difficult birth
4. **Stork/birth card** – LAMS generated card to identify pregnancy and litters at cage level
5. **Weaning** – separating healthy adult animals from their parents into gender-specific caging

Responsibilities

It is the responsibility of research staff to:

1. Set up mating: monogamous vs. harem, ensure compatibility, appropriate age, and strain.
2. Routinely monitor experimental and breeder animals.
3. Report animal health concerns to the LAMS veterinary staff.
4. Place stork card when female visibly pregnant, and document DOB when a litter is born during routine monitoring.
5. Weaning animals with proper cage set up (food, water bottle, floor chow, priming drinker valve).
6. Ensure Overcrowding does not occur (e.g., wean at appropriate time, separate visibly pregnant females for harem breeding and do not disturb cages).
7. Ensure enrichment available for all animals, 2 forms of enrichment for single housed animals.
8. Reporting Offspring numbers.

It is the responsibility of LAMS staff to:

1. Receive incoming animals and set up their cages.
2. Perform routine husbandry care and daily animal checks (e.g. cage changes, monitoring food/water levels, identifying health issues)
3. Place stork card when female visibly pregnant, and document DOB when a litter is born.
4. Report animal health concerns to the LAMS veterinary staff.
5. Place overcrowded notices on cage at day 21 (standard weaning) or day 28 (extended weaning, requires IACUC approval).
6. Ensure any cases of overcrowding are corrected immediately and report continued occurrences to LAMS supervisor.

Housing

Animal housing should have sufficient space for the animal to express natural postures and allow for species specific behavior. Housing should have adequate bedding to allow for burrowing, nesting, and urine/feces absorption.

Mouse**1. Non-Breeding**

- a. Separate by sex
- b. Up to 5 adult mice (same sex) are permitted in the NexGen Allentown cages

2. Breeding

- a. Monogamous – adult male and adult female pair
- b. Harem – 1 adult male and up to 3 adult females; Trio: 1 adult male, and 2 adult females
 - i. Female(s) must be placed in separate cage when visibly pregnant.
 - ii. Only 1 adult male, 1 adult female and litter may remain in cage.
 - iii. No more than 1 male may ever be in breeding set.

Rats**1. Non-breeding**

- a. Separate by sex
- b. Up to 3 rats are permitted in a standard cage if they are less than 300g each.
 - i. Research staff are responsible for monitoring weight regularly and separating rats when they exceed 300g. Separations done by LAMS will incur a supplemental fee.
- c. 2 rats are permitted in a standard cage if under 500g each.
 - i. When rats exceed 500g, they must be moved to the larger sized rat cage.
 - ii. Research staff are responsible for monitoring weight regularly and separating rats when they exceed 500g. Separations done by LAMS will incur a supplemental fee.

2. Breeding

- a. Monogamous – adult male and adult female pair
- b. Male to be removed prior to the birth of the litter.

Overcrowding

1. Cages are considered overcrowded when adults exceed normal occupancy limit, or multiple litters (without IACUC or veterinary approval) are present.
2. Overcrowding is not permitted and can result in animal welfare concerns.
3. It is the responsibility of the researcher to ensure they house their animals appropriately.
4. Overcrowded cages are considered a non-compliance; continued occurrences may be reported to the IACUC.
5. Reference the overcrowding flowchart posted in housing rooms for additional information.

Breeding

1. Breeding must be described in the IACUC protocol.
2. Tracking of sire/dam, relevant strain info, date of litters, number of litters, number of offspring, and final disposition is recommended.
3. Breeding animals should be mated and retired at appropriate ages for the species and strain.
 - a. Breeding set up is generally between 6 to 12 weeks of age.
 - b. Retire breeders between 6-12 months of age.

4. Male breeders that have been separated for breeding purposes must not be placed with other males; adult males have strong tendency to fight.
5. When female(s) appear visibly pregnant a “stork” card should be placed on the cage by the individual who identified the pregnancy, e.g. LAMS, research staff.
6. When litter is born the stork card should be flipped and DOB filled in by the individual (LAMS or research staff) who identified the birth: date of birth, date of wean (21 day vs 28 day), and animal ID.
7. Multiple litters are not permitted in a cage unless there is an **IACUC-approved exception** or the animal(s) are under the care of the veterinarian (e.g. too small to wean, fostered litters).

Obtain an IACUC-approved Multiple Litter Exception:

- a. Submit a [protocol amendment](#) for multiple litters; provide justification in the amendment.
 - b. If approved, communicate to husbandry by submitting [LAMS Service Request](#) and identifying cages with LAMS approved sticker.
8. Unsuccessful breeding can often occur:
 - a. It is recommended to retire breeders between 6-12 months for optimal breeding. Genetic makeup, breeding performance, and behavior may influence retirement.
 - b. Dams that have shown signs of being a poor breeder should be replaced (e.g. cannibalism of neonates, dystocia, unable to nurse, small litters unless expected phenotype).
 - c. Offering breeder diets provides higher calorie content for pregnant and nursing dams. Keep in mind prolonged use of breeder diet may result in mice becoming overweight.
 - d. Avoid disturbing the cage as best possible after dam gives birth. Disrupting the cage can cause parents to cannibalize or abandon the newborns. If justified, your breeders may qualify for “Do not disturb” for 3 days post-birth.

Obtain Do not Disturb approval:

- i. Submit a [protocol amendment](#) for Do Not Disturb; provide justification in the amendment.
 - ii. Once approved, communicate to husbandry by submitting [LAMS Service Request](#) and identifying cages with LAMS approved sticker.
 - iii. PI is responsible for cage change directly after the do not disturb period.
9. **Cross-fostering litters** – in the event a dam is unable to care for their young, you may attempt to foster the litter to another dam.
 - a. Choose a dam with a litter close to the age of the pups that are being fostered.
 - b. Identify foster pups by fur color, or a mark can be placed on their skin/tail using permanent marker.
 - c. Mark foster pups with the dam’s scent by gently rubbing a small amount of nesting material on the pups, then mix them in with current litter.
 - d. The fostered litter’s stork/birth card should be moved to the new cage and labeled as “Fostered”. Each litter should have its own stork/birth card on the cage to serve as cage level notice of the fostering.
 - e. Cage should be monitored closely by research staff to ensure dam is nursing and caring for the fostered pup(s).
 - f. Be mindful of the litter size. The dam may not be equipped to nurse and too many fostered pups can stress and deter her from caring for all pups in the cage.

Weaning

1. Standard weaning at 21 days is the default expectation.

- a. LAMS staff places a green Overcrowded notice on the cage and checks the time to wean box when pups reach 21 days of age.
 - b. Research staff must wean between 21-24 days of age.
 - i. In the event the researcher believes pup(s) are too small to wean, they must submit an animal health notice to the veterinary staff for evaluation.
 - c. On day 25, if the animals have not yet been weaned, LAMS staff will wean and charge a supplemental fee to the lab.
 - i. In the event LAMS staff feel the pup(s) are too small to wean they may place a TOO SMALL TO WEAN tag on the cage and leave the pups with the mother.
2. Extended weaning (28 days) must be justified and approved by the veterinarian.
- a. LAMS staff places a green Overcrowded notice on the cage and checks the time to wean box when the pups reach 28 days old.
 - b. Research staff wean between 28-31 days of age.
 - c. On day 32, if the animals have not yet been weaned, LAMS staff will wean and charge a supplemental fee to the lab.
- Obtain Extended weaning approval:**
- i. Submit a [protocol amendment](#) for **extended weaning**; provide justification in the amendment.
 - ii. Once approved, communicate to husbandry by submitting [LAMS Service Request](#) and identifying cages with LAMS approved sticker. Service request must list name of strain.
 - iii. Males must be removed from all cages with approved extended weaning to avoid multiple litters and overcrowding.
3. Research staff are expected to provide water bottles and a few pellets of floor chow for all weaned offspring for a minimum of 2 weeks. This will allow easy access to food and water while the weanling adapts to the drinker valve and food hopper.
4. Cages with animals must have PI, Protocol, and account number listed. Weaning packets containing new barcode cards are located in your animal housing room with corresponding protocol and account numbers. Request replacement weaning packets by submitting a [LAMS Service Request](#) the request should include the account number, per diem, and room number.
5. Offspring that are expected to be small may benefit from DietGel® Boost.
6. Offspring must be tracked and captured in RAP AOPS per the [Reporting Animal Numbers Policy](#).

Reporting Offspring

Research staff are responsible for reporting offspring using 1 of the following methods:

1. Document offspring in real time on the Offspring Reporting sheet, located on the inside of the animal housing room door. These logs are collected by LAMS monthly and turned into the IACUC office for capturing in RAP AOPS.
 - a. LAMS staff will document on the log if they wean due to overcrowding.
2. Self-report offspring in RAP AOPS each month using the [Reporting offspring tutorial](#).
 - a. Labs that are self-reporting must send an initial notice to the [IACUC office](#).
 - b. Labs must include LAMS weaned offspring in their monthly reports.

Continued occurrences of failure to wean/separate, and/or report offspring may be reported to the IACUC as a non-compliance and is subject to their review. Find more information on colony management at [The Jackson Laboratory: General Husbandry Tips](#).