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UNC-CH Policy on Housing and Breeding Mice

Introduction

Mouse strains have a large variety of requirements for successful breeding. Many of these depend on acknowledgment of the natural behaviors of mice in the wild. These include communal rearing of litters, seasonal differences in fecundity and innate physiological differences among “normal” but inbred strains of mice. As a result of this diversity, it is impossible to make “one size fits all” rules for regulation of mouse breeding. The purpose of this policy is to allow production of sufficient numbers of healthy mice with minimal amount of overproduction.

It is difficult to predict the number of pups any one mating will produce. Many inbred and transgenic mice have limited fertility, and even fertile matings have limited fertile periods. Many stocks carry deleterious mutations requiring that heterozygotes be used for mating and resulting in only a percentage of the pups having the desired genotype and phenotype. For example, mating systems producing double homozygous mice can result in only 1/16 of the pups having the correct phenotype; the remaining pups would most likely be culled. Long lead times in procuring many strains (often more than 6 months) require that stocks of mice be kept, even when they are not in active use. Each breeding protocol should indicate and justify the number of breeding cages maintained, and the number of mice produced.

UNC-CH Policy on Cage Density of Mouse Breeder Cages

Standard mouse breeding cages, ranging in size from 70 to 82 square inches, are permitted to contain no more than the following numbers of animals:

1. When a litter is born, no more than 3 adults are allowed in the cage.
2. When the litter is fourteen (14) days old, one of the following conditions must be met:
 - a. three (3) adults and no more than nine (9) pups (less than or equal to 10g each)
 - b. two (2) adults and no more than eleven (11) pups (less than or equal to 10g each)
 - c. One adult and no more than fourteen (14) pups (less than or equal to 10 g each).
3. When pups have attained a weight of 10 gm or more, the pups must be weaned promptly. The pups <10gm **may** remain with the adult(s) until the appropriate weight has been attained.

After pups are weaned, cage density guidelines are based on body weight. This policy follows the space recommendations of the *Guide*. Requirements are outlined in the tables below.

❖ **Small Mouse Cage**

Available floor space: 70 sq. inches

<u>WEIGHT</u>	<u>#OF ANIMALS PER CAGE</u>	<u>FLOOR AREA PER ANIMAL</u>
< 10 grams	11	6 sq. in. space required
10-15 grams	8	8 sq. in. space required
15-25 grams	5	12 sq. in. space required
>25 grams	4	15 sq. in. space required

❖ **Tecniplast Ventilated Mouse Cage**

Available floor space: 78-82 sq. inches

<u>WEIGHT</u>	<u>#OF ANIMALS PER CAGE</u>	<u>FLOOR AREA PER ANIMAL</u>
< 10 grams	13	6 sq. in. space required
10-15 grams	9	8 sq. in. space required
15-25 grams	6	12 sq. in. space required
> 25 grams	5	15 sq. in. space required

* Guide for Care and Use of Laboratory Animals, ILAR NRC publication

For any cage in which the above requirements are not met, DLAM will mark the cage with a yellow “Action Required” card that lists a date (generally within the next 48 hours) by which the cage density problem must be corrected by the PI.

- Cages that exceed the densities listed in this policy are considered out of compliance when the date on the yellow “Action Required” card has expired.
- DLAM is not required to contact the investigator after the expiration date and is authorized to correct the cage and assess a service charge. DLAM will correct the situation by removing a male, or separating litters. If there is no space in which to separate, DLAM will euthanize animals to correct the cage density.
- DLAM supervisors will inform the IACUC of repeated or ongoing problems with compliance with this policy.
- The investigator is responsible for contacting the IACUC if they cannot separate animals or otherwise comply with the policy.
- When investigators are correcting cages, correction may be achieved in several ways. For example: Removing the adult male from a trio breeding cage with 11 pups would satisfy compliance. In some cases, separating mothers with their pups will achieve compliance.

Breeder cages must legibly indicate the date of birth for all litters. This information must be provided by the research staff It is the investigator’s responsibility to ensure that mouse cage densities are maintained within this policy. A limited extension of the 48 hour grace period may be allowed for cards placed the day before a weekend. In cases of gross overcrowding, DLAM is authorized to correct the overcrowded cage without prior notification of the PI.

Please do not rely on the placement of the yellow card to manage your colony!

The IACUC will consider exceptions to this policy on a case-by-case basis if the investigator provides scientific justification with documentation. The "Exception" form submitted to the IACUC via the online ACAP submission process must specify the scientific basis for the exception along with any documentation that can be provided for the request and approximate number of cages involved. The exception will not be in effect until the PI has received written notification from the IACUC.

Mandatory Exception Situations Requiring Written IACUC Approval

- * Requesting multiple males to occupy the same cage with a single female.
- * When it is known that a particular strain consistently delivers a litter of 14 or more neonates.