MOUSE HOUSING DENSITY AND BREEDING SCHEMES

This policy applies to all personnel involved in activities involving the care and/or use of mice in TTUHSC facilities regardless of the funding source. The purpose of this policy is to address the health and well-being of mice by ensuring safe population densities. Animal overcrowding can contribute to significant animal welfare issues and therefore may violate federal and University policies on the humane care of animals if not expeditiously addressed. The PI on a breeding protocol has ultimate responsibility to ensure the colony is managed appropriately. This means the PI or the PI's staff has day to day responsibility to check on breeding pairs for new births, to wean when appropriate, and to maintain colony records (which are inspected by the IACUC).

I. Housing Density

Assuming an average adult mouse weighs 25-30 grams, the standard cages used by LARC can hold up to 5 compatible ADULT mice; mice that are observed fighting MUST be separated. The number of mice permitted in breeding cages depends on the breeding scheme and a number of variables specific to the strain of animals being bred. These considerations are covered below.

II. Breeding:

Breeding mice can be done in:

- pairs (one male, one female)
- trios (one male, two females)
- harem (one male, up to 4 females)

III. Pair Breeding

A. 21 Day Wean
For pairs, the breeding cages may be set up on a continuous basis, leaving the male with the female after pups are born. Multiple litters of differing ages are NOT allowed, thus weaning schedules must be strictly managed to avoid overcrowding cages with animals that are nearly adult-sized along with newborn pups.

B. 28 Day Wean
28 day weans are used when weaning needs to be delayed beyond 21 days due to the small size of offspring and their inability to thrive. As multiple litters of differing ages are NOT allowed, the male must be pulled as soon as the female is noticed to be pear-shaped and pregnant to prevent the female from getting pregnant during post-partum estrus. If the male is not pulled and she gets pregnant during post-partum estrus, the 1st litter will be weaned at 21 days to prevent overcrowding and trampling of the new litter. Note that trio breeding cannot be used with 28 day weaning.

IV. Trio Breeding

Breeding trios (one male, two females) should be closely managed to ensure that multiple litters do not occur. The litters should be weaned at 21 days. If weaning does not occur on schedule, weaning will be performed by LARC personnel at the investigator’s expense (See the LARC Policy on Overcrowded Cages for specific fees.) Note that trio breeding cannot be used with 28 day weaning.

V. Harem Breeding

Visibly pregnant females must be moved to their own cage to prevent housing multiple pre-weanling litters with more than 2 adults (i.e., only 1 litter per cage). Males that have been house with breeding females must NOT be re-housed with other males to prevent fighting and death. Breeder males must be housed alone when not housed with females.
VI. Weaning:
The Research Staff is responsible for cage card documentation and for separating and weaning mice. Litters must be weaned according to the procedures defined in the investigator’s approved animal protocol. Male and female pups must be separated at weaning unless they are being set up as new breeding cages, using one of the schemes defined above.

To ensure the well-being of newborn animals, as well as to provide adequate data regarding birth and weaning dates, cages must be adequately labeled by the investigator with the date of birth of each litter. If weaning does not occur on schedule, the investigator will be notified and weaning will be performed by LARC personnel at the investigator’s expense (See the LARC Policy on Overcrowded Cages for specific fees.)

A. Exceptions:
In the event that a litter cannot be weaned according to the approved schedule in the protocol, the investigator should notify LARC staff by appropriately labeling the cage, including the expected weaning date. If the expected weaning date is reached and the litter is still not ready to be weaned, notify LARC veterinary staff. An appropriate weight for weaning pups is 8-10 g.

For strains that consistently require delayed weaning, exceptions to the 21 day weaning age may be made. Exceptions must be requested in the IACUC protocol. The request should include justification (scientific, via a performance standard) for extended weaning and should include appropriate documentation or scientific justification. Once approved by IACUC, this extended weaning time is acceptable.

VII. LARC Actions When PI-Managed Cages Have Become Overcrowded
The LARC Staff checks for overcrowding and pregnancy when changing cages. Any cages that might be considered overcrowded according to standards defined above are marked with a Concern cage card, dated and initialed.

When overcrowding is noted, the Research Staff is given up to 48 hours to correct the problem, depending on the severity of the overcrowding. Alternatively, if the investigator feels that weaning should be delayed further, the LARC veterinary staff must be consulted.

If overcrowding is not addressed within the allotted time LARC staff separates the mice and charges the PI (as noted above).

When a harem housed mouse is noticeably pregnant (usually 14 days gestation), 48 hours’ notice will be given. However, if a female seems to be about to give birth, she is promptly separated and the investigator’s staff will be notified of the action and charged appropriately.

VIII. Fees
If weaning has not occurred on the schedule defined in the approved animal protocol, weaning will be performed by LARC personnel at the investigator’s expense. The investigator will be notified of this action and a minimum of $75 will be charged to the PI’s LARC account. (Charges are based on a rate for each new cage generated, including a new cage for the original adults and two or more cages for the offspring separated by sex. See the LARC Policy on Overcrowded Cages for specific fees.)

IX. Sanctions
Aside from the charges for performing colony weaning, investigators will be notified that they are out of compliance with IACUC regulations for each incident in which overcrowding has occurred because weaning was delayed past the age prescribed in the approved protocol. In such cases, the investigator will be subject to further remedial actions as deemed necessary by the IACUC.
References

- PHS Policy on Humane Care and Use of Laboratory Animals
  http://grants.nih.gov/grants/olaw/references/phspol.htm
- *The Guide* for the Care and Use of Laboratory Animals, 8th Edition
  http://www.nap.edu/catalog.php?record_id=12910
- USDA Policy #3: Veterinary Care
- http://www.iacuc.ucsf.edu/Policies/awSPMouseHousingDensity.asp
  http://www.bu.edu/orccommittees/iacuc/policies-and-guidelines/rodent-breeding-colony-management-mice/