

**Mouse Cage Density**  
**IACUC Policy**  
**Effective Date: September 15, 2020**

**I. Purpose**

UCSF is committed to complying with all housing standards in the *Guide for the Care and Use of Laboratory Animals*, 8th Edition. This policy outlines UCSF's implementation of the *Guide's* recommendations for mouse husbandry and sets standards for mouse cage density, social housing, and breeding.

**II. Policy**

**General Standards**

The following are general standards for mouse husbandry. Any deviation from these standards must be included in the IACUC protocol, and requires specific IACUC approval.

**A. Cage Density**

A maximum of 5 adult mice per cage are permitted in the standard (75 in<sup>2</sup>) mouse cages used by LARC (*Guide*, page 57). Other cage sizes will also have densities consistent with *Guide* requirements.

**B. Enrichment and Social Housing**

Mice must be provided with environmental enrichment in accordance with the [IACUC Environmental Enrichment for Rodents policy](#). This includes at least one piece of physical or food enrichment in each cage (nestlet, shelter, additional nesting material, etc). Refer to the [LARC Enrichment Guidelines](#) for additional enrichment options.

Mice must be socially housed with other compatible mice. Singly housed mice are acceptable in the following situations and do not need separate IACUC approval:

- LARC veterinary approval for concerns related to animal well-being, clinical monitoring, or treatment;
- when animals are incompatible (aggressor or aggressed);
- when they are the last animal of a cohort; or
- for the following breeding colony management situations:
  - intact male mice should be singly housed between matings
  - pregnant females may be singly housed to minimize stress prior to or during parturition
  - weaned animals when the litter contains a single male/female mouse or single mouse of unique genotype
  - female breeders while subsequent breeding paradigms are coordinated.

Singly housed mice must be provided with at least one additional piece of enrichment (2 total).

Other reasons must be based on scientific justification included in the IACUC protocol and approved by the IACUC.

### **C. Breeding**

Pair Breeding (one male: one female) is the standard method for breeding.

Laboratories should closely monitor cages and identify birth dates when time-sensitive procedures will be performed. LARC will label cages with birth and P21 projected weaning dates. Cages containing a litter older than P21 cannot also contain a newborn litter. For the welfare of a newborn litter, LARC staff is authorized to separate litters into new cages on a recharge basis when two generations of pups are present.

### **D. Weaning**

Litters must be weaned by **P21** and separated into same sex cages unless the litter contains small sized pups that may not be successfully weaned at P21. If the litter contains small pups, the cage must be labeled with the new expected weaning date.

Breeding pairs often breed during post-partum estrus (immediately following parturition) so pairs with litters near weaning age must be monitored closely for the arrival of a new litter. Ideally, the current litter should be weaned just prior to the birth of the new litter; however, if the new litter arrives early, the older litter must be weaned even if it is not yet 21 days old. Alternatively, the new litter can be euthanized. Either way the two separate litters may not remain in the same cage after discovery.

## **III. Exceptions**

Any deviation from the above standards must be included in the IACUC protocol and approved prior to implementation. The following is a list of variations for which the IACUC has specific standards before approving an exception. Continuing approval is contingent upon a closely managed breeding program. The following may be requested in the IACUC protocol under 'Reportable Exceptions.'

### **A. Trio Breeding (1 male : 2 females)**

The IACUC will consider approval for trio breeding if:

- It is scientifically justified;
- It is not a strain or stocks that routinely has large litters (avg. 10+ pups);
- Neonatal mice are bred for experimental use and will be euthanized by P12;

In all cases of trio breeding, the following requirement must be met:

- For standard (75 in<sup>2</sup>) mouse cages used by LARC, there is no limit on the total number of pups before day 12 (of the younger litter), but after day 12 the cage must be culled to 12 pups.
- For 112 in<sup>2</sup> mouse cages, there is no limit on the number of pups provided the male is removed from the cage before day 12 of the younger litter. If the male is not removed from the cage, then the total number of pups after day 12 may not exceed 12.

## **B. Extended Weaning**

Extended weaning (P22-P28) may be requested for strains that consistently require delayed weaning. The request should include justification. If approved, the researcher must separate the female from the male during pregnancy to avoid breeding at the post-partum estrus. If, however, the strain's fertility is such that a subsequent pregnancy is often delayed by several days or more, then the researcher may leave the male in the cage. If either female delivers a second new litter, both older litters must be weaned or alternatively the new litter may be euthanized. Either way, the new litter may not remain in the same cage with the older litters after discovery.

## **C. Harem Mating (1 male: 3-4 females)**

For harem mating, females must be separated prior to parturition, i.e. no litters may be born in a harem mating cage.

## **IV. References**

- a. [The Guide for the Care and Use of Laboratory Animals, 8<sup>th</sup> edition](#)
- b. [Animal Welfare Act & Animal Welfare Regulations](#)
- c. [UCSF IACUC Guideline on Weanling Care](#)