



UCF IACUC Breeding Addendum/Modification Form

Office Use Only:

Date Received:

Approval Date:

This addendum form does NOT extend the IACUC approval period or replace the Continuing Review form for renewal of the study.

INSTRUCTIONS: Use this form to request IACUC review of a minor change in an approved IACUC protocol and submit the request via e-mail to IACUC@ucf.edu or mailed to the Office of Animal Welfare: ATTN: Cristina Caamaño, Associate Director Research Program Services, 12201 Research Parkway, Suite 502, Orlando, FL 32826-3246 or campus mail 32816-0150. Phone: 407-882-1164, Fax: 407-823-3299.

All Addendums must be approved by the IACUC prior to implementation.

Protocol Number:

Principal Investigator:

Title of Protocol:

Type of Project: Category A ___ Category B ___ Category C ___ Category D ___ Category E ___

1. **How will you maintain the genetic integrity of the breeding colony? If your animals are inbred or outbred, appropriate nomenclature must be used and the breeding pairs and generations recorded (usually on cage cards and record books).**

2. **Please describe the following details as best you can.**

- a. **1:2 Male to female ratios?** *Note: At least 1 female should be removed prior to either female giving birth to prevent multiple births in a cage.*

- b. **Any chemicals or methods to synchronize estrus?**

c. Caging type (ventilated, filtered or conventional)?

d. When are pregnant females removed from male? *Note: At least 1 female should be removed prior to either female giving birth to prevent multiple births in a cage.*

e. When to cull old breeders?

f. How many litters permitted per dam?

g. How many breeding pairs at any one time during the year?

3. Who is the one person (lab manager, post-doc, etc.) who is responsible for the details of the breeding program? If this is not the Responsible Faculty member listed above, please identify that person here (phone and & email).

4. Why do you want to maintain this colony at UCF rather than purchase animals from an approved vendor?

5. Mouse breeding colonies almost always produce more animals than are needed. Please describe how you intend to cull those offspring not acceptable for your research and those offspring that are no longer useful. When will these decisions be made (age, weight, test results)?

6. Any genotyping or other invasive procedure done on animals in this breeding colony must be described here.

7. Will you be aging any of the animals from your breeding colony? If so, how many will be aged? How old will they be allowed to grow? Is this a reasonable expectation for this strain mouse? *Please explain.*

8. Methods of euthanasia must be listed in the related IACUC approved protocol; if not, list the method here.

Signature of Principal Investigator _____ **Date** _____

FOR REFERENCE ONLY

UCF Guidelines for Mouse Colony Breeding & Management

Requirement: If the breeding animals come under considerations described in your IACUC protocol, then all activities of breeding (below) must be reviewed and approved. The following items are presented as Guidelines for you to consider and address if they apply to your research.

The goal of managing any mouse colony at UCF should be to maintain adequate numbers of animals in as little shelf space as possible, while adhering to the university's policies regarding health and well-being of the mice, and minimizing labor costs. What constitutes "adequate numbers" will, of course, depend on a number of research factors, including:

- experimental needs,
- breeding characteristics of a given strain,
- genotypes and phenotypes (morbidity/mortality) of individual mice,
- limits of approved animal use protocol.

These guidelines present only the minimum effort and cage space needed to keep a normal strain of mice "on the shelf". If more animals are needed, more cage and shelf space result. However, the principles of mouse numbering, culling, and replenishment can be utilized on any scale to minimize cage space.

Different strains of mice vary in fecundity, and certain mutant strains can be difficult to breed, due to a variety of factors such as small litter sizes, low fertility, poor mothering instincts, high rates of cannibalism of newborns, and higher morbidity or mortality resulting from the genetic mutation/alteration. When acquiring a new genetically modified strain, therefore, it is always a good idea to consult with someone who has direct experience with maintaining that strain.

Cages required to simply maintain a strain: Simple strain maintenance generally requires no more than 2-3 mating cages and 3-4 additional cages to hold weaned pups that will be used to replace old breeders. To predict the cages needed to produce mice for experiments, figure about one litter per month from young breeders, and about 6-8 pups/litter, until experience proves otherwise. Maintaining these production levels requires consistent replacement of older breeders.

Breeding: House breeders in pairs of one male and one or two females. Gestation lasts 19-21 days. Check cages at least twice each week to flag pregnant females and record approximate birth dates. Pups are usually weaned at (removed from breeding cage and separated by sex) at 3 weeks of age. Identification can be accomplished prior to weaning by any of several methods (see below). Tissue for genotyping is usually collected at the same time that ID numbers are applied.

Weaning: The male and female pups are usually weaned (removed from breeding cage and separated by sex) at 3 weeks of age and moved to separate holding cages, with no more than 5 mice per cage. Females of any age or breeding status can be housed together. To minimize fighting, weaned males should be group-housed only with their littermates, and only until they are exposed to females. Males from different litters can be grouped together only if they are no more than 4-5 days apart in age. Even littermates may have to be separated as they age, to

prevent fighting. Males that have been used as breeders must ALWAYS be housed singly, because they will kill each other.

Replacement of breeders: Replace a breeder pair if:

- they have not produced a litter in two months,
- they are producing small litters (1-3 pups per litter),
- they are killing their pups.

New breeder pairs should be 8-12 weeks of age. Although both males and females can breed up to 8 months of age and beyond, if new breeders are available there is little point in continuing to use breeders older than about 6 months. Also, a mouse that has not been allowed to breed prior to about 3-4 months of age may never breed successfully. As breeders age, both litter size and the frequency of litters decrease. It may be wise to wait for new breeders to produce a litter, before euthanizing old breeders, if the strain presents any unusual breeding problems.

Cull older progeny: Euthanize older offspring as new litters are weaned. It is easy to neglect weaned pups, since they are not breeding. Periodic evaluation of all cages is essential to minimizing cage usage. If progeny are more than 3 months old, and you have new litters to replace them, and you don't need them for experiments, then take them off the shelf. The only reason to keep more than one or two weaned litters for a strain that is not being used in experiments is if that strain exhibits unusual morbidity or mortality, or is otherwise difficult to breed.

Pup identification: Weaned pups from different litters may be housed together if they are uniquely identified (or if they don't need to be identified). This helps to minimize the number of holding cages. (See above, however, for caveats about males.) The following table lists the common methods of pup ID, with pros and cons of each.

Method	pros	cons
ear punching/notching	Simple, inexpensive, easy to read	Sometimes ambiguous, subject to tearing and healing, limited numbers
metal ear tags	Unique numbering, relatively inexpensive	Loss of tags, infections, hard to read
toe clipping	Simple, inexpensive, permanent	Less humane, must be done at an early age
tattooing	Relatively permanent, easy to read, may be done on newborns	More difficult and time-consuming, may fade with time if done improperly
microchips	Permanent, virtually unlimited numbers, can provide physiologic data	High cost per mouse, difficult to apply, requires expensive reader