



## Animal Facility SOP 24.2

### Management of Mouse Breeding Colonies

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### General Information

*Optimal reproductive age span:* 2 – 10 months; some males can be productive longer

*Estrus cycle:* 4-5 days

*Postpartum estrus:* A period within 24 hours after parturition when females are sexually receptive (in estrus) and can conceive. After this period, they are not receptive until the pups' weaning age (usually ~21 days)

*Gestation period:* 19-21 days

*Weaning age:*  $\geq$  19 days old (may be strain-specific)

*Dam:* female breeder

*Sire:* male breeder

*Adult:* defined as 6 weeks of age or older, based on the average age of sexual maturity

**Breeding Schemes:** all schemes require only one male per cage

*Monogamous (Pair-breeding):* One adult male and One adult female

- Preferred method to minimize overcrowding
- Allows for identification of the dam and sire of the litter
- Utilizes postpartum estrus

*Polygamous:* One adult male and multiple females

- *Trio:* One adult male and two adult females
- *Harem:* One adult male and more than two adult females
  - Produces the maximum number of offspring per male mouse
  - Females may share task of rearing offspring
  - Utilizes postpartum estrus
  - More complicated record keeping
  - May not know which pups belong to which female
  - Can be more time consuming and difficult to manage due to, complications of record keeping and the need to separate multiple pregnant dams or dams with their litters to prevent overcrowding

### Policies for Colony Maintenance

1. *Contact information:* All cages must have a cage card with the Principal Investigator's name, current protocol number, and the contact person's name & phone number.

- Investigators are responsible for updating this information. The facility animal care staff use this information to contact the laboratory if a cage is overcrowded or needs attention.
2. *Maximum mice/cage:* The maximum number of adult mice per cage is five. This is based on the average weight of an adult mouse and the size of the caging used in our animal facilities. Recommended spaces for commonly used group-housed animals are indicated in the *Guide for the Care and Use of Laboratory Animals*. Typically the maximum number of weanlings in a 75-square-inch cage is nine.
  3. *Birth/wean dates:* Investigators are responsible for recording the birth and/or weaning dates on their breeding cages. These dates are critical for breeding programs with tight timelines for the weaning of pups and the birth of subsequent litters. The typical weaning age is 21 days. However, in some cases, genetically modified mice may need to remain with their mothers for a longer period of time due to inability to use the lixit or to consume the chow; thus separation may need to be delayed up to 28 days of age. In breeding mice with these constraints on weaning, it is recommended that you do not use postpartum estrus. That is, the male must be removed from the cage during the female's pregnancy. Increase in time-to-weaning (greater than 21 days) must be approved by the IACUC.
  4. *Postpartum estrus pregnancy:* If the dam has a litter and is pregnant due to breeding during postpartum estrus, then toward the end of gestation, daily monitoring by the lab is required to watch for the birth of the litter and welfare concerns, such as trampling of neonates and fighting. Where this breeding scheme is used, the current litter of the pregnant dam must be weaned at 21 days of age to avoid overcrowding and high levels of filth in the cage.
  5. *Weanling housing:* **Mice are not considered adults at weaning.** For the purpose of the allowable number of mice per cage, mice are considered adults at 6 weeks of age and, therefore, housed with a maximum of five per cage. If there are more than five young mice in a cage, the date of birth must be written clearly on the cage card, to indicate they are not adults. If the animal's age is unclear, they must be housed at a maximum of five per cage. In some cases, it is beneficial to provide weanlings with gel packs to ensure hydration. These are available in the animal facilities.
  6. *Trio or harem breeding:* If using trio or harem breeding schemes, and more than one female has a litter, each dam with her pups must be removed to another cage if any animal welfare concerns are observed, such as trampling, fighting, very high levels of filth, or if overcrowding is inevitable. Also, the mice must have enough space to express normal postural adjustments.
  7. *Upon weaning,* mice are separated into group housing by sex. A breeding log with calendar will be kept in the room and used for daily documentation of breeding cage observations
  8. *Timed Mating:* See The Jackson Laboratory: [6 STEPS FOR SETTING UP TIMED PREGNANT MICE](#)

[https://www.jax.org/news-and-insights/jax-blog/2014/september/six-steps-for-setting-up-](https://www.jax.org/news-and-insights/jax-blog/2014/september/six-steps-for-setting-up-timed-pregnant-mice)

[timed-pregnant-mice](#) Adapted From Johns Hopkins ACUC Policies

9. Identification of animals. [See SOP](#)