



## Animal Facility SOP 7.2 Rodent Breeding (Mice)

Date Adopted	9/21/20
Date Last Updated	8/3/2022
Prepared by	India Harper, Michelle Dennis and Ingrid Tulloch
Reviewed by	Matt Terzi 12/3/19; Julie Watson 9/21, 8/22

### I. Purpose

This SOP provides detailed instructions on managing a mouse breeding colony in the BSSC Vivarium.

### II. Scope

This is intended for use by all personnel who handle animals and intend to breed animals. This SOP will also cover all resources, personnel and equipment in the BSSC Vivarium.

### III. Breeding Procedure

#### Laboratory Mouse Housing Requirements

3.1 Housing requirements are based on The “**Guide For the Care and Use of Laboratory Animals**”

3.2 A maximum of 5 animals based on sex >21 days of age per cage

#### 3.3. Animals per Cage

3.3.1 **1 male with 1- 2 females** (males should never be housed together if there are females in the same cage).

3.3.2 To pair breeders: add female(s) into male cage not vice-versa.

3.4 Breeding cage is **overcrowded** and animals must be separated if:

3.4.1 **More than 3 adult mice.** Pups are considered adults and can be weaned at 21-28 days of age, unless the PI’s protocol specifically states that weaning age is later than 28 days for justified reasons.

3.4.2 **Two or more adult mice with more than one litter of pups.** If trio or harem breeding schemes are being used, once the second litter is born one female and all pups of the same age, with or without the male, must be moved to a separate cage. Females coparent so providing both females have milk, identification of the correct female/litter combination is not essential.

#### 3.5 Combining Cages

3.5.1 Never put adults (mice >28 days old) of mixed genders into the same cage unless deliberately doing so for breeding purposes. Sexual maturity for breeding purposes is generally 6 weeks of age.

3.5.2 Aside from during weaning, males CANNOT be combined into 1 cage under any circumstances. Multiple males in the same cage are permissible if they are all from the same litter and have been in the same cage since birth. Males of some strains (e.g. BALB/c) should not be housed together because of aggression. Females are typically not aggressive, thus, they can be combined at any age up to 5 per cage. If fighting should occur, the aggressor should be removed and housed alone (the aggressor is usually the animal with fewer/no fight wounds).

#### 3.6 Weaning

3.6.1 When pups reach 21-28 days of age, they may be weaned. The only exception to this is if the PI has justified a weaning age greater than 28 days in their approved animal use protocol.

3.6.2 Males are weaned into cages of only males. Females are weaned into cages with only females.

3.6.3 Pups from different breeding cages may be weaned into the same cage. This is the only time males from different cages may be combined into a new cage. It is important to observe the behavior of males if combined from different cages. Animals should be separated if aggressive, and a combination of litters avoided for that strain.

### 3.7 Social Housing

3.7.1 As social animals, rodents should be housed in groups whenever possible. If an animal must be single housed please use a white sticker to indicate the reason.\*See 'Single housed animals' in the Cage labeling section.

## IV. Cage Labeling

4.1. All cage identification supplies are provided by BSSC Vivarium and a stock of everything is stored in the animal rooms for everyone's use.

4.2 Single housed animals- A laboratory mouse should not be housed in a cage alone, however, if an animal needs to be housed separately due to lack of suitable litter mate, death, weaning or separation, **a white cage sticker** needs to be placed on the cage with the letter "A" (Attrition) and the date the animal became single housed. If the rodent was separated out of a cage due to fighting and is now being housed alone the white cage sticker will be labeled with an "F" (Fighting) and the date it was separated.

4.3 Create a new cage card when weaning pups from their parent cage or creating new breeding cages. Fill out all pertinent information onto the cage card (see Cage Labeling section). Check to make sure that your animals have food, enrichment and a water bottle before placing them on the animal housing rack.

## V. Breeding Recommendations

5.1 Keep accurate breeding records. Make a pedigree for each founder. It is easier to do this when you start your colony, as opposed to attempting to "backtrack" generations after the colony has expanded.

5.2 Male and female mice can be paired for breeding when they reach sexual maturity (6 weeks of age).

5.3. When pairing mice for breeding, move females into the males' cage to avoid territorial activities

5.4 Expect litter within a month of mating since female mice go into estrus every 3 or 4 days and the gestation time of mice is 19-21 days. Strain differences may change this expected timeline. Mating at postpartum estrus may result in delayed implantation resulting in apparent extension of the gestation period.

5.5 All cages are required to be labeled according to the cage labeling SOP.

5.6. Tips for rapid increased breeding efficiency: Mate breeding males with 2 females to get 2 litters in close succession. Once one of the females drops her litter, you may remove the male, the other female, or both the male and the other female to another cage so that the cage will not become overcrowded. Mice usually mate again on the day the female gives birth, resulting in a second litter 3 or more weeks after the previous one. For further efficiency, rotate 2 females through a male's cage every 1- 2 weeks. House pregnant females 1 or 2 per cage to prevent overcrowding of cages

## VI. Applicable References

"Guide For the Care and Use of Laboratory Animals"

***This standard operating procedure is modified from***

***<http://www.med.umich.edu/wicha-lab/SOP/SOP%206.15-%20Breeding%20Colony%20SOP.pdf>***

## Rodent Breeding Form (Example)

<https://docs.google.com/document/d/11VLKmVuQe7a41SZU2s6tMYxrKLjU74Ub39JMNWciMpQ/edit?usp=sharing>