Arizona State University
Institutional Animal Care and Use Committee
STANDARD INSTITUTIONAL GUIDELINE

MOUSE BREEDING

ASU has established mouse breeding guidelines to be in compliance with the Guide for the Care and Use of Laboratory Animals and AAALACi’s position statement on mouse breeding. These guidelines take into account the required provisioning of both minimum housing space and a social environment for social species. The below guidelines were created to assure that cages (1) allow animals to make normal postural adjustments, (2) enable animals to rest away from soiled areas, (3) provide free access to food and water, (4) provide sufficient space for mothers with litters to enable the pups to develop to weaning without detrimental effects to the mother or the litter, and (5) provide a favorable social environment for mice with the understanding that, for scientific reasons or for the well-being of the mice, certain breeding situations require an adult mouse to be housed alone for a period of time.

Standard Housing for Breeding Mice:

Permanent pairing:
1. A male may be permanently housed with one female in a standard “shoebox” cages (67-70 in²) with the pups weaned by day 21.
   a. Permanent pairing increases reproductive frequency by taking advantage of the female’s post-partum estrus.
   b. Weaning at 21 days of age ensures that the cage is not overcrowded with a second litter that is the result of the post-partum breeding.
   c. If a second litter is born before the weaning of the first litter, one of the litters must be removed (weaned, culled, or fostered to another female).

Temporary pairing:
1. It may be desirable to remove the male from the female’s cage for multiple reasons.
   a. If timed breeding is required, the male can be removed once copulation is confirmed (e.g., presence of a copulatory plug).
   b. If the strain tends to have sensitive maternal care, the male can be removed prior to the female giving birth to avoid the male disturbing the litter or the dam.

2. As a result of temporary pairing, the adult mice will temporarily need to be housed singly.
   a. Females that are confirmed pregnant are housed singly until the birth of their litters.
   b. Breeder males may be singly housed after female pregnancy is confirmed if there are no additional females for the male to breed at that time. Housing of breeder males with other males typically leads to fighting, and therefore co-housing adult breeder males is not a good option.

Purchase of time-pregnant females:
1. When a female rodent is ordered time-pregnant, she can be housed singly upon arrival until the birth of her litter.
Alternative Housing for Breeding Mice:

1. Alternative breeding strategies can be implemented if they will improve reproductive output and animal well-being. Reasons for implementing an alternative housing strategy include:
   a. Slow development of offspring
   b. Small average litter size
   c. Poor maternal care/nurturing

2. If offspring of a given strain develop slowly, they can be weaned by Day 28 rather than by Day 21.
   a. Under this scenario, if the female is due to give birth to a second litter, the first litter must be weaned prior to the birth of the second litter.
   b. Regardless of offspring age, if the cage becomes too crowded to effectively maintain a clean cage environment (based on DACT staff assessment of smell and bedding saturation), the offspring need to be weaned unless an alternate arrangement has been made with the Attending Veterinarian to increase cage change frequency. Such a change will likely result in an increased per diem rate.

3. If females of a given strain produce small litter sizes or have poor maternal care, two breeding females can be co-housed in a standard shoebox cage (70 in²). However:
   a. Under this housing scheme, the male may NOT be left in the cage during the rearing of the offspring.
   b. If there is a 10-day or more gap between birth dates of two litters, to avoid death of the younger litter, (1) the older litter needs to be weaned, (2) the two females (with their respective litters) need to be separated, or (3) one of the litters needs to be culled or moved to a surrogate female.
   c. If the total number of offspring, regardless of relative age between litters, becomes too high to effectively maintain a clean cage environment (based on the assessment of DACT staff, but typically more than a total of 12 offspring), the two females, each with their respective litter, must be separated.

References:

2. AAALAC International website, Frequently Asked Questions (FAQ) – Trio Breeding (https://www.aaalac.org/accreditation/faq_landing.cfm#Ctrio)