STANDARD OPERATING PROCEDURE #608

MOUSE BREEDING COLONY MANAGEMENT

1. PURPOSE

This Standard Operating Procedure (SOP) describes guidelines for the management of mouse breeding colonies.

2. RESPONSIBILITY

Principal investigator (PI) and their research staff, animal care staff and veterinary care staff.

3. MATERIALS

3.1. Caging and environmental enrichment

3.2. Cage cards

3.3. Identification method

3.4. Breeding records

4. CONSIDERATIONS

4.1. Generally, laboratory mice will reach sexual maturity at approximately 6 weeks of age, although females may have their first estrus as early as 5 weeks of age.

4.2. The reproductive lifespan of mice is on average between 7 and 12 months.

4.3. The duration of the estrous cycle is 4–5 days. Mice are polyestrous and breed year-round; ovulation is spontaneous. Sperm production can vary by strain and may last from 2 to 4 hours up to 1 week.

4.4. Gestation period: 19-21 days

4.5. Generally, weaning occurs at 21 days

5.2.4. Replace breeders:

5.2.4.1. Before their reproductive performance begins to decline. Breeding success decreases if the mice are older than 8 months old.

5.2.4.2. After 6 months of reproduction.

5.2.4.3. If clinical signs of poor health of undesired phenotypes are observed.

5.2.4.4. If no litters have been born 60 days after mating or 60 days after weaning of the last litter and female is not pregnant (90 days for strains known to have low fertility).

5.2.4.5. If more than 2 litters have been born but no pups survive to weaning age.

5.2.4.6. If a significant decrease in litter size is noted, e.g., 1-2 pups born per litter when previously average litter size was 8-9 pups.

5.2.5. Do not replace all breeding animals at the same time. It is best to have breeding animals of various ages in the colony.

5.2.6. Refresh breeders every 6 to 10 generations to avoid genetic drift. This can be accomplished by purchasing new breeders from a vendor or by backcrossing to the background strain.

5.2.7. Provide adequate environmental enrichment, nesting material is essential in breeding cages.

5.2.8. Handle breeding cages gently and place in a low-traffic area of the housing room. Avoid handling cages with newborn litters.

5.3. Breeding schemes:

5.3.1. Monogamous pair

5.3.1.1. One male and one female are housed together for mating.

5.3.1.2. The mice can continue to be housed together when the female becomes pregnant or delivers the pups.

5.3.1.3. When male and female are housed together continuously, allows to take advantage of the

5.6.3. Maintain breeding records that include:

5.6.3.1. Parents identification numbers

5.6.3.2. Date of breeding

5.6.3.3. Date litter is born

5.6.3.4. Litter size

5.6.3.5. Number of mice that have been weaned

5.6.3.6. Gender frequencies

5.6.3.7. Interval between litters

5.6.3.8. Phenotype

5.6.3.9. Number of animals euthanized

6. REFERENCES

6.1. Danneman, P.J., Suckow, M.A. &

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