

William S. Middleton Memorial Veterans Hospital
VA IACUC Policy #07-13

Use and Management of Rodent Breeding Colonies

If an overcrowded cage is discovered, the responsible animal care staff will contact the investigator. Failure to comply by 24 hours will result in action being taken to reduce the cage population and a \$50 service fee will be assessed.

Policy: Inbred strains of various species, especially rodents, have been developed to address specific research needs. The homozygosity of these animals enhances the reproducibility and comparability of some experimental data. Breeding animals in-house should occur only with scientific justification, because genetic drift in successive generations of the breeding colony may affect experimental reproducibility. Breeding colonies may not be used to gain budgetary savings. When breeding colonies are justified, it is important to monitor inbred animals periodically for genetic homozygosity. Several methods of monitoring have been developed that use immunologic, biochemical and molecular techniques (Cramer 1983, Groen 1977, Hoffman et al. 1980, Russell et al. 1993). In the absence of genetic monitoring, the number of generations the colony will be permitted to run must be defined and should not exceed three or four.

The number of animals used as breeders, and the number of offspring to be bred, should be sufficient to meet the needs of the researcher's approved Animal Component of Research Protocol (ACORP). Justification of numbers in the ACORP for the breeding colony itself should be based on the numbers needed for planned experiments.

In addition to genetic monitoring, breeding colonies must be managed to avoid overcrowding. This can occur when:

- More than 2 adults occupy the same cage with an unweaned litter. In the event of harem breeding, confirm female(s) pregnant and place in her own cage. (If using harem breeding scheme, once a female gives birth to a litter, one of the three adults must be removed from the cage to prevent overcrowding.)
- A litter is not weaned in a timely manner such that a new litter is born before weaning of an older litter.
- A litter is not weaned in a timely manner and too many mice occupy a single cage.

The 8th edition of the *Guide for the Care and use of Laboratory Animals* (2011) recommends a minimum amount of square footage for breeding mice and mice housed in groups. Our Current ARF caging for breeding mice meets this criteria (6.5 X 11 inches, equaling 71.5 square inches).

- Two breeding schemes are permitted: Monogamous pairing (1 male: 1 female) - this method is preferred to prevent overcrowding. Trio grouping (1 male: 2 females).

- Males may be removed from cages after mating and pregnancy confirmation to avoid postpartum insemination.
- In a breeding trio, one adult must be separated as soon as either female drops a litter. No more than two adults and 1-2 litters in a cage.
- Each female may have one litter under 21 days of age - the litter must be weaned by 21 –24 days and segregated by sex into separate cages.
- The birth date of litters in any cage must be posted on the cage card for viewing by the animal technician servicing the room.
- If pups are small or weak, weaning beyond 24 days may be necessary, but must be approved by the IACUC. In no case may weaning be delayed beyond 28 days.
- ***If an overcrowded cage is discovered, the responsible animal care staff will contact the investigator. Failure to comply by 24 hours will result in action being taken to reduce the cage population and a \$50 service fee will be assessed.***
- All breeding plans must be described in Appendix 9 of the ACORP.
- No breeding may occur without IACUC approval.

The essence of this policy is that a litter under weaning age is counted as equivalent to one adult and pups older than weaning age are counted individually.

Responsibilities:

1. Role of Investigator

Principal Investigators will scientifically justify the use of breeding colonies in their ACORPs. They will maintain breeding records sufficient for the Veterinary Medical Consultant (VMC) or other reviewer to be able to understand and follow the breeding scheme and to identify the breeding generations represented in the current stock. They will also arrange for appropriate genetic monitoring and maintain records of the findings of genetic testing.

The Principal Investigator will assure that the appropriate training will be given to personnel who will be breeding rodents. All personnel involved in rodent breeding and their training or experience will be listed in the ACORP. A card must be placed on each cage listing the birth dates and number of pups per litter. Cage population densities will be monitored by daily checks for new litters to assure that the breeding cage never contains more than 3 adults or 2 adults and 2 litters under weaning age. If the Principal Investigator's staff is unable to perform the above duty, the ARF Supervisor must be contacted to make other arrangements.

The Principal Investigators will be responsible for assuring that these policies are fulfilled. If there are scientific reasons for deviations from this policy, a request for a variance, including the scientific justification, may be submitted to the IACUC for review. The PI must have IACUC approval in order to deviate from this policy.

2. Role of the Animal Research Facility (ARF) Staff and Veterinary Medical Consultant (VMC)

The ARF staff and the VMC will monitor breeding colonies. VA ARF personnel will intervene as necessary to enforce the standards of the policy and the investigator will be charged for their services as is appropriate. The IACUC will be notified of policy violations.

Questions: Any questions on this policy should be directed to the A.O. (280-7222).

References:

- *Guide for the Care and Use of Laboratory Animals*, NRC, 2011 pgs. 55-58,

Effective date: This policy was approved at the IACUC meeting on 10/25/99; it was updated at the IACUC meeting on 11/27/01, 10/01/04, 7/07/08, 5/11/2009, 5/10/2010, 3/07/2011, 7/11/12, & 9/11/2013.