

University of Notre Dame's IACUC Policy on Social Housing of Laboratory Animals

Purpose

This document establishes policy in order to comply with the *Guide for the Care and Use of Laboratory Animals*, the PHS *Policy on the Humane Care and Use of Laboratory Animals*, and the USDA guidance documents, as well as the AAALAC position statement on Social Housing. This policy will serve as a reference for investigators at the University of Notre Dame using animals for education, research and testing.

Definitions

Environmental Enrichment – is the enhancement of an animal's physical or social environment by means of increased complexity of the primary enclosure, novel food/treats, olfactory/visual/tactile exposure to conspecifics, or positive interaction with husbandry staff.

Social Animal – the following species are defined as being potentially social: rabbits, swine, poultry, dogs, cats, NHP, and rodents (excluding adult male mice and hamsters).

Social Housing – animals housed in unisex compatible pairs or groups that provide suitable interaction with conspecifics.

Policy

The IACUC will consider pair or group housing of social animals the default method of housing unless otherwise justified based on social incompatibility resulting from inappropriate behaviors, veterinary concerns regarding animal well-being, or scientific necessity justified and approved by the IACUC.

General Principles

1. There are circumstances that necessitate that animals be individually housed due to experimental requirements. In that situation, it is the responsibility of the investigator to scientifically justify the departure from the standard housing policies of the Freimann Life Science Center. However, if there are circumstances that necessitate animals being housed individually due to illness or injury, it is at the discretion of the veterinary staff to individually house those affected to assure their well-being. The following are conditions that may initiate the removal of animals from a group cage:
 - a. When a group of male mice are housed together past the onset of sexual maturity, it is common for one or more of the mice to become very aggressive. The aggressor should be removed from the cage and housed individually. The other mice can remain together if the group stabilizes.
 - b. Animals with clinical signs of illness may need to be isolated to facilitate treatment and monitoring of health status.
2. Single housing of social animals post-operatively will be the norm and does not need specific exemption approval in animal protocols. Single housing should be for the minimum time post-operatively necessary for the recovery/healing as determined in consultation with the FLSC Veterinarian.
3. When social animals are by necessity housed singly, conspecifics will be housed in visual, olfactory, and/or tactile range whenever possible.
4. When social animals are by necessity housed singly, environmental enrichment, exercise/release into larger enclosures, and/or positive human interactions will be provided unless scientifically contraindicated.
5. It is stressful for animals to have their social group disrupted and this type of disruption can skew experimental data. When establishing animals to be group housed, the future experimental needs must be considered. For example, if young rats are housed 3-4 per cage, at some point they will need to be

separated due to the special requirements as they grow. Should a cage mate be lost during a study leaving an animal singly housed, the experimental requirements must be taken into consideration before automatically placing the individual into another group setting. Although isolation is stressful, the re-establishment of a social hierarchy for individual animals can be, too. Factors to consider are; duration of the experiment, nature of the experiment, experimental data being collected, age and sex of the animal. Should the detriments outweigh the benefits, the animals will remain singly housed and enrichment provided as listed in this document.

6. If primary enclosures do not allow for social housing, provisions for group socialization should be made outside the primary enclosure. Alternatively, such animals should be allowed visual and/or olfactory contact with conspecifics.
7. The FLSC Veterinarian has the authority to exempt specific animals from social housing for reasons related to health, condition, or well-being. The exemption must be documented in the animal's medical record or on a Veterinary Log Sheet and the animal's cage card.
8. Veterinary and/or husbandry staff will monitor the reintroduction of singly housed animals into social groups in order to assure the compatible and safe assimilation of the animal into the group.

Exemptions

1. Rabbits less than 4 months of age should be housed in pairs unless specifically exempted for experimental reasons in the approved protocol or exempted for veterinary medical reasons. Adult rabbits (>4 months of age), should be singly housed with the ability for visual, auditory, and olfactory association with conspecifics. Rabbits housed singly must be provided a toy or other manipulata on a regular basis to allow for exploratory behavior, in addition to periodic exercise time on the floor.
2. Hamsters, especially females, are often intolerant of same sex animals. With the exception of breeding, adult hamsters should be singly housed to avoid fighting resulting in death. Singly housed hamsters will be provided environmental enrichment to compensate for social isolation compatible with their normal behaviors.
3. Individual housing of rodents in the breeding colonies will occur under the following circumstances:
 - a. Breeder male mice, when removed from the breeding cage, will always be housed individually due to their aggressive nature which is exacerbated from the use of them for breeding.
 - b. Breeder male rats, when removed from the breeding cage, may be housed individually based on the level of aggression with other males as observed in specific strains.
 - c. Female breeders may be separated and individually housed when they are visually pregnant. They will remain individually housed until their litter is born. Upon weaning the litter, the female will be returned to the breeding cage with one or more other animals.
 - d. If rodents from a specific investigator are being aged for use in the breeding colony, there may be instances during that 3-4 week period, when they are housed alone. This would occur only if there are no other animals of similar age and sex among the investigator's animals. Animals of different strains can be housed together if they all belong to the same investigator.
 - e. A single female pup may remain with the mother at weaning until another group of weanlings is identified.
 - f. A single male pup can be housed with female siblings up to but not exceeding 7 days post weaning. More than one male pup may NOT be housed with female siblings.
4. Male mice should be housed only with male littermates after weaning. Male mice are territorial and will fight resulting in severe injury and/or death. All cages of group housed males will be closely observed

for signs of aggression and the aggressor removed to single housing when appropriate. The following are strategies to facilitate group housing of male mice:

- a. Studies have demonstrated that the transfer of bedding from a nesting or sleeping area transfers calming pheromones to the clean cage and will decrease the incidence of fighting within a male group. At Freimann, the use of cardboard huts (Shepherd Shacks or a similar item) is to be used in all group housed males' cages. The hut, and the bedding immediately within it, is to be transferred from the dirty to the clean cage. In the event that the hut is too dirty or shredded, a replacement should be put into the cage a few days prior to the scheduled cage date.
- b. The huts used in the cages must be those made of cardboard not of a rigid material as the use of rigid structures have actually been shown to cause increased aggression within the male group.
- c. Studies have demonstrated that the number of males housed together influences the level of aggression. It has been concluded that the ideal group size is 3 males per cage.

References

1. P.L.P Van Loo. 2000. Modulation of aggression in male mice: Influence of cage cleaning regime and scent marks. *Animal welfare* 9:3 pg:281 -295
2. P.L.P Van Loo. 2001 Modulation of aggression in male mice: Influence of group size and cage size. *Physiology & behavior* 72:5 pg:675 -683
3. P.L.P Van Loo et al. 2002 Influence of cage enrichment on aggressive behaviour and physiological parameters in male mice. *Applied Animal Behaviour Science*, 76:1, Pages 65-81
4. P.L.P Van Loo. 2004. Long-term effects of husbandry procedures on stress-related parameters in male mice of two strains. *Laboratory animals* 38 pg:169 -177
5. Institute of Laboratory Animal Resources (US). 2011. *Guide for the Care and Use of Laboratory Animals*. Washington, D.C. National Academy Press.
6. AAALAC, International. Position Statement on Social Housing. July 2011. (<http://www.aaalac.org/accreditation/positionstatements.cfm>)
7. United States Department of Agriculture, Animal Welfare Act Regulations (http://www.aphis.usda.gov/animal_welfare/awa_info.shtml)
8. Office of Laboratory animal Welfare, Public Health Services. Policy on the Humane Care and Use of Laboratory Animals. (<http://grants.nih.gov/grants/olaw/references/phspol.htm>)
9. Sørensen, D.B., Krohn, T., Hansen, H.N., Ottesen, J.L., Hansen, A.K. An ethological approach to housing requirements of golden hamsters, Mongolian gerbils and fat sand rats in the laboratory - A review. *Applied Animal Behaviour Science* 94 (2005) 181–195.