SOCIAL HOUSING OF ANIMALS

PERFORMANCE STANDARD: Social animals housed at the Duke University Medical Center (DUMC) and Duke University will be housed in species-appropriate social groups to provide opportunities to express species-specific behaviors that meet or exceed regulatory requirements.

BACKGROUND: The Animal Welfare Act and The Guide for the Care and Use of Laboratory Animals (The Guide) detail basic behavioral and social management expectations in the broad areas of structural environment, social environment, and activity. General laboratory animal expectations assume that appropriate social interaction among members of the same species, or compatible species, is essential to normal development and wellbeing (The Guide). Animals that are able to express species-specific behaviors are a more stable research platform and provide more accurate research data. An animal’s species-typical natural social behavior should guide the appropriateness and level of social interaction with conspecifics or compatible species whether housed singly, in pairs, or in groups. Exemptions from social housing require annual approval by the IACUC.

ROLES:
1. Research, DLC, and DLAR staff will abide by the institution’s policy as described in this document unless PRIOR approval for an exemption has been obtained from the IACUC.
2. Researchers will submit an annual exemption request with the Annual Progress Report for each protocol if they desire continuation of the exemption from social housing.
3. The DLAR Enrichment Committee (DEC) consists of members from DLAR and OAWA as well as protocol personnel. The DEC reviews and discusses social housing exemptions for all USDA covered species every 30 days.
4. DLC Veterinary Staff tracks all exemptions for individual lemurs from the environment enhancement plan because of health or condition, or in the consideration of its well-being. These exemptions will be reported to the DEC monthly and will then follow the same exemption process for DLAR animals.

PROTECTIVE POSTURES REQUIRED: Personnel Protective Equipment (PPE) routinely required for normal activity in animal rooms is also required when individuals are engaged in social housing procedures.
POLICY:
1. All social animals (non-human primates, cats, dogs, swine, rabbits, guinea pigs, ferrets, mice/rats, avian species, large agricultural animals, aquatic species, etc.) will be group- or pair-housed unless otherwise described in this Policy and/or an exemption is described in an IACUC approved protocol and approved annually.

2. Any PI requests for DLAR or DLC to exempt social animals from group or pair housing must be provided in writing from the principal investigator and be approved in this Policy and/or by the IACUC.

Exceptions to the Policy
1. Specific Animal Requirements
   a. Non-human primates
      i. Non-human primates in quarantine will be singly housed unless they arrive in a social pair or group. They will be evaluated for compatibility after their first negative TB test (and negative Herpes B serology if *Macaca spp.*) or as deemed appropriate by veterinary staff.
      ii. Non-human primates housed singly will have visual, auditory and olfactory contact with members of their species, unless a conspecific is not available, in which case enhanced environmental enrichment strategies will be employed. Depending on the species, protected tactile contact with compatible conspecifics will also be considered. Since social interactions are important for the well-being of non-human primates, cage-housed animals also receive daily interaction from human caretakers and the DLAR enrichment staff.
      iii. For information on environmental enhancement to promote psychological well-being in non-human primates, please refer to the Policy “Enrichment for Non-human Primates.”
      iv. Documentation of single housing will be in accordance to the Policy “Enrichment for Non-human Primates.”
   b. Dogs:
      i. When housed singly, they will have visual, auditory, and olfactory contact with members of their species, unless a conspecific is not available, in which case enhanced environmental enrichment strategies will be employed
      ii. Dogs housed individually with less than 2 times the USDA-required floor space for that dog will be provided with the opportunity for exercise at least 3 times a week
      iii. Dogs housed individually with greater than 2 times the USDA-required floor space do meet exercise requirements per the Animal Welfare Act but may still be provided with exercise opportunities as described above.
iv. For information on exercise for dogs and other enhanced enrichment strategies, please refer to the Policy “Enrichment for Species Other than Non-Human Primates.”

c. Cats, Ferret Rabbits, Guinea Pigs, Swine:
   i. When housed singly, they will have visual, auditory, and olfactory contact with members of their species, unless a conspecific is not available, in which case enhanced environmental enrichment strategies will be employed.

d. Other large agricultural animals (i.e. equine, caprine, ovine, bovine):
   i. When singly housed, animals should be able to see and/or have direct contact with compatible species.
   ii. If no other compatible species is available for a singly housed animal, enhanced enrichment measures will be employed.
   iii. For information on enhanced enrichment strategies, please refer to the policy “Enrichment for Species other than Non-human Primates.”

e. Mice/Rats:
   i. To ensure that cage population does not negatively impact animal well-being and overcrowding does not occur, mice or rats may be held in a cage as single pregnant females for the last 1/3 of gestation (approximately 1 week). This specific housing arrangement does not require a separate exemption. This specific housing is considered a positive animal welfare activity, for the benefit of the pregnant female and the newborn pups.
   
   
   ii. Male mice
   1. If they are not used for breeding and are combined into cages before 4 weeks of age they should be group-housed.
   2. Any males separated from cage mates for more than a week may be singly housed thereafter.*
   3. Any males used for breeding may be singly housed thereafter when not in the presence of a female.*
   *
   * These specific housing arrangements do not require a separate exemption. This housing is considered a positive animal welfare activity to prevent fighting of male mice which may lead to wounds and/or death. Aggression between male mice paired after weaning (4 weeks or older) is well documented. See references below (1-7).

   iii. All singly-housed rodents must be given two forms of dissimilar enrichment in accordance with the DLAR SOP.

f. Aquatic species (including cephalopods): All singly-housed aquatic species will be provided with visual obstacles to offer hiding places.
2. Guide-Specific Exceptions to Social Environment (page 64)

   a. Severe or prolonged social incompatibility: Examples: sex biased (male mice and female hamsters are generally more prone to aggression).

   b. Experimental requirement justification (see special notes).
      i. Limit to the minimum period necessary.
      ii. Where possible, provide visual, auditory, olfactory, and tactile contact with compatible conspecifics.

   c. Veterinary-related concerns about animal well-being (see special notes)
      iii. Limit to the minimum period necessary.
      iv. Where possible, provide visual, auditory, olfactory, and tactile contact with compatible conspecifics.

   d. Naturally territorial or nonsocial species
      v. For species that are known to be solitary or territorial, the IACUC does not require social housing (animals may be housed singly).
      vi. Species may include: Hamsters, opossums, lizards, artic ground squirrels, 13-line ground squirrels, and some species of birds and cephalopods.

SPECIAL NOTES:

   a. SOCIAL INCOMPATIBILITY WITH CONSPECIFICS: Socially housed animals that demonstrate severe or prolonged incompatibility should be separated to prevent chronic stress, injury, and possibly death. If possible, attempts should be made to re-pair or re-group singly housed animals with other conspecifics. If incompatible animals are identified by the PI or research personnel, they can be separated; but the Duke veterinary staff and Behavior/Enrichment staff must be notified and consulted. Direction on the continuation of single housing due to documented incompatibility should be directed by the Attending Veterinarian or their designee (see Special Note: Clinical Veterinary Care).

   b. RESEARCH EXEMPTIONS: Exemptions to social housing based upon research needs must be considered and approved by the IACUC before initiation of the exemption. The consideration of the exemption requires Full Committee review. The exemption must be reconsidered annually by the Full Committee.
c. **POST SURGICAL CARE:** Researchers do not require an exemption for single housing of animals during the immediate post-operative recovery period. Post-operative recovery is defined as from the time of surgery up to 7 days post-surgery or until 24 hours after external suture or bandage/wound dressings are removed. This specific housing is considered a positive animal welfare activity to promote the health and healing of the animal and is considered standard clinical veterinary care.

d. **CLINICAL VETERINARY CARE:** The Attending Veterinarian or his designee (see veterinary authority policy) may exclude an animal from social housing based on animal health, animal condition, or animal well-being. When the modifications are not part of the approved protocol, they must be in writing, specific for the affected animal(s), and written in the animal’s medical record (USDA-covered), single housing card/veterinary examination card (non USDA-covered), or equivalent. Clinical veterinary care modifications, in USDA-covered species, longer than 60 days require IACUC notification.

e. **END OF STUDY ANIMAL (absence of conspecifics):** The IACUC encourages protocol planning which minimizes animals remaining as single animals for extended periods of time. The IACUC recognizes that experiments may end in a cycle where a single animal remains, and in these cases, the IACUC expects the animal will be provided with an enhanced level of species-specific environmental enrichment in lieu of social housing. Single housing of end of study animals must be approved by the IACUC, but a specific exemption for single housing is not required.

**Review of the need for single housing of social species**

a. **Attending Veterinarian, or designee.** Decisions to singly house animals for veterinary-related concerns, which include severe or prolonged social incompatibility, should be documented in the animal’s medical record at the time of single housing. Continuation should be documented in the animal’s medical record (enrichment log and/or single housing card/veterinary examination card, or equivalent). Continuation of single housing should be evaluated on a regular basis but no longer than 30 days for USDA-covered species (as per 9CFR). These exemptions are reviewed & discussed by the DLAR Enrichment Committee every 30 days, and an exemption report is prepared for review and signature by the Attending Veterinarian, the Deputy Director, DLAR, or the Chief of Veterinary Services.

b. **IACUC.** The IACUC will review this Policy on a reoccurring basis.
REFERENCES:

1. Aggression and fighting - The Jackson Laboratory.  
   http://jaxmice.jax.org/support/husbandry/aggression.html
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4. Transgenic Animal Web, Mouse Breeding Suggestions. Transgenic Animal Model  
   Turner PV. Laboratory Animal Welfare. 2014. ACLAM Medicine Series. Elsevier,  
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