

## INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE (IACUC)

### POLICY ON ENVIRONMENTAL ENRICHMENT, SOCIAL HOUSING, AND EXERCISE OF LABORATORY ANIMALS

#### OVERVIEW

In accordance with federal regulations and accreditation standards this policy describes the requirements in effect for all vertebrate laboratory animals at MGH for an enhanced immediate environment and to promote the psychological wellbeing for all laboratory animals under MGH IACUC protocols. The main goal of this policy is to encourage the expression of species-typical behaviors by providing animals with environmental provisions (structural enrichment, sensory stimulation, manipulation devices, and nutritional enrichment options), social interaction and exercise. Such requirements should help prevent or reduce abnormal behaviors, including stereotypical movements, self-aggression and fighting. Enrichment strategies are developed to be compatible with standard laboratory housing/care, animal health, animal welfare, operational efficiency of the animal facility, and research needs.

#### DEFINITIONS

**Social species:** Any species known to naturally live and interact with conspecifics (animals of the same species). The majority of laboratory animals housed at MGH are considered social species, including but not limited to the following: most rodents (mice, rats, guinea pigs), rabbits, ferrets, dogs, sheep, pigs, nonhuman primates, and aquatics (frogs and fish).

**Social housing:** Housing social species in compatible pairs or groups with additional visual, auditory, olfactory, and/or tactile contact of conspecifics housed within the same room.

**Single housing:** Housing an animal in a primary enclosure by itself with additional visual, auditory, olfactory, and/or tactile contact of conspecifics housed within the same room.

**Solitary (or isolated) housing:** Housing an animal in a primary enclosure by itself in the absence of any other animals in the same room. Solitary housing is generally not permitted at MGH.

#### GENERAL POLICY

This policy applies equally to animals used and/or housed both inside and outside of CCM-managed facilities. While the environmental enhancement program is designed on a species-specific level, modifications may be appropriate to accommodate individual animals or

phenotypes. Species-specific SOPs or Visual Controls (VCs) document the operational implementation of this policy in the facilities. Species-specific VCs can be found in the [IACUC Policies & Guidance](#) section of the IACUC website.

## **ENVIRONMENTAL ENHANCEMENT PROGRAM PROVISIONS**

### **Social Housing**

Social housing or grouping is considered the default method of housing for animals who are known to naturally live and interact with conspecifics. Compatible pairs or groups will be developed based on appropriate sex, age, and behavior and in accordance with the study needs. For periods where social housing is not possible for scientific, veterinary or other reasons, an exemption must be considered (see Exemptions section for more details).

### **Environmental Enrichment**

Environmental enrichment is intended to promote diversity and complexity in the animal's immediate environment. Components of enrichment can be divided into four categories, including 1) structural enrichment, 2) sensory stimulation, 3) manipulation devices, and 4) nutritional enrichment options. All animals should have as many of these components of environmental enrichment as possible based on their species' needs and primary enclosure compatibility.

### **Exercise**

Opportunities for physical and cognitive activity can be facilitated by providing adequate space in the animal's primary enclosure. Additional opportunities may be provided individually or in compatible groups in enlarged enclosures or spaces intended to encourage exercise and/or through positive physical contact with personnel. Dogs will be provided with exercise as required by the Animal Welfare Act and Regulations (AWAR), [Exercise for dogs](#).

### **Physical Restraint**

Physical restraint is the use of manual or mechanical means to limit some or all of an animals' normal movement for the purpose of examination, collection of samples, drug administration, therapy, or experimental manipulation (*Guide*, p. 29). Restraint devices should be suitable in size, design, and operation to minimize discomfort, pain, distress, and the potential for injury to the animal and the research staff. The IACUC encourages training utilizing positive reinforcement to acclimate an animal, or achieve a cooperative behavior, to a particular environment or procedure.

Prolonged restraint, including chairing of nonhuman primates, should be avoided unless it is essential for achieving research objectives and is specifically approved by the IACUC (*Guide*, p. 29). Non-human primates must not be maintained in restraint devices unless required for health reasons as determined by the AV or scientifically justified in an IACUC-approved protocol. Maintenance under such restraint must be for the shortest period possible. If long-term restraint (restraint longer than 12 hours) is required, the animals must be provided opportunity for

unrestrained activity for at least one continuous hour during the restraint period, unless continuous restraint is approved by the IACUC, to be reviewed at least semi-annually ([AWAR, p. 176](#)). If prolonged restraint is required for veterinary reasons, this exemption must be reviewed at least every 30 days by the AV unless it is a permanent condition.

### **Special Considerations**

Animals identified to have special needs (infant or juvenile animals, animals that show signs of being in psychological distress through behavior or experience, activity restriction, or housed in isolation) will be evaluated and specific care provided as determined to meet the animal's needs. CCM develops and maintains pre-determined intervention plans/SOPs to address common behavioral concerns or occurrences. Interventions may include increased or modified enrichment, changes in their primary enclosures, increased positive human interactions, changes to feeding strategy, social housing, and/or advanced animal training techniques.

## **EXEMPTIONS TO THE ENVIRONMENTAL ENHANCEMENT PROGRAM**

Exemptions to all or any element of this policy for all or a portion of the study period must be approved by the IACUC or the Attending Veterinarian or his/her delegate. The basis for the exemption shall be reviewed by the IACUC at appropriate intervals as determined by the Committee, but not less than annually. Additionally, program-wide exemptions may be approved by the Attending Veterinarian and the IACUC and documented in the species-specific SOPs.

### **Exemptions to Social Housing**

If single housing of social animals is deemed necessary, it should be limited to the minimum time period necessary and, where possible, visual, auditory, olfactory and, depending on the species, protected tactile contact with compatible conspecifics should be provided. In the absence of other animals, a focus on enriching the environment will be implemented, such as safe and positive interaction with the animal care staff, as appropriate to the species; periodic release into larger enclosures; supplemental enrichment items; and/or the addition of a companion animal in the room or housing area.

**A. Husbandry and Veterinary Exemptions.** The following general categories of exemptions to social housing have been approved by the IACUC and justification in an animal use protocol, or case-by-case approval by the IACUC is not required:

**1. Standard Animal Husbandry Exemptions:**

MGH standard animal husbandry and management practices include single housing of social animals. Examples of such situations include, but are not limited to:

- a. The unavailability of another social compatible animal due to:
  - i. Research attrition of cage/pen mates

- ii. Aggressive or incompatible conspecifics as determined by CCM veterinary services staff (e.g., adult males of certain species: mice, hamsters, NHP, rabbits, swine)
  - iii. Short-term studies ( $\leq 90$  days) for NHPs, swine, or rabbits, where establishment of pairs or resocializing of animals exceeds the time allotted for research conduct, unless the animals were procured in a social grouping or can be easily socially housed on premises.
- b. Breeding and weaning situations, for example:**
- i. Pregnant females separated to prevent overcrowding prior to or following birth
  - ii. Separation of males and females to prevent unwanted pregnancy
  - iii. Only one mouse received, or only one mouse of either gender born in a litter
  - iv. Single housing to condition males or females prior to or post breeding/weaning
- c. Perioperative period – standard practices in managing surgery or other technical procedures including fasting prior to anesthesia and post-operative recovery period that accounts for animals being fasted or until healed from surgery (up to 14 days post-op). In certain species (adult mice, rabbits and hamsters) the separation may be considered permanent when resocialization is not recommended.**

**2. Veterinary / Clinical Exemptions:**

CCM veterinary staff may require individual housing of animals due to medical concerns. The veterinarian will record the basis for the exemption, the period of single housing and frequency of reevaluation in the individual animal medical record (IAMR) or similar health recordkeeping, will monitor the animal as noted and re-house the animal when the clinical condition is resolved. Exemptions for NHPs will be reviewed by a CCM veterinarian at least every 30 days, unless it is a permanent condition.

**B. Scientific Exemptions:**

When single housing of social species is required for all or a portion of the study period for experimental reasons, or if the perioperative period exceeds 14 days post operatively (see A.1.c. above), a scientific justification must be described in the animal use protocol, submitted for review and approved by the IACUC. The basis for the exemption will be reviewed by the IACUC annually for USDA-regulated species and every 3 years for non-USDA regulated species.

**Exemptions to Enrichment**

All animals are considered enrolled in the environmental enrichment program.

The Attending Veterinarian may exempt an individual animal from the environmental enrichment program because of health or condition, or in consideration of its well-being. The veterinarian will document the basis of the exemption in the individual animal medical record (IAMR) or similar health recordkeeping, will monitor the animal as noted, and will re-house the animal

when the clinical condition is resolved. Exemptions for NHPs will be reviewed at least every 30 days, unless it is a permanent condition.

Experimental procedures requiring exemptions to all enrichment for scientific reasons will be documented in the animal use protocol, approved by the IACUC, and re-evaluated no less than annually for USDA-regulated species and every 3 years for non-USDA regulated species.

Use of environmental enrichment other than described in the CCM Species-specific VCs should be done in collaboration with the CCM enrichment personnel and/or veterinarian.

### **Exemptions to Exercise**

The Attending Veterinarian may exempt an individual animal from the dog exercise program because of health or condition, or in consideration of its well-being. The veterinarian will document the basis of the exemption in the individual animal medical record (IAMR) and the exemption will be re-evaluated every 30 days, unless the basis for the exemption is a permanent condition.

Experimental procedures requiring exemptions to the dog exercise policy for scientific reasons will be documented in the animal use protocol, approved by the IACUC, and re-evaluated no less than annually.

## **REFERENCES**

AAALAC International. Position Statements: [Social Housing](#) . AAALACi: Frederick. MD, 2019.

National Research Council of the National Academies. [Guide for the Care and Use of Laboratory Animals, 8th edition](#). National Academies Press: Washington, D.C., 2010.

U.S. Department of Agriculture. [Animal Welfare Act and Regulations](#) (Animal Care Blue Book). Code of Federal Regulations (CFR), Title 9, Chapter 1, Subchapter A, Parts 1-4. 2020.

U.S. Department of Health and Human Services. [Public Health Service Policy on Humane Care and Use of Laboratory Animals](#). Office of Laboratory Animal Welfare, National Institutes of Health: Bethesda, MD, 2015.

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