ENRICHMENT FOR SPECIES
OTHER THAN NON-HUMAN PRIMATES

PERFORMANCE STANDARD: Animals housed at the Duke University Medical Center (DUMC) and Duke University will be provided with species-appropriate enrichment and 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 management expectations in the broad areas of structural environment, social environment, and activity. General laboratory animal expectations assume that animals that are relaxed and comfortable and able to express species-specific behaviors are a more stable research platform and provide more accurate research data. An appropriate housing space or enclosure should also account for the animals’ social needs. Exemptions require annual approval by the IACUC.

ROLES:
1. Research 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 (if they desire continuation of the exemption to environmental enrichment) with the Annual Progress Report for each protocol.
3. The Enrichment Committee consists of members from DLAR and OAWA as well as protocol personnel.
4. For more information on single housing please refer to the Policy “Social Housing of Animals.”

PROTECTIVE POSTURES REQUIRED: Personnel Protective Equipment (PPE) routinely required for normal activity in animal rooms is also required when individuals are providing enrichment.

POLICY:
1. Cats:
   a. Cats will be group- or pair-housed when space is available, animals are compatible, and research aims do not limit that type of housing.
   b. All cats must be provided with raised resting areas (as defined by USDA regulations).
   c. Cats should be provided with species-specific manipulanda.
   d. Cats with claws require material/objects to express normal sharpening movements. Material/objects should be easily sanitizable or disposable.
   e. DLAR personnel (behavior & enrichment, husbandry, or veterinary staff) as
well as approved research personnel may provide time for human interaction as enrichment.
f. DLAR personnel (behavior and enrichment, husbandry and veterinary staff) as well as approved research personnel may provide veterinary approved novel treat items as enrichment if not contraindicated by research goals.
g. Consultation with the PI is necessary prior to modifying the existing care or interaction with the research animal, to prevent any untoward effects upon the research outcomes.
h. Food enrichment may be provided at least one time per month.
i. Requests to exempt cats from receiving enrichment, interaction, treats, or group housing must be provided in writing from the principal investigator and be approved by the IACUC.

2. Dogs:
a. Dogs will be pair-housed when space is available, animals are compatible, and research aims do not limit that type of housing.
b. All dogs will be provided with either raised resting cots or another raised surface so that dogs may choose not to sleep directly on the floor of the cage or run.
c. Dogs will be provided with at least two different items of species-specific manipulanda.
d. Dogs housed in groups that are provided less than 100 percent of the USDA-required floor space for each dog if maintained separately will be provided with the opportunity for exercise at least 3 times a week.
e. Exercise opportunity may include walking on a leash or group playtime with other dogs and/or humans in a large space.
f. Time periods for exercise opportunities will be determined by the enrichment coordinator and/or veterinary staff.
g. Dogs housed in groups that are provided in total at least 100 percent of the USDA-required floor space for each dog, if maintained separately, do meet exercise requirement’s per the Animal Welfare Act but may still be provided with exercise opportunities as described above. DLAR personnel (behavior & enrichment, husbandry and veterinary staff) as well as approved research personnel may provide time for human interaction as enrichment.
h. DLAR personnel (behavior & enrichment, husbandry and veterinary staff) as well as approved research personnel may provide veterinary approved novel treat items as enrichment if not contraindicated by research goals.
i. Consultation with the PI is necessary prior to modifying the existing care or interaction with the research animal, to prevent any untoward effects upon the research outcomes.
j. Food enrichment may be provided at least one time per month.
k. Requests to exempt dogs from receiving enrichment, interaction, treats, play time or social housing must be provided in writing from the principal investigator and be approved by the IACUC.
3. Swine:
   a. Swine will be group- or pair-housed when space is available, animals are compatible, and research aims do not limit that type of housing.
   b. Swine will be provided species-specific manipulanda in their cage.
   c. DLAR personnel (behavior & enrichment, husbandry and veterinary staff) as well as approved research personnel may provide time for human interaction as enrichment.
   d. DLAR personnel (behavior & enrichment, husbandry and veterinary staff) as well as approved research personnel may provide veterinary approved novel treat items as enrichment if not contraindicated by research goals.
   e. Consultation with the PI is necessary prior to modifying the existing care or interaction with the research animal, to prevent any untoward effects upon the research outcomes.
   f. Food enrichment may be provided at least one time per month.
   g. Requests to exempt swine from receiving enrichment, interaction, treats, or group housing must be provided in writing from the principal investigator and be approved by the IACUC.

4. Rabbits:
   a. Rabbits will be group- or pair-housed when space is available, animals are compatible, and research aims do not limit that type of housing.
   b. Rabbits will be provided with species-specific manipulanda.
   c. Rabbits may be brushed to provide human interaction and reduce fur ingestion.
   d. Rabbits may receive playtime in an approved play pen in a designated location.
   e. DLAR personnel (behavior & enrichment, husbandry and veterinary staff) as well as approved research personnel may provide time for human interaction as enrichment.
   f. DLAR personnel (behavior & enrichment, husbandry and veterinary staff) as well as approved research personnel may provide veterinary approved novel treat items as enrichment if not contraindicated by research goals.
   g. Consultation with the PI is necessary prior to modifying the existing care or interaction with the research animal, to prevent any untoward effects upon the research outcomes.
   h. Food enrichment may be provided at least one time per month.
   i. Requests to exempt rabbits from receiving enrichment, interaction, treats, play-time, or social housing must be provided in writing from the principal investigator and be approved by the IACUC.

5. Avian Species:
   a. Avian species will be pair- or group-housed when space is available, animals are compatible, and research aims do not limit that type of housing.
   b. Avian species will be provided with various species-specific manipulanda.
   c. Avian species will be provided with items to foster species-specific behavior at least once per month.
   d. Consultation with the principal investigator is necessary prior to modifying the existing care or interaction with the research animal, to prevent any
untoward effects upon the research outcomes.

e. Requests to exempt avian species from receiving enrichment or social housing must be provided in writing from the principal investigator and be approved by the IACUC.

6. Guinea pigs:
   a. Guinea pigs will be group- or pair-housed when space is available, animals are compatible, and research aims do not limit that type of housing.
   b. Housing devices (huts/tubes) will be placed in each cage and species-specific manipulanda will be provided.
   c. DLAR personnel (behavior & enrichment, husbandry, and veterinary staff) as well as approved research personnel may provide time for human interaction as enrichment.
   d. DLAR personnel (behavior & enrichment, husbandry and veterinary staff) as well as approved research personnel may provide veterinary approved novel treat items as enrichment if not contraindicated by research goals.
   e. Consultation with the PI is necessary prior to modifying the existing care or interaction with the research animal, to prevent any untoward effects upon the research outcomes.
   f. Food enrichment may be provided at least one time per month.
   g. Requests to exempt guinea pigs from enrichment, interaction, treats, or group housing must be provided in writing from the principal investigator and be approved by the IACUC.

7. Ferrets:
   a. Ferrets will be group- or pair-housed when space is available, animals are compatible, and research aims do not limit that type of housing.
   b. Housing devices (boxes/tubes/huts) will be placed in each cage.
   c. Ferrets will be provided with species-specific manipulanda.
   d. DLAR personnel (behavior & enrichment, husbandry and veterinary staff) as well as approved research personnel may provide time for human interaction as enrichment.
   e. DLAR personnel (behavior & enrichment, husbandry and veterinary staff) as well as approved research personnel may provide veterinary approved novel treat items as enrichment if not contraindicated by research goals.
   f. Consultation with the PI is necessary prior to modifying the existing care or interaction with the research animal, to prevent any untoward effects upon the research outcomes.
   g. Food enrichment may be provided at least one time per month.
   h. Requests to exempt ferrets from enrichment, interaction, treats, or social housing must be provided in writing from the principal investigator and be approved by the IACUC.
8. Mice and rats:
   a. Mice and rats will be pair- or group-housed when space is available, animals are compatible, and research aims do not limit that type of housing.
   b. Mice and rats will be provided with an approved type of nesting material in addition to the regular bedding to foster species-specific behaviors (this may be mixed in bedding).
   c. Mice and rats may also be provided with a hut, tube, igloo, or other approved device to foster species-specific behaviors.
   d. DLAR personnel (husbandry and vet tech) as well as approved research personnel may provide time for human interaction as enrichment.
   e. DLAR personnel (behavior & enrichment, husbandry and vet staff) as well as approved research personnel may provide veterinary approved novel treat items as enrichment if not contraindicated by research goals.
   f. Consultation with the PI is necessary prior to modifying the existing care or interaction with the research animal, to prevent any untoward effects upon the research outcomes.
   g. Additional housing items and manipulanda may be provided if space allows.
   h. Requests to exempt mice/rats from enrichment, interaction, or social housing must be provided in writing from the principal investigator and be approved by the IACUC.

9. Other Rodents (such as hamsters, gerbils, chinchillas, ground squirrels, etc.):
   a. Other rodents may be group- or pair-housed when space is available, animals are compatible, and research aims do not limit that type of housing. For example, not all other rodents are social by nature (e.g. dwarf hamsters are social vs. Syrian that are not social).
   b. All other rodents will be provided with some type of nesting material in addition to the regular bedding to foster species-specific behaviors (this may be mixed in bedding).
   c. All other rodents may be given huts, tubes, or other approved devices to foster species-specific behaviors.
   d. DLAR personnel (behavior & enrichment, husbandry and veterinary staff) as well as approved research personnel may provide time for human interaction as enrichment.
   e. DLAR personnel (behavior & enrichment, husbandry and veterinary staff) as well as approved research personnel may provide veterinary approved novel treat items as enrichment if not contraindicated by research goals.
   f. Consultation with the PI is necessary prior to modifying the existing care or interaction with the research animal, to prevent any untoward effects upon the research outcomes.
   g. Housing items and manipulanda may be provided if space allows.
   h. Food enrichment may be provided at least one time per month.
   i. Requests to exempt other rodent species from enrichment, interaction, treats, or social housing must be provided in writing from the principal investigator and have received prior approval on the animal care protocol approved by the IACUC.
10. Other large agricultural animals (i.e. equine, caprine, ovine, bovine):
   a. Other large agricultural animals will be group or pair housed when space is available, animals are compatible, and research aims do not limit that type of housing.
   b. Large agricultural animals will be group or pair housed according to species.
   c. Weather/season permitting, animals shall have daily access to pasture type environments.
   d. DLAR personnel (behavior & enrichment, husbandry and veterinary staff) as well as approved research personnel may provide time for human interaction as enrichment.
   e. DLAR personnel (behavior & enrichment, husbandry and veterinary staff) as well as approved research personnel may provide veterinary approved novel treat items as enrichment if not contraindicated by research goals.
   f. Consultation with the PI is necessary prior to modifying the existing care or interaction with the research animal, to prevent any untoward effects upon the research outcomes.
   g. Food enrichment may be provided at least one time per month.
   h. Requests to exempt large agricultural animals from enrichment, interaction, treats, or social housing must be provided in writing from the principal investigator and be approved by the IACUC.

11. Aquatic species (including cephalopods):
   a. Schooling fish (ex: zebrafish) will be group housed, animals are compatible, and research aims do not limit that type of housing.
   b. Non-schooling fish (ex: flounder) should be provided with visual barriers from other animals. Schooling fish may be provided with visual obstacles to offer hiding places when space is available.
   c. Amphibians must be group- or pair-housed when space is available, animals are compatible, and research aims do not limit that type of housing.
   d. Amphibians will be provided with hiding places.
   e. For wild-caught animals and fish or non-traditional experimental subject studies, captive care should always try to replicate the natural habitats in which the animals live.
   f. Captive habitats should match natural habitats as closely as possible in temperature range, day length, physical structures, refugia, and/or cohabitation by compatible species. Thus, each investigator should be prepared to define how the holding facility accommodates each species need for a natural environment. Where such conditions cannot be accommodated due to experimental constraints the PI must defend that lack of accommodation and define what mitigation measures will be in taken.
12. Opossum:
   a. Most laboratory opossum (Monodelphis domesticus) are solitary animals with defined territories. Opossum will be pair-housed for breeding purposes only or when a litter is present before weaning.
   b. Housing devices (boxes/tubes/huts/substrate) will be placed in each cage.
   c. They may be provided with some type of nesting material in addition to the regular bedding to foster species-specific behaviors.
   d. Approved research personnel may provide time for human interaction as enrichment.
   e. DLAR (behavior & enrichment, husbandry and veterinary staff) as well as approved research personnel may provide veterinary approved novel treat items as enrichment if not contraindicated by research goals.
   f. Food enrichment may be provided at least one time per month.
   g. Species-specific manipulanda may be provided if space is available.
   h. Consultation with the PI is necessary prior to modifying the existing care of interaction with the research animal, to prevent any untoward effects upon the research outcomes.
   i. Requests to exempt opossum from enrichment or food treats must be provided in writing from the principal investigator and be approved by the IACUC.
SPECIAL NOTES:

A. RESEARCH EXEMPTIONS: Exemptions to enrichment 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.

B. POST SURGICAL CARE: Researchers DO NOT require an exemption for restricted cage sizes less than the recommended caging size (e.g. ICU caging) of immediate post-operative recovery patients. Post-operative recovery is defined as from the time of surgery up to 7 days post-surgery. Animals should retain the ability to make normal postural adjustments with adequate freedom of movement, including sitting, standing, and turning around.

C. CLINICAL VETERINARY CARE: The Attending Veterinarian or designee (see veterinary authority policy) may modify animal care provisions for issues 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 or special husbandry card. Clinical veterinary care modifications longer than 60 days require IACUC notification.

D. FORAGING SPECIES: Feed on the cage floor, on top of cage, or placed in the bedding is considered a positive animal welfare activity that encourages species-specific foraging behavior. Feed must be monitored for fungus, mold, or wetness and replaced when these conditions exist.