

STANDARD OPERATING PROCEDURE

ENVIRONMENTAL ENRICHMENT FOR GERBILS USED IN RESEARCH AND TEACHING

1.0 PURPOSE:

- 1.1 This standard operating procedure (SOP) describes the methods for environmental enrichment of gerbils (*Meriones unguiculatus*) used for research and teaching purposes.
- 1.2 These methods are intended to improve the well-being of these animals by increasing species-specific behaviors and reducing maladaptive behaviors.
- 1.3 This SOP is part of the UGA Environmental Enrichment Program that fully complies with the requirements of the National Research Council, *Guide for the Care and Use of Laboratory Animal*, ed8 available at <http://grants.nih.gov/grants/olaw/Guide-for-the-Care-and-Use-of-Laboratory-Animals.pdf> and the Animal Welfare Act and Regulations: Public Law 99-198 – The Improved Standards for Laboratory Animal Act available at <http://www.nal.usda.gov/awic/legislat/awa.htm> .

2.0 STANDARDS:

2.1 Natural Behavior:

Gerbils are also known as “jirds” or “desert rats”. They are native to the desert regions of Mongolia and northeastern China. Gerbils are known to be clean, docile and curious. They may, however, fight when establishing breeding pairs and are territorial. They often form close bonds with their cagemates and may even grieve upon the loss of one. Gerbils spend most of their day nest building by digging and burrowing into the sand. This activity is important in helping wear down their claws. Gerbils also spend a lot of time in grooming. Gerbils are active foragers and have cycles of activity and rest both day and night, though their activity may peak during the middle of the dark cycle. Gerbils are naturally prone to seizure disorders that may be exacerbated by handling. (Field and Sibold, 1998)

2.2 Environmental enrichment must be evaluated by taking into account the following:

- 2.2.1 The Natural Behavior and needs of gerbils (see above)
- 2.2.2 Social Enrichment – Housing of compatible co specific offers a high level of enrichment. Every effort will be made socially house social species. If social housing is not possible, animals should be housed in a manner that allows for as much tactile, auditory, visual or olfactory contact as possible. Social housing is a recognized and important part of the Environment Enrichment Program but should not be viewed as the sole means of meeting the enrichment needs of animals.
- 2.2.3 Physical Enrichment (devices, toys, etc) – Physical enrichment can be an important part of the Environmental Enrichment Program. However the selection of physical enrichment should take into account the safety of the device, its ability to stimulate and maintain the animal’s interest and its impact on the research being conducted. Physical enrichment should be carefully monitored to assess its impact of the goals of increasing natural behaviors.
- 2.2.4 Activity/Food Enrichment – Activity/food enrichment can be an important part of the Environmental Enrichment Program. However, the selection of activity/food enrichment should take into account the health of the animal, the limitations of its confines and its impact on the research being conducted. Any activity/food

enrichment should be planned in consultation with the Attending Veterinarian (AV) and the Principal Investigator (PI).

- 2.3 The enrichment program is carried out by University Research Animal Resources (URAR). Specific needs and requirements should be communicated to the Assistant Director of the Animal Resources (AR) Unit.
- 2.4 Unless specifically justified by the PI in the Animal Use Proposal (AUP), all animals will receive enrichment. It is recognized that animal enrichment can be a research variable. In caring for the psychological well-being of animals, it is important to recognize limitations and use a balanced approach in providing the best possible care and allowing for the expression of species-typical behavior within a functioning research environment.
- 2.5 Abnormal Behaviors:

The Environmental Enrichment Program is a dynamic process. Ongoing evaluation is a necessary component to meeting the goal of more species-specific natural behaviors. University Research Animal Resources (URAR) will regularly monitor all enrichment, in part, by looking for stereotypical behaviors that might indicate animal stress or maladaptation to the laboratory environment.

Abnormal behaviors in gerbils includes:

- repeated scratching at cage corners
- fighting among cagemates
- bar mouthing
- grinding teeth
- rapid foot-thumping with hind feet (males may natural thump after copulation)
- lashing tails
- infanticide

When these behaviors are observed, URAR will evaluate the need for additional environmental enrichment. All changes to enrichment will be approved by the AV and the PI. Enrichment changes will be made for all animals on study, in order to minimize research variability, even if all of the animals are not showing the stereotypical behavior.

3.0 PROCEDURES:

- 3.1 Social Enrichment – As a social species, gerbil social housing will be considered the default method of housing unless otherwise justified based on social incompatibility resulting from inappropriate behavior, veterinary-related concerns regarding animal well-being, or scientific requirements approved by the UGA Institutional Animal Care and Use Committee. Gerbils breed best in monogamous pairing so social housing may be limited to a single compatible breeding pair.

Human contact with gerbils may be stressful for the animals and may even elicit seizure activity or infanticide. For this reason, Animal Care Staff will limit their contact with gerbils to that which is necessary for their care and to meet research goals.

- 3.2 Physical Enrichment - in order of preference
 - 3.2.1 Solid bottom caging with bedding that encourages burrowing
 - 3.2.2 Rough-surfaced object (small bathroom tile) for clawing and marking behavior
 - 3.2.3 Structure for hiding (at least 5cm diameter) (especially important if litter doesn't allow for burrowing)
- 3.3 Activity/Food Enrichment - in order of preference
 - 3.3.1 Gnawing and shredding material (paper drinking cone and gnawing stick from Pine, Maple, Willow or fruit trees)
 - 3.3.2 Food scattered on cage floor – Gerbils produce little urine and can be allowed to forage on their cage floor.
 - 3.3.3 Modified food hoppers with 0.9-1.2cm spacing – With their broad snout, gerbils may have trouble feeding from standard rodent food hoppers, leading to competition among cagemates.
 - 3.3.4 Other gnawing material such as hay or paper
 - 3.3.5 Food treats of sweet and/or juicy produce scattered on cage floor – Must be removed daily to prevent hoarding and spoilage.

4.0 RECORDS:

The Animal Care Staff will log provision of enrichment daily according to their facility specific documentation records.

5.0 DEFINITIONS AND REFERENCES:

5.1 Definitions:

- 5.1.1 Animal Use Proposal (AUP): a detailed written description of the procedures involving the use of animals in a research or instructional project.
- 5.1.2 Attending Veterinarian (AV): the veterinarian responsible for the health and well-being of all laboratory animals used at the institution
- 5.1.3 Enrichment: a method of providing animals with the opportunity to behave as they do in the wild, playing, foraging, grooming, and interacting in other ways with one another.
- 5.1.4 Principal Investigator (PI): the scientist who plans and coordinates all phases of the research or instructional work and the protocol.
- 5.1.5 Standard Operating Procedure (SOP): a set of standardized instructions for dealing with routine laboratory procedures

5.2 References:

Animal Welfare Act and Regulations: Public Law 99-198 – The Improved Standards for Laboratory Animal Act (<http://www.nal.usda.gov/awic/legislat/awa.htm>)
 Field, K. and Sibold, A. (1998) *The Laboratory Hamster and Gerbil*. CRC Press
 National Research Council, *Guide for the Care and Use of Laboratory Animals*, ed 8 available at <http://grants.nih.gov/grants/olaw/Guide-for-the-Care-and-Use-of-Laboratory-Animals.pdf>
 Waiblinger, Eva (2004) *Comfortable Quarters for Gerbils in Research Institutions*. AWI online