

**STANDARD OPERATING PROCEDURE**  
**ENVIRONMENTAL ENRICHMENT FOR RABBITS**  
**USED IN RESEARCH AND TEACHING**

**1.0 PURPOSE:**

- 1.1 This standard operating procedure (SOP) describes the methods for environmental enrichment of rabbits (*Oryctolagus cuniculus*) 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:

Rabbits are crepuscular (active at dawn and dusk) or nocturnal animals that spend most of the diurnal period underground in burrows while emerging to feed at dusk or during the night. In the laboratory, periods of activity are seen throughout the day and night. Rabbits are social animals and stable breeding groups are formed with linear hierarchies of both males and females. Once a dominance hierarchy has been established, continued fighting is rare. Aggressive behavior is seen most in breeding and pubertal animals. Adult males are most aggressive when competing for food, territory or females. Rabbits are gnawing herbivores requiring a diet with high fiber content. They are normally coprophagic, reingesting their feces in order to absorb additional nutrients. (Wolfenshohn and Lloyd, 1998; Gunn and Morton, 1995)

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

- 2.2.1 The Natural Behavior and needs of rabbits (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 rabbits include:

- Barbering or hair pulling
- Increased aggression
- Cage nosing or mouthing
- Digging
- Frisky hopping
- Chin rubbing

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 – Rabbits, especially females, will be pair-housed whenever possible. If pair housing is not possible, animals will be housed in a manner that allows for as much tactile, auditory, visual or olfactory contact as possible. In these instances, singly housed animals will be offered the opportunity for supervised social activity outside of the cage if possible.
- 3.2 Physical Enrichment - in order of preference
- 3.2.1 Hanging toy (e.g. Rabbit Relaxers®, bunny block chains, mirrors, rattles) rotated at least biweekly.
- 3.2.2 Nest box for pregnant females
- 3.2.3 Floor toy (e.g. jingle balls, plastic balls, dumbbells, bell rockers) rotated at least biweekly

3.3 Activity/Food Enrichment - in order of preference

- 3.3.1 Roughage for gnawing, such as autoclaved/irradiated hay or straw
- 3.3.2 Food items daily (e.g. sliced apples, carrots) on cage floor for foraging
- 3.3.3 Nylabones for gnawing

**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>)
- Gunn, D. and Morton, D.B. (1995) *Rabbits: In: Environmental Enrichment Information Resources for Laboratory Animals*. AWIC Resources Series No. 2
- 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>
- Wolfensohn, S. and Lloyd, M. (1998) *Small Laboratory Animals: In: Handbook of Laboratory Animal Management and Welfare*. Blackwell Science Ltd.