

STANDARD OPERATING PROCEDURE
ENVIRONMENTAL ENRICHMENT FOR MARMOSETS
USED IN RESEARCH AND TEACHING

1.0 PURPOSE:

- 1.1 This standard operating procedure (SOP) describes the methods for environmental enrichment of marmosets (*Callithrix jacchus*) 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:

Marmosets originated in the Atlantic Coastal Forest in northeast Brazil. They are strictly arboreal, rarely if ever leaving their treetop homes. Marmosets are very small with long claw-like nails that allow them to cling to trees. In the wild, they live in small family groups of 3-15 individuals. They spend their time socializing, foraging and playing. They are capable problem solvers, always on the lookout for predatory dangers.

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

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

- Aggression, especially with piloerection (hair standing up)
- Excessive scent marking
- Scratching and gouging
- Excessive vigilance
- Repeated circling and weaving
- Hair picking
- Isolation or inactivity

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 – Marmosets 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. Positive human interaction will be provided by Animal Care Staff on a regular basis.
- 3.2 Physical Enrichment - in order of preference
- 3.2.1 Areas to rest and hide
- 3.2.2 Pieces of autoclaved hardwood (no cedar or pine) to scent mark
- 3.2.3 Swings, ropes and perches
- 3.2.4 Tubes and tunnels to hide in and explore
- 3.2.5 Feathers
- 3.2.6 Unusual toys or objects for investigation, rotated on a weekly basis
- 3.3 Activity/Food Enrichment - in order of preference
- 3.3.1 Foraging device like objects with food hidden inside, rotated on a weekly basis

- 3.3.2 Frozen bananas
- 3.3.3 Live insects (e.g. crickets, grasshoppers)

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>)
- Buchanan-Smith, Hannah (2011) *Environmental Enrichment in Captive Marmosets and Tamarins*. PrimateCare
<http://www.marmosetcare.com>
- 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>
- Primate Info Net (Behavior of the Common Marmoset):
<http://pin/primate.wisc.edu/callicam/calbeh.html>