

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

**1.0 PURPOSE:**

- 1.1 This standard operating procedure (SOP) describes the methods for environmental enrichment of equines (*Equidae*) 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:

*Equus* is a genus of animal in the family *Equidae* that includes horses, donkeys and zebras. In the laboratory environment, the term equine generally refers to the horse (*Equus ferus caballus*). The horse is an ungulate mammal with a monogastric digestive system that includes a large cecum that aids in the digestion of cellulose from plant material. Humans began to domesticate the horse around 4000 B.C. but there are still populations of feral species today. Horses make use of speed to escape predators. They have a well-developed sense of balance and a wide range of vision of more than 350 degrees. They have the largest eyes of any land mammal. They have excellent day and night vision, though it is dichromatic. They also have an excellent sense of smell, though they rely more strongly on their sense of sight. Like all prey animals, they have a strong fight-or-flight response. Horses evolved to survive in areas of wide-open terrain with sparse vegetation where other grazing animals, like ruminants, could not. Their main source of nutrition should always be from good-quality forage such as hay or pasture. Horses typically spend 10-12 hours grazing per day. Horses form extremely strong social bonds and exist best in herds. Mares and stallions stay together year-round over multiple breeding seasons. Mare-mare bonds are also very stable especially among individuals of similar social rank who are closely related. Horses are creatures of habit and respond best when the same routines and techniques are used consistently. Individual animals may also have distinct personality and temperamental differences.

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

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

- Aggression, to people or other horses
- Cribbing and wood chewing
- Anorexia
- Weaving, stall walking, pawing, stomping
- Apathy

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, equine 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. If equines cannot be housed together, every attempt will be made for defined group interactions. Positive human interaction will be provided by Animal Care Staff on a

regular basis. Also, the addition of a companion animal from another species will also be considered.

3.2 Physical Enrichment - in order of preference

3.2.1 Exercise (increased time directly proportional to decreased stereotypies)

3.2.2 Equine toys (1 toy/horse/week) – rotated biweekly

3.3 Activity/Food Enrichment - in order of preference

3.3.1 Forage –pasture access ½ day or ~7kg of hay per day, split into at least 3 meals (more if possible)

3.3.2 Round or polyhedral food balls to increase foraging time

3.3.3 Food treats (e.g. carrots, apples, supplemental feed)

**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>)

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[www.fass.org/docs/agguide3rd/Ag\\_Guide\\_3rd\\_ed.pdf](http://www.fass.org/docs/agguide3rd/Ag_Guide_3rd_ed.pdf)

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Hanggi, E. (2007) *Understanding horse intelligence*. Horsetalk

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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>