

STANDARD OPERATING PROCEDURE

ENVIRONMENTAL ENRICHMENT FOR FERRETS USED IN RESEARCH AND TEACHING

1.0 PURPOSE:

- 1.1 This standard operating procedure (SOP) describes the methods for environmental enrichment of ferrets (*Mustela putorius furo*) 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:

Ferrets are in the same family as otters, weasels and minks. They were domesticated around 2000 years ago for use in trapping rabbits. They are very social animals and prefer to be housed in groups or pairs. (Einon, 1998) They have the unusual characteristic of being very difficult to wake from sleep and they often shiver if awakened sudden or are overly excited. Ferrets communicate primarily by vocalizations and olfactory cues. They have several distinct vocalizations that can be learned by an observant caretaker. Ferrets can be aggressive and difficult to handle if not appropriately socialized. They require regular handling to keep them adaptable to their environment. Jills are especially protective mothers. If well socialized, they are relatively easy to breed and handle in the laboratory. Ferrets are playful, mischievous and intelligent. They need a complex and stimulating environment. Ferrets were bred to climb through burrows and they enjoy exploring tight spaces. They are prolific swimmers. They also have a strong instinct to gnaw. Ferrets require a diet high in protein and must eat frequently to avoid hypoglycemia. (ALAT Manual, 2010)
- 2.2 Environmental enrichment must be evaluated by taking into account the following:
 - 2.2.1 The Natural Behavior and needs of ferrets (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 ferrets includes:

- Digging in dishes or litter box excessively
- Pacing
- Anorexia
- Isolation and Lethargy
- Chewing on Cage

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, ferret 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 ferrets cannot be housed together, every attempt will be made for defined group play activities. 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 Variety of shelters ($\geq 2''$ in diameter) for exploratory play
- Burrowing examples
 - PVC pipes with 1 or more holes cut in sides, can be linked with elbow connections

- Flexible tubing (e.g. Foster and Smith “super throughway”)
- 3.2.2 Ferret/Cat Toys, rotated on a biweekly basis
 - Toys should be easily maneuverable or able to be chased
 - Toys should not be made of a material that could become a foreign body if ingested (e.g. kong-like rubber)
 - Toy examples:
 - Geometric shapes made of paper + / - food inside
 - Balls which cannot be ingested + / - rattle or bell inside
 - Balled up paper towel
 - 3.2.3 Water bath
 - 3.2.4 Digging box
 - Paper bag with shredded paper material
 - 3.2.5 Sleeping bag or hammock in dark space away from litter box
 - 3.2.6 Play time in set area or dog pen
 - Items to be provided include toys, tubes, small water tub, burrowing tub
- 3.3 Activity/Food Enrichment - in order of preference
 - 3.3.1 Puzzle toy containing food treat
 - 3.3.2 Novel food treats, particularly those that move or wiggle (e.g. canned meat, cat/ferret treat, meal worms, frozen grapes or blueberries)

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:

- ALAT Manual* (2010) American Association for Laboratory Animal Science (Less Common Research Animals)
- 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>)
- Einon, Dorothy (1998) *The Effects of Environmental Enrichment in Ferrets*. The Animal Welfare Information Center

National Centre for the Replacement, Refinement & Reduction of Animals in Research,
Ferrets
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>