

University of Notre Dame IACUC Policy for Environmental Enrichment

Purpose

As stated in “The Guide”, animals should be housed with the goal of maximizing species-appropriate behaviors and minimizing stress-induced behaviors. The availability of suitable enrichment devices and practices within the primary enclosure aids in achieving this goal. Each species has different requirements and must be evaluated individually. The overall plan of environment enrichment must be flexible to adapt to a wide variety of species housed in the Freimann Life Science Center.

Group Housing

The IACUC will consider pair housing or group housing of social animals the default method of housing unless otherwise justified based on social incompatibility resulting from inappropriate behaviors, veterinary concerns regarding animal welfare, or scientifically justified and approved by the IACUC. See the IACUC Policy on Social Housing of Laboratory Animals.

Experimental Animals Cages

Once a group of animals has been assigned to an experimental protocol, the enrichment must be standardized to avoid introducing any unwanted variables. For experimental animals the following items can be used: Enviro-Dri[®], paper tubes, or paper huts, singly or in any combination. For cages housing 3-5 male mice; **always** supply with a cardboard hut such as the Shepherd Shack[®] which is moved with the mice when the cage is changed.

Breeding Mouse Cages

For the breeding cages, any combination of enrichment devices can be utilized as determined by the breeding room techs. Each strain may require a different type of enrichment thus the devices can be utilized to best suit the needs of the mice.

Enrichment Devices

The follow is a list of devices that have been successfully used on various species. Single housed animals will be provided one or more of these devices.

1. **Mice:** Chew sticks/blocks, paper rolls, Nestlets[®], PVC tubes, Enviro-Dri[®], paper towels, Nylabones[®], corn husks, wheels, and critter cubes.
2. **Rats:** Paper rolls, Nestlets[®], paper towels, chew sticks/blocks, Nylabones[®], PVC tubes.
3. **Guinea pigs:** Paper rolls, corn husks, PVC tubes, cardboard boxes, Ferret Balls, bedding bags, Jingle Balls[®], “houses” made of old cages.
4. **Rabbits:** PVC tubes*, “houses”*, baby rattles/keys, corn husks, Bunny Blocks[®], Jingle Ball[®], baby rattles, and Ferret Balls*.
** is used when they are housed on the floor*
5. **Gerbils:** Paper rolls, Nestlets[®], wood blocks.
6. **Frogs:** Ramps, perches, PVC tubes, “J” feeders, plastic aquarium plants, floating leaves (*made from trash bags*).
7. **Fish:** PVC tubes, plastic aquarium plants, floating leaves. Singly housed zebrafish require at least one leaf/artificial plant and live feed once daily.
8. **Chickens:** Perches, red marbles in food, red marbles in water, mirrors, plastic links.
9. **Chicks:** Astro[™] turf covered with feed.
10. **Crabs:** Rocks, perches.
11. **Birds:** Perches.
12. **Hamsters:** Paper rolls, Nestlets[®], PVC tubes.
13. **Xenopus:** Free floating artificial plants, red tinted plastic huts. Number of devices is predicated by tank size and population density.

Food Treats

Food treats that are species appropriate are provided to the animals on an unscheduled basis. Treats are limited

to avoid causing the animals to go off their regular feed. The following is a list of treats provided to the various species.

1. **Rodents:** A variety of seeds, including corn and sunflower seeds, are provided in the bedding to promote foraging. The seeds are given no more than twice weekly to avoid dietary problems.
2. **Rabbits:** Alfalfa hay (loose and cubed), greens, dried fruit, Bunny Blocks, apples, and cereal (such as Shredded Wheat biscuits) are provided to the rabbits as treats and as appetite enhancements. These are provided in sealed ceramic crocks for animals housed on the floor or in the cage feeders.
3. **Guinea pigs:** Alfalfa hay, greens, corn husks, apples, dried corn on the cob, and carrots are provided as treats to the guinea pigs. Corn husks can be given as often as three times weekly. Other treats should be limited to weekly.

Preparations of Devices

1. All items used for environmental enrichment purposes must be easy to sanitize or disposable after single use.
2. All items that are placed into genetically altered mouse cages must be autoclaved prior to use: the corn husks, Enviro-Dri[®], Nestlets[®], paper and PVC tubes, and chew blocks.
3. Enrichment devices are sanitized at least bi-weekly. Xenopus and zebrafish enrichment is sanitized at the time the tanks are changed.
4. Devices are checked regularly and replaced as they become difficult to reassemble, difficult to sanitize, or damaged to the point of causing a hazard to the animals.
5. Enrichment devices will be rotated and stored devices will be sanitized every 6 months.

Development of Novel Methods

The staff is encouraged to bring any novel ideas for enrichment to the management team for evaluation and discussion. Approved ideas are then presented to the Director for final approval and funding.

References

Michael L. Kaplan, DVM, DSC. An Enriched Environment For The African Clawed Frog (*Xenopus laevis*), Lab Animal Magazine, May 1993, Vol. 22, Number 5, pp. 25-29.