

**POLICY REGARDING HOUSING AND ENVIRONMENTAL  
ENRICHMENT FOR LABORATORY ANIMALS**

**PURPOSE:**

This document serves to assist researchers in developing appropriate enrichment programs for the species used in research, teaching, or training at Liberty University.

**POLICY:**

Enrichment programs must be reviewed by the IACUC, researchers, and the university veterinarian on a regular basis to ensure that they are beneficial to the well-being of the animals, and that the programs are consistent with proper animal use. Deficiencies must be updated to reflect current knowledge and practices. Personnel responsible for the care of animals shall be properly trained in the behavioral aspects of animal care to appropriately monitor the effects of any enrichment, as well as identify the development of any adverse behavior.

**DEFINITIONS**

- Standard Housing
  - Housing conditions as provided to animals by default per standard procedures.
- Group Housing
  - More than a single animal within a cage or primary enclosure.
- Social Contact
  - Visual, auditory, olfactory, or tactile contact with others of the same species.
- Isolation
  - Housed individually in a room without visual, auditory, olfactory, or tactile contact with others of the same species.

**STANDARDS**

- Each animal housing room maintains a single species at any given time unless special arrangements have been made for compatible species.
- Enrichment and appropriate social contact must be provided according to the table below.
- Changes from the standards listed below are not allowed except under the following circumstances:
  - Changes are described in the applicable protocol approved by the LU IACUC
  - The university veterinarian prescribes the change
- Provision of enrichment must be provided so as not to cause undue stress or otherwise harm the animal or alter the species appropriate standards for husbandry, nutritional requirements, or housing.
- Physical materials used for enrichment must be easily sanitized to the level required by the building's SOPs.
- Husbandry must be provided to any singly housed mouse, rat, hamster, guinea pig, or other rodent unless otherwise specified (must be approved by the IACUC).
- Materials and labor costs associated with optimal enrichment will be charged to the Principal Investigator.
- Enrichment must be conducted in such a way to not interfere with the research results, or must be controlled appropriately.

**TABLE I. ENRICHMENT STANDARDS**

<b>Species</b>	<b>Standard Housing and Enrichment for Group Housed Animals</b>  <i>Requirements for group housed animals. Changes from these standards are not allowed except by IACUC approval.</i>	<b>Enrichment for Singly Housed Animals</b>  <i>Requirements for singly housed animals. Changes from these standards are not allowed except by IACUC approval.</i>	<b>Optional Enrichment</b>  <i>These options are not required to be addressed in the IACUC Protocol. PI must decide which animals receive and arrange for the provision of this enrichment.</i>
Mice Rats Hamsters Guinea Pigs Other Rodents	Group housed whenever possible. Approved polystyrene, polycarbonate, or other high temp solid bottom plastic cage fitted with a functioning filter-top or polyethylene disposable cages. Cages may be connected to racks providing filtered air. Commercially available paper, wood chip, or corn cob type bedding. Wire bar lide, frame, or box feeder. Resting lofts where applicable (i.e. Techniplast caging). Water bottle or lixit for automatic watering. Approved feed in a feed hopper or wire bar lid.	Singly housed animals will be provided with one of the following: <ul style="list-style-type: none"> <li>• Cotton nesting material</li> <li>• Sterilized paper towel</li> <li>• Paper towel (not sterile)</li> <li>• Paper or plastic tubes</li> <li>• Bedding enriched w/ paper nesting chips</li> </ul>	Provision of cotton nesting, sterilized paper, paper or plastic enclosures.
Rabbits	Individually housed, but with social contact with conspecifics whenever possible. Easily sanitized wire bottom caging of the appropriate size for the species. Water bottle or lixit for automatic watering at all times. Nutritionally complete	Single <u>isolated</u> animals will have positive human interaction daily.	Small portions of fruit, vegetables, alfalfa not to interfere with primary diet.

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	<p>pelleted food per weight daily. Enrichment materials that are easily sanitized, (hard balls, plastic chains, PVC pieces, nylabones) will be placed in cages. Small portions of timothy hay or other grass hay, in portions that will not offset normal diet.</p>		
Reptiles/Other Amphibian	<p>Group housed whenever possible in easily sanitized and secured enclosures with a safe heating device located in such a way to allow animal(s) to thermoregulate appropriately for the species. Substrate that is easily sanitized and appropriate for the species. Fresh water (de-chlorinated for amphibian species) and nutritionally complete feed appropriate for the species. Hiding tubes, boxes, and perches of appropriate size.</p>	<p>Same as for group housed reptiles/other amphibians.</p>	<p>Food items and treats not to constitute a substantial portion of the standard diet.</p>
Xenopus	<p>Group housed in water tanks or tubs with PVC pipe or a floating device that is removable and easily sanitized. De-chlorinated water, temperature appropriate for species flushed daily post feeding, and free of significant debris. Nutritionally complete commercially available food, appropriate for the species.</p>	<p>Same as for group housed xenopus.</p>	

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Fish	Group housed in water tanks. De-chlorinated water, temperature appropriate for species continuous recirculation of water to maintain free of significant debris. Nutritionally complete commercially available food appropriate for the species.	Same as for group housed fish.	
Birds	Group housed whenever possible in smooth wire cages adequate for the species. Flight cages if possible or alternative enrichment made available. Perches adequate to prevent foot disease, water source available at all times, food nutritionally complete for the species, and access to materials for maintaining crop.	Same as for group housed birds.	