Animal Housing and Environmental Enrichment

I. Purpose:

This policy outlines the types of standard housing used for laboratory animal species at UC Merced and the types of environmental enrichment materials or practices that may be used to enhance species-specific behavior and reduce distress and anxiety in laboratory animals.

The *Guide for the Care and Use of Laboratory Animals*¹ ("The Guide") states that:

- "A good management program provides the environment, housing, and care that permit animals to grow, mature, reproduce, and maintain good health; provides for their well-being; and minimizes variations that can affect research results."
- "Animals should be housed with the goal of maximizing species-specific behaviors and minimizing stress-induced behaviors."
- "Depending on the animal species and use, the structural environment should include resting boards, shelves or perches, toys, foraging devices, nesting materials, tunnels, swings, or other objects that increase opportunities for the expression of species-typical postures and activities and enhance the animals' well-being."
- "Consideration should be given to an animal’s social needs. The social environment usually involves physical contact and communication among members of the same species (conspecifics), although it can include non-contact communication among individuals through visual, auditory, and olfactory signals."

The Animal Welfare Act (AWA) mandates "environmental enrichment" for nonhuman primates² by specifying that there must be a "program for the psychological well-being of nonhuman primates". Exercise requirements for dogs³ are also specified in the AWA.

II. Definition:

**Standard housing** refers to the type(s) of housing approved by IACUC and Department of Animal Research Services (DARS) for housing the species concerned.

**Environmental enrichment** refers to additions to an animal's environment with which it can interact. The goal is to allow animals to express a range of species-typical behaviors which may enhance their well-being. Examples of environmental enrichment include the following:

- Allowing control over the environment such as providing opportunities for:
  - nest-building
  - areas for animals to hide from threatening situations
III. Policy:

In compliance with Federal Animal Welfare Regulations and guidance and in consideration of the physical and social needs of research animals the IACUC requires that appropriate environmental enrichment be provided to standard animal housing unless there is scientific justification, approved by the IACUC that precludes the use of environmental enrichment materials or practices.

IV. Implementation:

- All animals housed for use in research, teaching or testing purposes at UC Merced must be housed in an animal facility or other space approved by the IACUC.
- Each animal housing room (or isolated housing unit) will contain a single species unless special housing arrangements have been made with DARS for compatible species.
- Standard housing is provided by DARS on a recharge basis, unless the IACUC has approved that housing can be provided and maintained by research groups. For certain species of animals that are not currently or routinely housed at UC Merced, research groups may be responsible for set-up costs to provide specialized equipment for maintaining the animals.
- Changes to the standard housing and environmental enrichment described in the tables below are not permitted except under the following circumstances:
  o Changes are described in the animal use protocol and approved by the UC Merced IACUC.
  o Changes are prescribed by the Attending Veterinarian for animal health or welfare reasons.
- Enrichment materials or practices should not significantly alter the species-appropriate standards for husbandry, nutrient requirements or housing, as described in The Guide, unless these deviations are described and approved by the IACUC in the animal use protocol.
- Provision of environmental enrichment other than the Standard or Allowed Environmental Enrichment described in Table 1 must be described in the IACUC protocol. If the standard housing and enrichment for the species cannot be used, a justification must be submitted and approved by the IACUC.
- For USDA-covered species, a written record of the environmental enrichment items provided will be kept along with the daily husbandry records.
V. References:

1 Guide for the Care and Use of Laboratory Animals (Eight Edition), Chapter 3.
2 Animal Welfare Regulations, 9 CFR Chapter 1, Subchapter A, Part 3, Subpart D, Section 3.81
3 Animal Welfare Regulations, 9 CFR Chapter 1, Subchapter A, Part 3, Subpart A, Section 3.8
### Species Dimensions of Enclosure | Maximum Number Animals/Enclosure | Guiding Documents | Enclosure Composition & Description
--- | --- | --- | ---
13-3/8" L x 7-3/4" W x 6-3/8" H | Breeding trio plus litters | Other, Individually ventilated Zyfone™ cage (Lab Products, Super Mouse 750™)
Rats | 14-19/32" L x 9-3/8" W x 8-1/2" H | One adult rat | Guide, Individually ventilated Zyfone™ cage (Lab Product, One Cage™)
\[2\text{ adult rats plus litter} \] | Guide, Individually ventilated Zyfone™ cage (Lab Product, One Cage™)
Zebrafish | 1.1 L | 5 adult fish | Guide, AAAALAC Reference Resource Zebrafish, Tecniplast zebrafish polycarbonate tank (Tecniplast® USA)
3.5 L | 15 adult fish | Guide, AAAALAC Reference Resource Zebrafish, Tecniplast zebrafish polycarbonate tank (Tecniplast® USA)
8 L | 40 adult fish | Guide, AAAALAC Reference Resource Zebrafish, Tecniplast zebrafish polycarbonate tank (Tecniplast® USA)
0.8 L | 5 adult fish | Guide, AAAALAC Reference Resource Zebrafish, Aquaneering zebrafish polycarbonate tank (Aquaneering, Inc)
1.8 L | 10 adult fish | Guide, AAAALAC Reference Resource Zebrafish, Aquaneering zebrafish polycarbonate tank (Aquaneering, Inc)
2.8 L | 15 adult fish | Guide, AAAALAC Reference Resource Zebrafish, Aquaneering zebrafish polycarbonate tank (Aquaneering, Inc)
Breeding tank | 2 adult fish | Guide, AAAALAC Reference Resource Zebrafish

### Species Standard Housing and Environmental Enrichment

<table>
<thead>
<tr>
<th>Species</th>
<th>Notes</th>
<th>Additional Environmental Enrichment</th>
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<tbody>
<tr>
<td>Mouse</td>
<td>Individually ventilated cages</td>
<td>Lab Products, Super Mouse 750™</td>
<td>Disposable cardboard houses</td>
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<tr>
<td>Life Span unit</td>
<td>Life Span™ Rodent Enrichment, Lab Products</td>
<td>Plastic houses (must be cage-washer safe)</td>
<td>Bio-Serv™ Mouse Igloo™</td>
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<td>Teklad Corncob bedding, Envigo</td>
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<td>Nesting material</td>
<td>Nestlets™ and Enviro-Dri™</td>
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<td>Group housed</td>
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<tr>
<td>Rat</td>
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<td>Lab Product, One Cage™</td>
<td>Disposable cardboard houses</td>
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<td>Teklad Corncob bedding, Envigo</td>
<td>Disposable cardboard tubes</td>
<td>Bio-Tunnels for Rats</td>
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<tr>
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