

## IACUC Guidelines for Environmental Enrichment

*Last Review: 4/2022*

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### **Environmental enrichment:**

The Guide for the Care and Use of Laboratory Animals states: “The primary aim of environmental enrichment is to enhance animals’ well-being by providing animals with sensory and motor stimulation, through structures and resources that facilitate the expression of species-typical behaviors and promote psychological well-being through physical exercise, manipulative activities, and cognitive challenges according to species-specific characteristics”.

**All animals will receive enrichment unless specifically justified by the primary investigator and approved by the IACUC. Animals will be provided with at least one enrichment item. Animals will receive enrichment each time the cage is changed.**

Items that may be used for enrichment need to be evaluated for use by taking into account the following:

- The species of animal (its needs, habits, and capabilities)
- The type of enrichment device (treat, exercise, toys)
- The utility of the device (its ability to stimulate the animals’ interest)
- The safety of the device (not injurious to the animal and its ability to be sanitized for future use)
- The nature of the research being done (research will not be compromised due to placement of an enrichment device)
- Cage complexities and important resources (perches/shelves, visual barriers, refuges, food, water, shelter and enrichment devices) should be provided in such a way that cannot be monopolized by dominant animals or elicit aggression between animals.

### **Housing and Cage Density:**

The Guide for the Care and Use of Laboratory Animals states: “The need for single housing based upon experimental requirements is the exception and must be scientifically justified in the animal use protocol and reviewed and approved by the IACUC.”

**Single housing of social species should be the exception and justified based on experimental requirements or veterinary-related concerns about animal well-being. The need for single housing should be reviewed on a regular basis by the IACUC and the Veterinarian. This will take place at the time of the annual protocol review.**

Items to take into account for housing:

- The risks of social incompatibility are greater when introducing adult animals so consideration should be given to introducing adult animals at a younger age to reduce aggressive interactions. The social stability of newly created groups should be carefully monitored for excessive aggression and incompatible individuals separated.
- Single housing is justified in cases of aggression when there is a risk to animal health due to cage dominance. In these cases, the aggressive animal would be isolated from his/her the cage mates to prevent further injury.
- Single housing may be justified in the case of breeding animals. An adult male may be removed from the breeding cage if he poses a risk to the safety of the pups.
- When single housing is justified it should be limited to the minimum period necessary, and where possible, visual, auditory, olfactory and tactile contact with compatible conspecifics should be provided. In the absence of other animals other forms of enrichment should be offered such as positive interaction with staff and additional enrichments items.

In general, the number of animals allowed per cage is based upon the mathematical formula found in the Guide. These formulas are on laminated cards in each of the animal rooms as reference. In some cases animals may require more space than the minimum listed in the Guide, especially with breeding cages.

**Table of Standard Housing and Enrichment Options**

Species	Standard Housing	Approved Enrichment
<b>Rat/ Mice</b>	<ul style="list-style-type: none"> <li>• Group housed when possible.</li> <li>• Polycarbonate “standard” shoebox static open top cages.</li> <li>• Static or ventilated micro isolator compatible.</li> <li>• Commercially available wood chip, corn cob, or shredded paper bedding.</li> <li>• Wire bar lid.</li> <li>• Water bottle or automatic watering</li> <li>• ARC/IACUC commercially available approved feed in a wire bar lid</li> </ul>	<ul style="list-style-type: none"> <li>• Nesting material (enviro-dri, paper towels, crinkle paper, nesting sheets)</li> <li>• Paper tubes, cardboard</li> <li>• Mouse houses (paper or plastic)</li> <li>• Egg cartons</li> <li>• Wooden clothes pins/blocks</li> <li>• Paper towels</li> <li>• PVC tube</li> <li>• IACUC approved food treats</li> <li>• Rat Tickling</li> </ul>
<b>Mice (Breeders)</b>	<p>(For trio-breeding: 1 male plus 2 females and litter)</p> <ul style="list-style-type: none"> <li>• Polycarbonate “standard” shoebox static open top cages.</li> </ul>	<ul style="list-style-type: none"> <li>• Nesting material (enviro-dri, paper towels, crinkle paper)</li> <li>• Paper tubes</li> <li>• Mouse houses (paper or plastic)</li> <li>• Egg cartons</li> <li>• Running wheels</li> </ul>

	<ul style="list-style-type: none"> <li>• Static micro isolator compatible.</li> <li>• Commercially available wood chip or corn cob bedding.</li> <li>• Wire bar lid.</li> <li>• Water bottle watering ARC/IACUC approved feed in a wire bar lid</li> </ul> <p>(For monogamous breeding)</p> <ul style="list-style-type: none"> <li>• One female and male + litter</li> <li>• Polycarbonate “standard” shoebox static open top cages.</li> <li>• Static micro isolator compatible.</li> <li>• Commercially available wood chip or corn cob bedding.</li> <li>• Wire bar lid.</li> <li>• Water bottle watering ARC/IACUC approved feed in a wire bar lid</li> </ul>	<ul style="list-style-type: none"> <li>• Wooden clothes pins</li> <li>• Paper towels</li> <li>• PVC tube</li> </ul>
<b>Rat (Breeders)</b>	<ul style="list-style-type: none"> <li>• Polycarbonate “standard” shoebox static open top cages.</li> <li>• Static micro isolator compatible.</li> <li>• Commercially available wood chip bedding or corn cob.</li> <li>• Wire bar lid.</li> <li>• Water bottle watering ARC/IACUC approved feed in a wire bar lid</li> </ul>	<ul style="list-style-type: none"> <li>• Nesting material (enviro-dri, paper towels, crinkle paper)</li> <li>• Paper tubes</li> <li>• Egg cartons</li> <li>• Wooden clothes pins</li> <li>• Paper towels</li> <li>• PVC tube</li> </ul>
<b>Frogs</b>	<ul style="list-style-type: none"> <li>• Group housed if possible in aquaria made of sanitizable materials.</li> </ul>	<ul style="list-style-type: none"> <li>• Housed in compatible groups</li> <li>• PVC tubes</li> <li>• Hides and shelters</li> </ul>
<b>Fish</b>	<ul style="list-style-type: none"> <li>• Group housed if possible in aquaria or tanks made of sanitizable materials.</li> <li>• Flow through re-circulating or static systems</li> </ul>	<ul style="list-style-type: none"> <li>• Hides and shelters</li> <li>• PVC tubes, rocks, plastic plants, marbles</li> </ul>

## **Directions**

### **Rodents:**

- Place one of the enrichment items in the rodent cage. Toss if items are found in small pieces to prevent injury. Replace with a new item when the old one is gone and/or at the time of cage change.

Sanitize all plastic, metal or rubber items by putting them through cage wash weekly and/or biweekly. At Garland/Pearse, place rodent enrichment devices in accessory basket and wash on soap cycle. At Lapham, place in accessory basket and wash on “Alkaline” (soap) cycle.