

University of California, Merced
Institutional Animal Care and Use Committee Policy

Version No. 1

Policy

No. 110

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

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Version No. 1

Policy

No. 110

- exercise
- Novel items (e.g. food, toys, climbing structures).
- Group housing to allow interaction with conspecifics.

The type of environmental enrichment provided depends on the species of animal, type of housing, space available, research needs, husbandry practices and other operational needs.

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:
 - Changes are described in the animal use protocol and approved by the UC Merced IACUC.
 - 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.

**University of California, Merced
Institutional Animal Care and Use Committee Policy**

Version No. 1

No. 110

Policy

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

**University of California, Merced
Institutional Animal Care and Use Committee Policy**

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No. 110

Policy

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Species	Dimensions of Enclosure	Maximum Number Animals/Enclosure	Guiding Documents	Enclosure Composition & Description
Mice	13-3/8" L x 7-3/4" W x 6-3/8" H	5 adult mice	Guide	Individually ventilated Zyfone™ cage (Lab Products, Super Mouse 750™)
	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 adult rats plus litter	Guide	Individually ventilated Zyfone™ cage (Lab Product, One Cage™)
Zebrafish	1.1 L	5 adult fish	Guide, AAALAC Reference Resource Zebrafish	Tecniplast zebrafish polycarbonate tank (Tecniplast® USA)
	3.5 L	15 adult fish	Guide, AAALAC Reference Resource Zebrafish	Tecniplast zebrafish polycarbonate tank (Tecniplast® USA)
	8 L	40 adult fish	Guide, AAALAC Reference Resource Zebrafish	Tecniplast zebrafish polycarbonate tank (Tecniplast® USA)
	0.8 L	5 adult fish	Guide, AAALAC Reference Resource Zebrafish	Aquaneering zebrafish polycarbonate tank (Aquaneering, Inc)
	1.8 L	10 adult fish	Guide, AAALAC Reference Resource Zebrafish	Aquaneering zebrafish polycarbonate tank (Aquaneering, Inc)
	2.8 L	15 adult fish	Guide, AAALAC Reference Resource Zebrafish	Aquaneering zebrafish polycarbonate tank (Aquaneering, Inc)
	Breeding tank	2 adult fish	Guide, AAALAC Reference Resource Zebrafish	

Species	Standard Housing and Environmental Enrichment (Provided by DARS)	Notes	Additional Environmental Enrichment (Supplied by Investigator)	Notes
Mouse	Individually ventilated cages	Lab Products, Super Mouse 750™	Disposable cardboard houses	Shepherd Shack®
	Life Span unit	Life Span™ Rodent Enrichment, Lab Products	Plastic houses (must be cage-washer safe)	Bio-Serv™ Mouse Igloo™
	Contact bedding	Teklad Corncob bedding, Envigo		
	Nesting material	Nestlets™ and Enviro-Dri®		
	Group housed			
Rat	Individually ventilated cages	Lab Product, One Cage™	Disposable cardboard houses	Bio-Homes for Rats
	Contact bedding	Teklad Corncob bedding, Envigo	Disposable cardboard tubes	Bio-Tunnels for Rats
	Nesting material	Nestlets™ and Enviro-Dri®	Plastic houses (must be cage-washer safe)	Fat Rat Hut™, Bio-Serv
	Group housed			