 <i>David H. Murdock Research Institute</i>	<b>Document Title</b>			Document ID	DCO ID
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## 1.0 PURPOSE

- 1.1 To ensure compliance with space allocation regulations for mice as defined by the “Guide for the Care and Use of Laboratory Animals” and the PHS Policy.

## 2.0 SCOPE

- 2.1 This Policy applies to all parties who use the DHMRI Center for Laboratory Animal Sciences (CLAS), including but not limited to, Center Directors, Animal Facility Managers and Animal Care Staff.

## 3.0 RESPONSIBILITIES

- 3.1 Primary Investigators (and designees) are responsible for:

3.1.1 All Principal Investigators (PI) must comply with cage census limitations as described in section 4.0. For all breeding schemes, the PI must place a breeding card on the cage that estimates (within 1-2 days) the birth dates of each litter in the cage and must separate animals in accordance with section 5.0 (below).

3.1.2 Variances approved by the IACUC must be indicated clearly in the room. It is the PI’s responsibility to post these variances.

- 3.2 CLAS Staff are responsible for:

3.2.1 If animals have not been weaned by 21 days of age, and no threat to health is seen, CLAS personnel will place a “Please Wean” card on the cage. If the cage is not weaned within 2 days, CLAS personnel will separate animals and charge the PI for time and materials at the technical assistance rate.

3.2.2 If a cage is out of compliance with the above policy and animals need to be weaned or separated immediately as detailed above, CLAS staff will wean or separate animals and charge the PI for time and materials at the technical assistance rate.

- 3.3 DHMRI Quality Systems is responsible for:


3.3.1 Accuracy of assigned document numbers, DCO numbers and relevant meta data against the master logs before document approval.

3.3.2 Effective document release, storage and retention.

3.3.3 Biennial Review.


## 4.0 MOUSE CAGING REGULATIONS

- 4.1 No more than 5 adult mice per cage (See Appendix 8.1 for space recommendations for mice from the Eighth Edition of the Guide for the Care and Use of Laboratory Animals).

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## 5.0 BREEDING AND WEANING REQUIREMENTS

- 5.1 Standard (pair) breeding: one standard mouse cage can house one adult male, one adult female, and one litter until weaning.
- 5.2 Trio breeding (two females and one male):
  - 5.2.1 Should be used only for inbred strains or genetically modified mice where small litters (average 6 pups or less per litter) or poor breeding efficiency is seen. It is highly recommended that once the first female has pups, the remaining pregnant female and male should be removed from the cage to avoid exceeding the recommended housing guidelines.
  - 5.2.2 In the case where two litters are present within the cage, the older pups (greater than 10 days old) must be either weaned or separated with the dam. The adult male can be placed with either dam and her pups.
- 5.3 Three females and one male: Females need to be separated after pregnancy is detected, prior to delivery. If one of the females has a litter, the remaining females and the male should be separated from the cage immediately.
- 5.4 Animals will be weaned by the research group on or before 21 days of age unless an IACUC variance is approved.
- 5.5 Variances from this standard policy as part of the approved IACUC protocol:
  - 5.5.1 An IACUC variance for weaning at an age greater than 21 days of age shall include:
  - 5.5.2 Reason for late weaning (Please note that the “Guide” and current federal regulations do not allow cost alone as justification for departures from the Guide) and strain(s) involved).
    - 5.5.2.1 Breeding scheme and maximum number of adults and litters that will be in the cage.
    - 5.5.2.2 An assurance that if a new litter is born in the cage prior to weaning of the old litter (pups greater than 19 days of age), the old litter will be weaned or separated immediately. Conversely, the variance can provide an explanation (with data) as to why this is not needed.
  - 5.5.3 An IACUC variance for breeding in trios (two females and one male) when average litters are larger than 6 per dam, should include:
    - 5.5.3.1 An explanation of the benefit to the breeding and weaning efficiency of trio breeding for this strain (including past data) and strain(s) involved.
    - 5.5.3.2 Breeding scheme and maximum number of pups that will be in the cage.

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5.5.3.3 An assurance that if a new litter is born in the cage prior to weaning of the old litter (pups greater than 19 days of age), the old litters will be weaned or separated immediately. Conversely, the variance can provide an explanation (with data) as to why this is not needed.

## 6.0 REFERENCES AND RELATED DOCUMENTS

- 6.1 “Guide for Care and Use of Laboratory Animals” (2011).
- 6.2 PHS Policy
- 6.3 Heiderstadt KM, Blizard DA. 2011. Increased juvenile and adult body weights in BALB/cByJ mice reared in a communal nest. *J Am Assoc Lab Anim Sci.* 50(4):484-7.
- 6.4 Branchi I. 2009. The mouse communal nest: investigating the epigenetic influences of the early social environment on brain and behavior development. *Neurosci Biobehav Rev.* 33(4):551-9.
- 6.5 Pritchett, K.R. and R.A. Taft. 2007. *Reproductive Biology of the Laboratory Mouse In The Mouse in Biomedical Research, Normative Biology, Husbandry and Models.* J.G. Fox, M.T. Davisson, F.W. Quimby, S.W.Barthold, C.E. Newcome, A.L. Smith. eds., Academic Press. Burlington. pp.103-121.


## 7.0 DEFINITIONS

Term	Description
CLAS	Center for Laboratory Animals Services
QS	Quality Systems (establishes controlled documentation practices used at DHMRI for initiating, revising, routing, reviewing and approving Policies, Reports, SOPs, Forms and SOWs).

## 8.0 APPENDIX:

- 8.1 Recommended Minimum Space for mice from the guide for the care and use of Laboratory animals (Eighth edition)

Animals	Weight (g)	Floor Area/Animal <sup>a</sup> in. <sup>2</sup> (cm <sup>2</sup> )	Height <sup>b</sup> in. (cm)	Comments
Mice in Groups <sup>c</sup>	<10	6 (38.7)	5 (12.7)	Larger animals may require more space to meet the performance standards.
	Up to 15	8 (51.6)	5 (12.7)	
	Up to 25	12 (77.4)	5 (12.7)	
	>25	≥15 (≥96.7)	5 (12.7)	
Female + litter		51 (330) (recommended space for the housing group)	5 (12.7)	Other breeding configurations may require more space and will depend on considerations such as number of adults and litters, and size and age of litters. <sup>d</sup>

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<sup>a</sup> Singly housed animals and small groups may require more than the applicable multiple of the indicated floor space per animal.

<sup>b</sup> From cage floor to cage top.

<sup>c</sup> Consideration should be given to the growth characteristics of the stock or strain as well as the sex of the animal. Weight gain may be sufficiently rapid that it may be preferable to provide greater space in anticipation of the animal's future size. In addition, juvenile rodents are highly active and show increased play behavior.

<sup>d</sup> Other considerations may include culling of litters or separation of litters from the breeding group, as well as other methods of more intensive management of available space to allow for the safety and well-being of the breeding group. Sufficient space should be allocated for mothers with litters to allow the pups to develop to weaning without detrimental effects for the mother or the litter.

REVISION HISTORY		
Superseded Revisions	DCO Number	Effective Date
R1.0	13-023	09AUG2013
<b>Current Revision:</b>	<b>R2.0</b>	
Section Number	Description of Changes	Justification of Changes
1.0	Rephrased the Purpose	Accuracy and clarity.
4.2	Section deleted	Deleted inaccurate statement.
5.2.1	Cage Compliance Policy for Mice	New DHMRI Document.
5.2.2/5.2.3	Sections deleted	To be consistent with reworded 5.2.1.
5.3	New language used	Updated separation guidelines.
6.3	Section deleted	Accuracy.
All	Cage Compliance Policy for Mice	New DHMRI Document.