



**INDIANA UNIVERSITY**  
**Office of Research Compliance (ORC)**  
**Institutional Animal Care and Use Committee (IACUC)**

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**Mouse Housing Density & Breeding Schemes**

**Policy Statement**  
**Background**  
**Policy**  
**Sanctions**  
**Contacts**  
**Related Information**  
**References**

**Effective:** 11.2011  
**Last Updated:** 10.2017

**Responsible University Office:**  
Office of Research Compliance IACUC Office(s)  
Laboratory Animal Resource Center (LARC)

**Responsible University Administrator:**  
Vice President for Research

**Policy Contacts:**  
Indianapolis: [somiacuc@iupui.edu](mailto:somiacuc@iupui.edu); [larc@iupui.edu](mailto:larc@iupui.edu)

## Scope

This policy applies to all personnel involved in activities involving the care and/or use of mice in IU SOM facilities regardless of the funding source.

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## Background

The purpose of this policy is to address the health and well-being of mice by ensuring safe population densities. Animal overcrowding can contribute to significant animal welfare issues and therefore may violate federal and University policies on the humane care of animals if not expediently addressed.

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## Policy

### Housing in Standard Cages:

Assuming an average adult mouse weighs 25-30 grams, the standard cages in LARC can hold up to 5 adult mice.

Breeding mice can be done in:

- pairs (one male, one female)
- trios (one male, two females)
- harem (one male, up to 4 females)

For pairs and trios, the breeding cages may be set up on a continuous basis, leaving the male with the female(s) after pups are born. Multiple litters of differing ages are allowable, but weaning schedules must be strictly managed to avoid overcrowding cages with animals that are nearly adult-sized along with newborn pups. If weaning has not occurred on the schedule defined in the approved animal protocol, weaning will be performed by LARC personnel at the investigator's expense. The investigator will be notified of this action and a minimum of \$75 will be charged to the PI's LARC account. (Charges are based on a rate for each new cage generated, including a new cage for the original

adults and two or more cages for the offspring separated by sex. See the LARC Policy on Overcrowded Cages for specific fees.)

In continuous breeding cages, the preferred scheme is pairs when the following two factors exist:

- The strain produces large numbers of offspring ( $\geq 10$  pups/litter)
- Weaning needs to be delayed beyond 21-23 days due to the small size of offspring and their inability to thrive (as occurs for some inbred strains).

Breeding trios (one male, two females) should be closely managed to insure that overcrowding does not occur. If the strain of mice used regularly produces large litters ( $\geq 10$  pups), the litters should be weaned between 21-23 days. If weaning does not occur on schedule, the investigator will be notified and weaning will be performed by LARC personnel at the investigator's expense (See the LARC Policy on Overcrowded Cages for specific fees.)

For inbred strains that produce large litters ( $\geq 10$ ) and also require 28 days for proper weaning, the PI will justify the need for trio breeding with delayed weaning in the IACUC protocol for review on a case-by-case basis.

When harem breeding, visibly pregnant females must be moved to their own cage to prevent housing multiple pre-weaning litters with more than 3 adults.

To ensure the well-being of newborn animals, as well as to provide adequate data regarding birth and weaning dates, cages must be adequately labeled by the investigator with the date of birth of each litter.

### **Weaning:**

The Research Staff is responsible for cage card documentation and for separating and weaning mice. Litters must be weaned according to the procedures defined in the investigator's approved animal protocol.

Male and female pups must be separated at weaning unless they are being set up as new breeding cages, using one of the schemes defined above (pair, trio, harem).

If weaning does not occur on schedule, the investigator will be notified and weaning will be performed by LARC personnel at the investigator's expense (See the LARC Policy on Overcrowded Cages for specific fees.)

### **Exceptions:**

In the event that a litter cannot be weaned according to the approved schedule specific to the protocol, the investigator should notify LARC staff by appropriately labeling the cage, including the expected weaning date. If the expected weaning date is reached and the litter is still not ready to be weaned, a LARC Sick/Dead/Other Form should be completed and submitted to notify LARC veterinary staff.

For strains that consistently require delayed weaning, exceptions to the 21-23 day weaning age may be made. Exceptions must be requested in the IACUC protocol. The request should include justification (scientific, via a performance standard) for extended weaning and should include appropriate documentation or scientific justification. Once approved by IACUC this extended weaning time is acceptable.

### **LARC Actions When PI-Managed Cages Have Become Overcrowded**

The LARC Staff checks for overcrowding and pregnancy when changing cages. Any cages that might be considered overcrowded according to standards defined above are marked with a Sick/Dead/Other or Please Wean Card, dated and initialed.

When overcrowding is noted, the Research Staff is contacted via email and given up to 48 hours to correct the problem, depending on the severity of the overcrowding. Alternatively, if the investigator feels that weaning should be delayed further, the LARC veterinary staff must be consulted.

If overcrowding is not addressed within the allotted time LARC staff separates the mice and charges the PI (as noted above).

When a harem housed mouse is noticeably pregnant (usually 14 days gestation), 48-hour notice will be given. However, if a female seems to be about to give birth, she is promptly separated and the investigator's staff will be notified of the action. (No charges will be garnered for this action.)

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## Sanctions

Aside from the charges for performing colony weaning, investigators will be notified that they are out of compliance with IACUC regulations for each incident in which overcrowding has occurred because weaning was delayed past the age prescribed in the approved protocol. In such cases, the investigator will be subject to further remedial actions as deemed necessary by the IACUC.

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## Contacts

<b>Subject</b>	<b>Contact</b>	<b>Phone</b>	<b>Email</b>
Policy Implementation	IACUC Administrator	317-278-1826	<a href="mailto:somiacuc@iupui.edu">somiacuc@iupui.edu</a>
Policy Contents	LARC	317-274-8649	<a href="mailto:larc@iupui.edu">larc@iupui.edu</a>

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## Related Information

PHS Policy on Humane Care and Use of Laboratory Animals <http://grants.nih.gov/grants/olaw/references/phspol.htm>

*The Guide for the Care and Use of Laboratory Animals*, 8th Edition [http://www.nap.edu/catalog.php?record\\_id=12910](http://www.nap.edu/catalog.php?record_id=12910)

USDA Policy #3: Veterinary Care [http://www.aphis.usda.gov/animal\\_welfare/policy.php?policy=3](http://www.aphis.usda.gov/animal_welfare/policy.php?policy=3)

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## References

<http://www.iacuc.ucsf.edu/Policies/awSPMouseHousingDensity.asp>

Heiderstadt KM, Blizard DA, "Increased juvenile and adult body weights in BALB/cByJ mice reared in a communal nest." [J Am Assoc Lab Anim Sci](#). 2011 Jul;50(4):484-7. <http://www.bu.edu/orccommittees/iacuc/policies-and-guidelines/rodent-breeding-colony-management-mice/>

Hickman DL, MP Swan. "Effects of Age of Pups and Removal of Existing Litter on Pup Survival during Cross-Fostering between Multiparous Outbred Mice." [J Am Assoc Lab Anim Sci](#). 2011 Sept;50(5):641-646.