

Boston University Animal Science Center

MOUSE HOUSING POLICY

Because mice are naturally social animals and usually fare better when housed in groups, it is the policy of the Boston University Institutional Animal Care and Use Committee (IACUC) to house mice in groups of two or more wherever possible. It is the responsibility of the investigator to maintain social housing of their animals. There may be instances when mice are required to be individually housed, either temporarily or permanently. The below descriptions apply to both male and female mice unless otherwise stated.

Protocol Requirements: Mice may require individual housing based upon study design. Investigators are required to provide experimental justification to do so in their IACUC protocol. Once approved, ivory colored *Single Housing Exemption* cards must be placed on the cage stating the approved exemption for individual housing. It is required that additional enrichment be provided to these animals, e.g., nestlet and hut, when social housing is not permissible. Opting out of extra enrichment must also have IACUC approval.

Fighting: Mainly seen in male mice, there are instances when dominance hierarchies are formed within groups, and fighting can occur. BUASC staff will individually house the presumed aggressor animal(s) and notify the investigator via a Health Concern email. In the event the fighting has occurred within a group of female animals, the individually housed female will be labeled as socially incompatible using the ivory-colored *Single Housing Exemption* card and provided two forms of enrichment. Please see below for more information regarding the individual housing policy for male mice.

Veterinary Treatment: Mice may require temporary individual housing in order to provide a treatment for an acute, non-lethal, health concern, e.g., wounding caused by excessive barbering. BUASC staff will temporarily separate the animal to be treated and notify the investigator via a Health Concern email. Once the health concern is resolved, the veterinary care red card will be removed from the cage and replaced with an ivory-colored *Single Housed Notification* card. The female must then be returned to its original home cage by the investigator. In the event a male animal is required to be separated for treatment, he is then required to remain individually housed and may not be re-paired with other males. He may be used for breeding.

Breeding: *Dams:* harem females may be individually housed during pregnancy until postpartum weaning of the pups. At that time, the female must be re-housed in the original harem or housed in a breeding pair with a male. If the female will no longer be used for breeding, she must be housed with another compatible female(s) or euthanized. *Sires:* Individually housed males must remain singly housed and provided enrichment, be re-paired for additional breeding, enrolled into study, or euthanized. *Pups:* Female pups with no same-sex siblings should be co-housed with same strain females of closely matching birth dates wherever possible. Single male pups of a litter may be weaned with like strain and age males of another litter. Breeding colonies managed by ASC Support Services will be weaned according to sex and rack maps updated accordingly. Upon review of rack maps, labs must request housing consolidation for any individually housed pups by contacting Support Services with cage numbers to be combined.

Attrition: Older animals may become individually housed due to separations caused by experimental usage of cage mates or death of cage mates. In both circumstances, the investigator is responsible for

consolidating aged female compatible animals wherever possible. Males may not be consolidated with other aged males.

MALE MICE

Group-housed rodents typically develop dominance hierarchies. Male mice of certain strains (e.g. BALB/c, CD-1, and C57) are reported to have an increased incidence of fighting that can inflict severe wounds on their opponents. In severe cases, mortality may be directly or indirectly caused by fighting.

It is highly recommended that newly received animals be housed in caging groups that are expected to be appropriate for the duration of the housing period. The mixing of unacquainted animals as new cage-mates frequently causes significant stress as the animals establish a new social dominance hierarchy.

Even with the precautions, inter-mouse aggression may subsequently develop in previously “stable” groups of male mice.

To mitigate the occurrences of fighting, reduce experimental variables, and preserve the humane housing of research animals, all BU Researchers and ASC Staff must adhere to the below policy when considering housing male mice in all BUASC spaces.

Housing Male Mice upon Arrival to BUASC

Newly received male mice will be housed by BUASC staff in the same grouping(s) as shipped by the sending institution/vendor.

- Males shipped in separate compartments of the same shipping box or in individual boxes will not be combined upon entry into BUASC facilities.
- Should the investigator require special housing arrangements different from how the mice were grouped at arrival, he/she must provide scientific justification to do so. There must be an IACUC approved exemption to the BUASC housing policy within the protocol under which the animals are covered.

Housing Male Mice Born at BU

Male siblings and conspecifics (aged 3-4 weeks) weaned from their parent cage may be housed together. After 3-4 weeks of age, male mice separated from their siblings may not be re-housed with siblings and/or any other males.

- It is permissible to house a male mouse with any female(s), up to 3 females per harem, for breeding purposes.
- Should a cage of male siblings be flagged as a health concern for fighting, the male aggressor/s will be removed from the cage and housed individually. This cage (or cages if multiple aggressors are found) will be labeled as an “aggressor” and is no longer permitted to be housed with its siblings or with any other male mice. Males housed individually are then required to have two forms of enrichment, e.g., nestlet and hut.
- Should a male mouse in a breeder cage be flagged as a health concern for fighting, the male will be removed from the cage and housed individually. This cage will be labeled as an “aggressor” and is no longer a suitable candidate for breeding with that female mouse. Two forms of enrichment must then be provided to the male.

- Should the investigator require any “aggressor” mice to be re-housed with previous female mice, he/she must provide scientific justification to do so. There must be an IACUC-approved exemption to the BUASC housing policy in the protocol under which the animals are covered.

Animal Cages Flagged for Fighting

Cages flagged for fighting by the BUASC Animal Care Staff will have the “aggressor” male separated at no charge to the investigator. Injured animals will be treated by the ASC staff at the discretion of the Attending Veterinarian or designee. The investigator(s) will be notified via email or phone of the health concern and of the separation, including treatment plan and new cage card information. Once the injured animal/s have healed, it is NOT permissible to re-house the “aggressor” animal with its former cage mates. For instances where the “aggressor” is not easily identifiable (the animal without any wounds), all non-injured animals will be housed individually and provide extra enrichment. The injured animals will remain together. In the event that all animals in a cage are found to have fight wounds, all animals will be housed individually.

Should the investigator require any “aggressor” mice to be re-housed with other mice, he/she must provide scientific justification to do so. There must be an IACUC-approved exemption to the BUASC housing policy within the protocol under which the animals are covered.

NB: should any previously separated animals not covered by an IACUC-approved exemption be housed back together by researchers and be found by BUASC staff, those animals will be separated by ASC for a service fee and the BU IACUC notified.

MICE FOUND INDIVIDUALLY HOUSED BY BUASC STAFF

Cages of singly housed mice of either sex found by BUASC staff during routine daily husbandry or veterinary care that do not have a Single Housing Exemption cage card will be given a Single Housed Notification card. At that time, the animal is provided additional enrichment, unless animals are exempt from extra enrichment per the Treatment Exclusion Form or IACUC protocol. The lab will have 7 days to co-house the mouse with a compatible cage mate, indicate the reason for its isolation via a Single Housing Exemption cage card, or euthanize it. It remains the responsibility of the lab to justify individual housing or socially house the animal as soon as possible.

References

- <https://www.bu.edu/research/ethics-compliance/animal-subjects/housing/asc-rodent-housing-policy/>
- <https://www.jax.org/jax-mice-and-services/customer-support/technical-support/breeding#>

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