

## **Stabilization of Mouse and Rat Breeding Colonies during a Prolonged Disaster or Furlough**

The stabilization and preservation of mouse and rat breeding colonies at the NIH is critical to the mission of our various institutes and centers. Colonies throughout the NIH contain numerous unique and irreplaceable animal models, and our on-going research is the foundation for new discoveries and medical intervention strategies. The goal of colony stabilization is to both preserve on-going research initiatives and to provide an environment for resuming research initiatives in a timely and efficient manner.

In the face of a prolonged disaster or furlough, the ability of any program to stabilize breeding colonies will be limited by that program's available resources (i.e. personnel, space, etc.). In the absence of any critical resource, a program must determine which animals will be preserved and which will be humanely euthanized. The amount of time a program has, before a critical decision must be made, will vary depending upon the resources (i.e. cage space, personnel, etc.) available. In some cases, this may be as short as a few days, while in others cases, weeks or months.

Although stopping all breeding by separating breeders at the start of a disaster or furlough may seem to be the best strategy, this approach can be limited by the number of available empty cages or other resources, resulting in a need to immediately euthanize animals due to space and/or equipment limitations. This approach can also lead to unintentional errors in animal identification and/or loss of critical research data. In addition, resumption of research initiatives following the separation of breeders can be complicated by problems with re-pairing of the animals and the time required to obtain young of the desired age.

***Alternatively, breeding may be allowed to continue and the young weaned as usual until available space or personnel become a limited resource. Once that point is reached, un-weaned animals, determined not to be critical, shall be humanely euthanized in accordance with the "AVMA Guideline for the Euthanasia of Animals" (2013) and applicable NIH ARAC Guidelines. Subsequently, new neonates < 5 days of age will continue to be euthanized until the end of the disaster or furlough period. Neonates of this age range do not have sufficient nervous system development to perceive pain (AVMA Guideline). By allowing breeding to continue throughout a disaster or furlough, the potential for corruption of animal identification and the loss of critical research data, is minimized. In addition, problems with re-pairing breeders are avoided and the required time to resume normal research activities is shortened by weeks or even months.***

For both approaches outlined above, programs should determine, ideally in advance, which lines are most critical to the mission of their institute or center. Plans for dealing with critical lines, lines producing small litters, poor breeders, or lines requiring unique breeding strategies, should be handled on a case-by-case basis. In these unique cases, the line must be allocated the resources needed to ensure their protection.

Holding facilities and animal programs are encouraged to carefully monitor the age of breeding animals throughout any prolonged shutdown period to ensure the integrity of the colony when work resumes. If resources permit, genotyping of potentially transgenic animals should continue. This will allow the preservation of valuable transgenic lines through the culling of nonessential animals, as well as the preservation of valuable resources. Cryopreservation of critical lines is ideal and recommended prior to a disaster or furlough. However, the time required to reconstitute lines makes this approach problematic on a large scale following a disaster or furlough.

Animals euthanized during a disaster or furlough must be tracked against their approved Animal Study Protocol. Following a prolonged disaster or furlough, Animal Care and Use Committees (ACUC) should evaluate the number of animals euthanized due to the disaster or furlough and, if required, adjust the number of animals approved on an ASP accordingly.