ACUC Approval Date: 12/11/07 **NIMH Guideline # G3**

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TITLE: Harem Breeding In Mice

SCOPE: This policy governs the use of harem breeding strategies in mice maintained in support of the NIMH intramural research program, regardless of their holding location.

I. Purpose

A. This policy addresses the use of harem breeding strategies in mice throughout the NIMH DIRP. The policy is designed to establish parameters which ensure:

1. Maximum breeding efficiency
2. Maximum survival of offspring
3. Efficient space utilization
4. Facilitation of research goals

B. In addition, this policy establishes standards which prevent overcrowding, as well as performances standards by which to judge the effectiveness of the program.

II. Background

A. The majority of the mice used in support of the NIMH DIRP are unique strains/lines which have been genetically modified. Past experience has demonstrated that many of these animals produce smaller litters then wild type animals, are often poorer breeders than wild type animals and the dams can be poor milk producers. For over twelve years, The NIMH has been using harem breeding strategies to address these issues.

B. For the purpose of this policy, harem breeding is defined as the permanent housing of two females and one male within the same cage. The permanent housing of the trio together facilitates a higher breeding efficiency by permitting breeding at the first post partum estrus occurring shortly after parturition. In addition, harem breeding can facilitate cross fostering of the young and thereby minimizing the impact of a poor lactation.

C. Since the implementation of harem breeding strategies, investigators have reported increased breeding efficiency, as judged by the number of litters produced, as well as an increased survivability of young. These observations are not restricted to NIMH investigators alone, but rather have been reported by numerous investigators throughout various ICs at NIH, working with a wide range of strains, lines and unique constructs. Except for the potential for cage overcrowding, to date there have been no negative reports related to the implementation of harem breeding strategies within the NIMH.

III. Animal Numbers

A. In order to prevent cage overcrowding, most programs have developed either engineering or performance standards to address the issue. Experience has demonstrated that a combination of the two approaches has proven the most efficacious. Many programs at the NIH utilize a “Fourteen Heads – Fourteen Days” policy.

B. As an engineering standard, on day fourteen postpartum the maximum number of animals permitted in the cage is fourteen. This includes the three adults (one male, two females) and up to eleven pups whose birthdays are not more than 7 days apart.

C. Separation of the litter on day fifteen, rather than at an earlier date is facilitated by the fact that by fourteen days postpartum most pups are supplementing their milk diet with solid food. Therefore, if one of the dams is a poor milk producer, the negative impact of separating the litter and placing some of the pups solely with the poorly lactating female is minimized.

D. As a performance standard, harem breeding cages are monitored by both facility and investigative personnel. Animals are visually monitored for health, welfare, “normal” growth and development. To date, the maximum cage densities advocated above have not adversely impacted either the animals or research.

IV. NIMH Harem Breeding Policy

A. Harem breeding is approved throughout the NIMH DIRP regardless of the animal’s housing location.

B. On day fourteen postpartum for the oldest litter in the cage, the maximum number of animals permitted in the cage is fourteen.

C. If, on day fourteen, there are more than fourteen animals in the cage, the litters/cage must be separated on day fifteen.

1. Ensure that when separating the litters/cage that all pertinent information from the original cage card is included on the cage card for the newly separated cage.

2. Ensure that a lactating female is present in each cage containing a litter.

D. The use of ventilated caging systems is recommended. When using non-ventilated, bonneted cages, the cages must be cleaned a minimum of twice a week.

F. Harem breeding units with pups must be carefully monitored by both facility and investigative personnel. Care must be taken to adequately monitor the pups for growth rate, health, welfare and “normal” growth and development.

G. Any observed problems should be reported to both the Facility and NIMH veterinarians for further assessment and, if required, treatment.

H. Conditions determined to be related to harem breeding or cage densities shall be reported to the NIMH ACUC for evaluation and consideration.