

I. Social Grouping

A. Overview

The cornerstone of the University of Illinois at Chicago's (UIC) Nonhuman Primate (NHP) Enrichment Plan is social grouping. All measures are taken to socially house NHPs in pairs or groups, in accordance with Section 3.81(a) of the Animal Welfare Standards, when stable pairs can be established or unless otherwise exempt due to veterinary or scientific reasons (see exemptions and exceptions). Within the UIC NHP Environmental Enrichment Plan, two levels of social grouping exist and include (1) tactile contact, defined as contact through mesh or slats, and (2) full contact, defined as unrestricted physical contact to a conspecific. NHPs exempt from tactile and full contact still maintain auditory, visual, and olfactory contact with conspecifics.

B. Social Grouping Process

The time period to achievement of social grouping is variable and dependent upon the individual animal's level of aggression, age, and prior social history. The process used at UIC for social grouping is based on the recommendations in the Animal Welfare Institute's publication entitled *Safe Pair Housing of Macaques*. The UIC stepwise process includes a period of observation to assess dominance hierarchies and an introductory period of tactile contact between potential pairs where compatibility is further assessed. The final intent is to produce full contact pairs after a successful introductory period; however, the UIC NHP Environmental Enrichment Plan recognizes that some animals may never reach full contact. To maintain desired social groupings, established pairs are checked at regular intervals. While this process may lengthen the time period before full contact, an extended assessment period is necessary to properly evaluate pair compatibility and minimize injury due to incompatibility.

C. Temporary Exemptions from Social Grouping

During certain periods, NHPs are temporarily exempt from social grouping. Specifically, these periods include:

1. Quarantine—The disease status of newly acquired animals is not definitively known, and thus, social grouping is avoided to prevent the possibility of infectious disease transmission. NHPs are monitored during this period to assess dominance hierarchies.
2. Post-operative period—Monitoring of the NHP's food/water intake, urinary/fecal output, activity, and posture during the post-operative period is necessary to assess post-operative condition and can only be performed accurately with singly housed animals. Additionally, a NHP may be temporarily debilitated from a surgical procedure and separated from its cagemate to avoid inter-animal aggression. For these reasons, NHPs are temporarily exempt from full contact (but not tactile contact) after any major surgical procedure. Veterinary monitoring is performed regularly during this period, and the NHP is returned to full contact after release from post-operative monitoring by the veterinarian.
3. Anesthetic recovery—An unconscious animal is unable to defend itself from its conspecific, and for this reason, all NHPs are exempt from full contact during anesthetic recovery. Previous full contact is restored once the animal is fully recovered from anesthesia.
4. Medical management—Certain medical cases (diarrhea, anorexia, urinary obstruction, etc.) require monitoring of an individual animal's fecal/urinary output and/or feed/water consumption. Full contact could impede the veterinarian's ability to evaluate response to therapy and treatment of the condition. As a result, NHPs under medical management are exempt from full contact but will maintain tactile contact with their partner. These cases are

regularly monitored by the veterinarian and full contact is restored once the condition has resolved.

5. Isolation—Only during extreme circumstances, such as an individual who presents with a naturally acquired, contagious disease, is complete isolation (lack of visual, auditory, olfactory, and tactile contact to conspecifics) considered for the maintenance of a NHP. This situation is extremely rare, and the NHP is given additional non-social enrichment during the period of isolation.

II. Environmental Enrichments

NHPs are provided with combinations of cage enrichment strategies that may include:

A. Increased Cage Complexity

1. Manipulada, which may include branches of nontoxic tree species, hanging plastic or metal toys, mirrors, durable chew toys, and hard plastic balls
2. Perches

B. Foraging and Food Enrichment

1. NHPs receive a variety of foodstuffs in addition to their daily diet of primate biscuits, which may include seasonal fruits and vegetables, Softies®, and human food treats.
2. NHPs receive a foraging mixture consisting of a variety of seeds, dried fruit, and dry dog food several times each week.
3. Species specific foraging behavior is encouraged by the use of foraging devices.
4. Several times a month, NHPs receive a novel food enrichment item which may include seasonal foods (green onions, radishes, melons, oranges, holiday candies, etc.), treats (frozen juice popsicles, popcorn balls, etc.), or novel foraging toys (cardboard tube containing treats).

C. Audio and Visual Enrichment

1. NHPs in the conditioned colony are exposed daily to environmental sounds, such as rainstorms or jungle sounds, and music.
2. Animated videos are used for visual and auditory enrichment in responsive species.

III. Special Considerations

Certain NHPs are provided special attention regarding enhancement of their environment as outlined below.

- A. Infant and young juvenile animals are grouped, after a brief conditioning period, with peer-aged conspecifics and adult conspecifics whose history is (are) compatible with that role.
- B. NHPs exhibiting abnormal behavior defined as deleterious quantitative and/or qualitative behavioral pathologies (i.e. self injurious behavior, stereotypic behaviors, etc.) are evaluated and monitored on a case-by-case basis by the veterinarian and a treatment plan is developed.
- C. NHPs that are isolated due to contagious disease receive increased cage complexity and audio/visual enrichment as stated under section II “Environmental Enrichment” of the UIC NHP Environmental Enrichment Plan. Positive human interactions, such as feeding of treats, are provided daily if the contagious disease is not of zoonotic concern.
- D. Great apes are not maintained at UIC.

IV. Restraint Devices

All NHPs restrained for more than 12 hours are managed in accordance with UIC Policy for Prolonged Restraint and must receive a minimum of one continuous hour of unrestrained activity per day.

IV. Exemptions

The attending veterinarian or institutional Animal Care Committee (ACC) may exempt an individual NHP from participation in the UIC NHP Environmental Enrichment Plan for the following reasons.

- A. Overt and repeated aggression—If repeated attempts at social grouping fail, resulting in injury to pair conspecifics, the aggressor NHP is exempt from social grouping. NHPs exempt from social grouping for aggression will maintain visual, auditory, and olfactory contact to a group of conspecifics.
- B. Debilitation—NHPs that are debilitated due to a disease condition (whether natural or protocol induced) or age are exempt from full contact (but not tactile contact) as determined by the veterinarian.
- C. Scientific Reasons—The ACC may grant selective participation in the UIC NHP Environmental Enrichment Plan for scientific reasons as set forth in the UIC Protocol for Animal Use. Requests for exemptions from the UIC NHP Environmental Enrichment Plan are reviewed annually by the ACC. Upon completion of the exemption period, the NHP is returned to social grouping.

V. References

Animal Welfare Regulations. 2008. 9 CFR § 3.81

Carlson, Jodi. 2008. *Safe Pair Housing of Macaques*. Washington, (DC): Animal Welfare Institute.

Reinhardt V, Reinhardt A. 2001. *Environmental Enrichment for Caged Macaques*. Washington, (DC): Animal Welfare Institute.