Albert Einstein College of Medicine

Primate Enrichment Policy

I. Purpose

The purpose of this Policy is to provide guidelines for promoting the psychological well-being of non-human primates.

II. Scope

This Policy applies to all research experiments and programs at Einstein.

III. Policy

The Institutional Animal Care and Use Committee (IACUC) recognizes that the body of knowledge regarding the environmental enrichment of non-human primates is complex and ever changing. As new methods are developed, this policy for environmental enrichment shall be modified accordingly. The needs of each individual non-human primate shall be addressed and, where possible, changes instituted to benefit the animal.

A. General Considerations

Sufficient space appropriate for the species shall be provided in their primary enclosures. Animals shall be able to accomplish the full range of normal postural movements.

Unless exempted for health reasons by the attending veterinarian or for research or other considerations by the IACUC, socially compatible non-human primates will be group or pair housed. Care shall be exercised to house socially compatible animals in a manner consistent with species typical behavior that allows for adequate access to veterinary care and minimizes serious injury. Social compatibility will be carefully evaluated by the Veterinary Care staff using a system of observations and graduated conditions for social interactions in a controlled environment.

Each non-human primate shall have access to various stimuli, including non-toxic objects such as soft toys, balls, and non-breakable mirrors. These objects shall be periodically evaluated to determine those that appear to be most interesting to individual animals, and changed as necessary to provide novelty.

For individually housed monkeys, at least one of the following methods shall be used for enrichment:

- Cages will be positioned to allow visual, auditory, olfactory, and limited tactile contact between compatible individuals.
- Daily positive interaction will occur with caretaker(s) and other authorized persons. This includes provision of small food treats as permitted within research protocol constraints.
- Primates will be given periodic access to task-oriented feeding devices (e.g., puzzle feeders).

B. Special Considerations

1. **Solitary non-human Primates (one animal per room)**: We try to avoid this situation. On rare occasions, however, primates must be housed alone in a room due to quarantine or other IACUC-approved experimental constraints. Solitary animals do not have visual or other social contact with other non-human primates. Therefore, in addition to daily positive interactions with animal care staff and provision of inanimate novelties, attempts to enhance the psychological well-being of these animals will include placement of primary housing near windows or a wall mirror (if available) so that the animal may have visual stimulation.

   Solitary animals will be given a mirror, radio, or television for companionship. Television/Visual & Auditory stimulation: Television monitors and DVD/VHS players are provided in the NHP rooms to provide diversion & stimulus diversity. Recorded (NHP-appropriate) presentations are played daily during the 5-day work week.

2. **Individually housed (one animal per cage): Quarantine.** Quarantine is necessary to determine the health status of newly acquired non-human primates and to protect the health of animals and caretakers in the facility. We typically procure multiple animals at a time to avoid solitary housing. We attempt to obtain non-human primates that are known to be socially compatible. However, this is not always possible. Animals arriving into quarantine are singly housed while they undergo serial health testing (e.g. TB tests) and until their social compatibility can be fully assessed by our Veterinary Care personnel.

3. **Individually Housed Macaque Species in Neurophysiology Studies (one animal per cage)**: Primates on neurophysiology studies undergo behavioral training and conditioning, water restriction/scheduling, and surgery to implant cranial hardware (posts, chambers, electrode arrays).

   Fighting, aggressive grooming, and aggressive sexual behavior could lead to severe psychological distress and physical injury that could ruin or disrupt the experimental work. The risk is especially high following surgery when one monkey has a head implant that can become infected or become loosened by an overly attentive cage mate. Even under close human supervision, the possible need for human intervention to stop potentially injurious behaviors by the animals incurs unacceptable health and safety risks to the human. Nevertheless, in close cooperation and coordination with investigators, attempts will be made to allow socially compatible animals to be co-housed to the extent possible within the constraints of the experimental paradigm. For example, individual animals being conditioned for or on experiments will be on water restrictions or water rationing protocols at various times, requiring the restricted animal to be single housed at that time. During periods of ad lib water access, these animals may be able to rejoin their cage mate. Scheduling access to social housing under these circumstances will be the responsibility of the investigator.

   Decisions regarding which primates are housed in adjacent cages or in specific rooms will be made jointly by the veterinary care staff and the investigators taking into account social compatibility, the intended experimental use, logistical and other research considerations. Such arrangements may at times result in an animal having to be singly housed.

a. Adequate exercise: Macaque species are housed in large modular caging units that exceed minimal space requirements for this species. Animals are given equal access to the activity module adjoining their home cages. We alternate access to the activity module during the 5-day work-week such that each monkey has the access to the activity module every other day.

b. On weekends, access to the activity module is alternated every other weekend when two animals share an activity module, and every third weekend when three animals share an activity module. Adequate social interaction. The cages allow monkeys to have direct visual and auditory contact with their neighbors. Cages will be positioned in the rooms so that the monkeys can see one another as much as is possible. The plexiglass dividers or the finger holes in between cages on each bank of caging will be set up so that side by side monkeys can interact as much as possible without allowing harmful physical contact that could damage their implants.

c. Direct Social Interaction with humans: Non-human primates will have frequent direct social interaction with the caretakers (daily), veterinary staff, and laboratory personnel as they undergo extensive behavioral training and conditioning as part of the experimental paradigm. Interactions involve safe socially interactive play activities such as grooming and distribution of small food items (treats) by hand.

d. Dietary enrichment: In addition to their daily ration of monkey biscuits, a variety of fresh or dried fruits/vegetables are provided (e.g. apples, oranges, bananas, baby carrots, lettuce, etc.). Additional preferred food treats, including nuts, seeds, are provided, too. These foods are given ad libitum also, in the immediate postoperative period to further stimulate appetite. Food treats are either given by hand, provided in the feeder with the regular ration, or placed in puzzle feeders or on foraging boards to enhance interest and activity. Treats (e.g. candies, peanut butter) are used extensively during behavioral training and electrophysiological recording sessions as positive reinforcement (rewards). Because the scientific protocols usually require that food intake be controlled so that behavioral motivation is not diminished, during periods (weeks to months) that monkeys will be undergoing series of behavioral training and recording sessions, all food supplements (fruits, treats, etc.) are provided only by the research laboratory personnel.

e. Behavioral stimulation: In addition to access to the activity module, each monkey is provided with several enrichment products (toys) in its home cage. These include a variety of toys specifically designed for primates, as well as human toddler's toys. Toys are rotated among the animals regularly, after adequate washing and sanitation. Periodically, food puzzles or foraging boards are provided to increase foraging-like activity.

f. Visual stimulation is provided by mirrors (hand–held) or wall mounted facing the animal cages. At various times a radio or sound machine is played to provide auditory stimulation. Television monitors and DVD/VHS players are provided in the NHP rooms to provide diversion and stimulus diversity. Recorded (NHP-appropriate) presentations are played during the 5-day work week.

4. **Infants and young juveniles (Macaque species).** Infants are not used at Einstein. If studies with these animals are proposed, specific plans will be developed and incorporated into this Policy.

5. **Macaques showing signs of being in psychological distress through behavior or appearance.** Should any monkey exhibit signs of being in psychological distress (stereotypical behavior, aggression, social withdrawal, self-mutilation, etc.) it will be evaluated by the attending veterinarian, or their designee, and in consultation with the investigator a plan for intervention developed. Interventions are developed and evaluated on a case-by-case basis and could include altering the social environment, more intensive positive interactions with human caregivers, trying other types of cage enrichment (toys, foraging puzzles, etc.), and pharmacologic treatments, or a combination of interventions. If the animal does not improve with these interventions such that a humane endpoint is reached, or if these interventions would abrogate the investigators ability to achieve research goals, then the animal would be euthanized.

6. **Macaca used in research for which Committee-approved protocol requires restricted Activity.** Currently there are approved protocols for cognitive studies in which animals are restrained in a chair for several hours. During this time however, the monkeys are engaged actively in non-stressful behavioral tasks with positive rewards (treats). The training/task-oriented behavior itself is viewed as a positive interaction with humans.

IV. Definitions

None.

V. Effective Date

Effective as of: 2 March 2021

VI. Policy Management and Responsibilities

Einstein's Institutional Animal Care and Use Committee (IACUC) is the Responsible Office under this Policy. The Institutional Official for the IACUC is the Responsible Executive for this Policy. The IACUC Chairperson is the Responsible Officer for the management of this Policy.

VII. Approved (or Revised)

	03/02/2021
Institutional Official	Date