

1. PURPOSE

The intent of this Standard Operating Procedure (SOP) is to describe an appropriate environmental enrichment program for non-human primates (NHPs).

2. RESPONSIBILITY

Facility Animal Care Committees (FACC), veterinarian, principal investigators (PIs), animal care staff

3. CONSIDERATIONS

- 3.1. The purpose of environmental enrichment is to provide non-human primates with opportunities to express basic behavior needs, to promote species-typical, non-injurious, behavior and to promote physical and mental health thus enhancing animal welfare. Environmental enrichment should be biologically relevant, i.e., allow for hiding, socializing, searching, so that it does not lose its enriching value over time.
- 3.2. The environmental enrichment program must be approved by a veterinarian. This includes enrichment provided within the animal facility, provided as part of an Animal Use Protocol (AUP), or provided in Alternative Locations for Procedures and Housing of Animals (ALPHA) locations.
- 3.3. Deviation or exemption from this environmental enrichment program must be scientifically justified in the AUP and approved by the FACC or prescribed for medical reasons by a veterinarian.

4. PROCEDURES

4.1. Social Contact:

- 4.1.1. Pair or group house non-human primates in conditions that allow full contact with compatible animals.
- 4.1.2. When animals are removed from social housing for a particular component of an experimental protocol (e.g., behavioral testing), it should be for the minimum duration required; the animals should be returned to their housing promptly following completion of the session. Such procedures must be described in the AUP and approved by the FACC.
- 4.1.3. Non-human primates may be singly housed with strong scientific, welfare, or medical justification:
 - 4.1.3.1. Incompatibility
 - 4.1.3.2. Medical reasons
 - 4.1.3.3. Specific protocol approved by the FACC
- 4.1.4. At a minimum, primates must be able to have visual, olfactory, and auditory interaction with conspecifics while maintaining the capacity to remove themselves from visual contact when they want by way of barriers and/or privacy panels.

4.2. Housing System:

- 4.2.1. Animals should be housed with the goal of maximizing species-specific behaviors, minimizing stress-induced behaviors, providing opportunity for social contact and locomotor (e.g., walking, climbing, leaping) and sleep in a normal manner. Cages should be of a sufficient size and complexity to allow primates to be housed in appropriately sized groups and to perform behaviors important to their welfare.
- 4.2.2. House non-human primates preferably in cages favoring higher vertical spaces, maximizing the use of the cage volume with perches, swings, ropes, platforms, nests, etc. at different levels.
- 4.2.3. Provide regular opportunity for exercise, unless specifically described in the animal use protocol and approved by the FACC.
- 4.2.4. Provide sufficient perching space at different levels within the upper area of the housing unit to accommodate all the animals.

- 4.2.5. Housing system should meet or exceed the minimal space and height recommendations in the Canadian Council on Animal Care (CCAC) Guidelines for Nonhuman Primates. Refer to Appendix 1 - Nonhuman primate housing system assessment tool.
- 4.3. Dietary Enrichment:
 - 4.3.1. Provide foraging opportunities daily.
 - 4.3.2. Increase time spent eating, gathering, and processing food with modified feeders, foraging devices, or by placing small foods in bedding or other floor substrates.
 - 4.3.3. Provide a variety of fresh vegetables and fruits (in small quantities) daily. Vegetables should be thoroughly rinsed prior to use.
 - 4.3.4. Give treats as reward for positive reinforcement.
- 4.4. Materials
 - 4.4.1. All objects must be safe and non-toxic.
 - 4.4.2. Natural substrates such as wood are preferred, and maple, beech, and oak are all considered appropriate.
 - 4.4.3. Any object or structure should be sanitized before use and sanitized or replaced regularly to minimize risks associated with physical injury and microbiological burden, with consideration to their use for scent marking.
 - 4.4.4. Natural material, e.g., wood, that will retain scent marks should be provided for New World species such as marmosets.
- 4.5. Environmental enrichment devices:
 - 4.5.1. Introduce new objects regularly, rotating according to a schedule.
 - 4.5.2. Objects provided should link to strong natural behaviors, such as eating, foraging, grooming, or locomotion and postural movements.
 - 4.5.3. Select items with a variety of textures and items that can be manipulated and modified such as mirrors, logs, branches, paper and cardboard boxes.
 - 4.5.4. Swings, ladders, play and resting structures, porches, hammocks, pools, nest boxes may be provided.

5. REFERENCES

- 5.1. [Canadian Council on Animal Care \(CCAC\) guidelines: Nonhuman primates, 2019.](#)
- 5.2. Jennings, M., Prescott, M. J., Members of the Joint Working Group on Refinement (Primates), Buchanan-Smith, H. M., Gamble, M. R., Gore, M., Hawkins, P., Hubrecht, R., Hudson, S., Jennings, M., Keeley, J. R., Morris, K., Morton, D. B., Owen, S., Pearce, P. C., Prescott, M. J., Robb, D., Rumble, R. J., Wolfensohn, S., & Buist, D. (2009). Refinements in husbandry, care and common procedures for non-human primates: Ninth report of the BVA/WF/FRAME/RSPCA/UFAW Joint Working Group on Refinement. *Laboratory animals*, 43 Suppl 1, 1–47. <https://doi.org/10.1258/la.2008.007143>

SOP REVISION HISTORY

DATE	NEW VERSION
2024.07.09	<p>3. CONSIDERATIONS</p> <p>3.1. The purpose of environmental enrichment is to provide non-human primates with opportunities to express basic behavior needs, to promote species-typical, non-injurious, behavior and to promote physical and mental health thus enhancing animal welfare. Environmental enrichment should be biologically relevant, i.e., allow for hiding, socializing, searching, so that it does not lose its enriching value over time.</p> <p>3.2. The environmental enrichment program must be approved by a veterinarian. This includes enrichment provided within the animal facility, provided as part of an Animal Use Protocol (AUP), or provided in Alternative Locations for Procedures and Housing of Animals (ALPHA) locations.</p> <p>3.3. Deviation or exemption from this environmental enrichment program must be scientifically justified in the AUP and approved by the FACC or prescribed for medical reasons by a veterinarian.</p>
2024.07.09	4.1.1. Pair or group house non-human primates in conditions that allow full contact with compatible animals.
2024.07.09	4.1.2. When animals are removed from social housing for a particular component of an experimental protocol (e.g., behavioral testing), it should be for the minimum duration required; the animals should be returned to their housing promptly following completion of the session. Such procedures must be described in the AUP and approved by the FACC.
2024.07.09	4.1.4. At a minimum, primates must be able to have visual, olfactory, and auditory interaction with conspecifics while maintaining the capacity to remove themselves from visual contact when they want by way of barriers and/or privacy panels.
2024.07.09	4.2.4. Provide sufficient perching space at different levels within the upper area of the housing unit to accommodate all the animals.

2024.07.09	4.2.5. Housing system should meet or exceed the minimal space and height recommendations in the Canadian Council on Animal Care (CCAC) Guidelines for Nonhuman Primates. Refer to Appendix 1 Nonhuman primate housing system assessment tool.
2024.07.09	4.4. Materials 4.4.1. All objects must be safe and non-toxic. 4.4.2. Natural substrates such as wood are preferred, and maple, beech, and oak are all considered appropriate. Sanitize items before use. 4.4.3. Any object or structure should be sanitized before use and sanitized or replaced regularly to minimize risks associated with physical injury and microbiological burden, with consideration to their use for scent marking. 4.4.4. Natural material, e.g., wood, that will retain scent marks should be provided for New World species such as marmosets.
2024.07.09	4.5. Environmental enrichment devices:
2024.07.09	4.5.1. Introduce new objects regularly, rotating according to a schedule.
2024.07.09	4.5.3. Provide and rotate toys with Select items with a variety of textures regularly, e.g., Kong toys, wooden blocks, balls, mirrors, cardboard boxes, etc. and items that can be manipulated and modified such as mirrors, logs, branches, paper and cardboard boxes. Select items that can be manipulated and modified such as paper, cardboard, or wood.
2024.07.09	4.5.4. Swings, ladders, play and resting structures, porches, hammocks, pools, nest boxes may be provided.
2024.07.09	3.6 Other environmental enrichment items:
2024.07.09	5.2 Jennings, M., Prescott, M. J., Members of the Joint Working Group on Refinement (Primates), Buchanan-Smith, H. M., Gamble, M. R., Gore, M., Hawkins, P., Hubrecht, R., Hudson, S., Jennings, M., Keeley, J. R., Morris, K., Morton, D. B., Owen, S., Pearce, P. C., Prescott, M. J., Robb, D., Rumble, R. J., Wolfensohn, S., & Buist, D. (2009). Refinements in husbandry, care and common procedures for non-human primates: Ninth report of the BVAAWF/FRAME/RSPCA/UFAW Joint Working Group on Refinement. <i>Laboratory animals</i>, 43 Suppl 1, 1–47. https://doi.org/10.1258/la.2008.007143