ENVIRONMENTAL ENRICHMENT PROGRAM FOR RODENTS AND RABBITS

1. PURPOSE

1.1. The purpose of this Animal Care and Use Procedure (ACUP) is to describe the methods to provide an environmental enrichment program for rodents and rabbits. This ACUP is intended for use by all mouse users. This ACUP is approved by the Cornell Institutional Animal Care and Use Committee (IACUC). Any deviation must be approved by the IACUC prior to its application.

2. SCOPE

2.1. This ACUP is intended for Principal Investigators (PI's) and anyone caring for rodents and rabbits.

3. INTRODUCTION

3.1. The purpose of environmental enrichment is to provide rodents and rabbits with the opportunity to fulfill and express basic, non-injurious behavioral needs that are typical to the species. Meeting these behavioral needs by providing a biologically relevant environment (i.e., opportunity to hide, socialize, and forage) will optimize physiologic and psychological well-being, thereby enhancing animal welfare. Introduction of novel enrichment materials must be approved by the investigator and the facility veterinarian before introduction.

3.2. Contact Center for Animal Resources and Education (CARE) at Cornell University by e-mailing care@cornell.edu for more information or for assistance.

4. MATERIALS AND EQUIPMENT

4.1. PVC tubes
4.2. Nesting material
4.3. Forage material
4.4. Shelter
4.5. Plastic chew bones (e.g., Nylabones)
4.6. Dietary supplements
4.7. Running wheels
4.8. Hard wood blocks

5. PROCEDURE

5.1. All Species

5.1.1. Social Contact

5.1.1.1. Pair or group-house mice and rats.
5.1.1.2. Rodents or rabbits may be singly housed in some cases, including:

5.1.1.2.1. Incompatibility due to aggression (e.g. breeding age males)
5.1.1.2.2. Medical conditions
5.1.1.2.3. Pregnant females predisposed to peripartum complications (e.g., cannibalization)
5.1.1.2.4. Protocol approved by IACUC

5.1.1.3. In cases where social species are singly-housed, extra enrichment should be considered as this may alleviate stress that can occur from asocial housing.

5.2. Mice, Grasshopper Mice, Rats, Hamsters, and Voles

5.2.1. Housing System

5.2.1.1. House animals in solid-bottom cages with contact bedding, unless specifically described in a protocol and approved by the IACUC.
5.2.1.2. Provide cages that are appropriate in size for the number of rodents housed in them. Refer to the recommendations set in Table 3.2 (page 57) of the Guide for the Care and Use of Laboratory Animals (8th Ed).
5.2.1.3. Refer to Section 9. Appendix in ACUP 513 Rodent Breeding and Husbandry, for guidelines on trio breeding space recommendations for mice.

5.2.2. Dietary Enrichment

5.2.2.1. Dietary enrichment is not routinely provided unless approved by CARE vet or in the approved protocol.
5.2.2.2. Provide mice, grasshopper mice, rats, and voles with dietary supplementation as approved by PI and the facility vet.

5.2.3. Objects

5.2.3.1. Nesting Material

5.2.3.1.1. Provide at least one type of nesting material (e.g. Nestlet, Envirodry, shredded aspen) in every cage.
5.2.3.1.2. During cage-change, transfer the nest to the clean cage with the animals, with additional nesting material, and provide a new shelter if necessary.

5.2.3.2. Supplemental Material

5.2.3.2.1. Provide at least one of the following:

5.2.3.2.1.1. Shelter
5.2.3.2.1.2. Tube (e.g., PVC pipe)
5.2.3.2.1.3. Running wheel
5.2.3.2.1.4. Plastic chew bones (e.g., Nylabones)
5.2.3.2.1.5. Hard wood block

5.3. Guinea Pigs and Rabbits

5.3.1. Dietary Enrichment

5.3.1.1. Provide hay daily.
5.3.1.2. Intermittently (e.g., 3 times weekly) provide fresh leafy vegetables, as approved by PI and facility vet. Rinse vegetables thoroughly prior to use.

NOTE: Document all non-hay enrichment provided. Fruit and carrots are high in calories and should therefore not be routinely provided. Rinse vegetables thoroughly prior to use.

5.3.2. Objects

5.3.2.1. Provide at least one form of enrichment in all cages (e.g., metal or plastic chains or rings mounted on the cage side).
5.3.2.2. Provide a shelter (e.g., large diameter PVC pipe).

5.4. African Pouched Rats

5.4.1. Dietary Enrichment

5.4.1.1. Intermittently (e.g., 3 times weekly) provide fresh fruits, vegetables, and / or seeds, as approved by PI and facility vet.

5.4.2. Objects

5.4.2.1. Nesting Material

5.4.2.1.1. Provide clean, shredded newspaper in every cage. Newspaper should be changed as necessary (i.e. when soiled).

5.4.2.2. Housing Material
5.4.2.2.1. Provide a metal stovepipe for housing. Stovepipes should be changed out at a minimum weekly.

5.4.2.3. Supplemental Material

5.4.2.3.1. May be provided at the discretion of the PI and facility vet. (e.g., PVC pipe, Plastic chew bones).

5.4.2.4. Supplemental Activities

5.4.2.4.1. Clicker training may be used as a form of positive reinforcement and enrichment.

6. PERSONNEL SAFETY

6.1. Medical Emergencies: CALL 911.

6.2. When working with animals wear appropriate PPE, observe proper hygiene, and be aware of allergy, zoonosis, and injury risks. Refer to the CARE Occupational Health and Safety webpage for more information.

7. ANIMAL RELATED CONTINGENCIES

7.1. Post contact information for emergency assistance in a conspicuous location within the animal facility.

7.2. Emergency veterinary care is available at all times including after working hours and on weekends and holidays by calling the CARE pager (1-800-329-2456).

7.3. Non-emergency veterinary questions and requests for care, email CARE veterinary staff at care@cornell.edu.

8. REFERENCES


http://www.nap.edu/openbook.php?record_id=12910

8.3. Making Lives Easier for Laboratory Animals, Animal Welfare Institute (AWI), 2007:

8.4. ACUP 513 Rodent Breeding and Husbandry:
https://ras.research.cornell.edu/care/documents_k/ACUPs/ACUP513.pdf

8.5. ACUP 707 Animal Related Injury:
https://ras.research.cornell.edu/care/documents_k/ACUPs/ACUP707.pdf

8.6. ACUP 715 Personal Protective Equipment:
https://ras.research.cornell.edu/care/documents_k/ACUPs/ACUP715.pdf

8.7. CARE Occupational Health and Safety webpage:
https://ras.research.cornell.edu/care/OHS.html
9. APPENDIX

9.1. None

10. HISTORY

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>03 MAY 18</td>
<td>Most Recent Annual Review – Reviewed by: J. Wright</td>
</tr>
<tr>
<td>23 MAY 16</td>
<td>New Format – Converted by: J. Kirby</td>
</tr>
<tr>
<td>20 NOV 14</td>
<td>Revised – Revision Author: Dr. B. Noe; Referee: Dr. T. Pavek</td>
</tr>
<tr>
<td>15 DEC 11</td>
<td>Revised – Revision Author: D. Mooneyhan</td>
</tr>
<tr>
<td>28 FEB 05</td>
<td>New Issued – Original Author: Dr. J. Gourdon</td>
</tr>
</tbody>
</table>