1. PURPOSE

This document provides information regarding the social housing and environmental enrichment of laboratory mice and rats used for research, teaching, or other purposes at Carleton University.

To define environmental enrichment for rodents, including various ways to “facilitate the expression of species-typical behaviour and promoting psychological well-being through physical exercise, manipulative activities or cognitive challenges”

2. CONSIDERATIONS/NOTES

2.1. Laboratory housing conditions can deprive animals the possibility of performing a full repertoire of normal behavior. As a response to this lack of stimulation animals may show abnormal behaviors, such as stereotypies or passiveness (Smith & Taylor, 1995).

2.2. Non-enriched housing for rodents (e.g., a shoe box-type cage using only corn cob bedding) restricts various behaviors (O’Donoghue, 1993) and it is recommended that the cage environment should be improved to cater for physiological and ethological “needs” such as resting, grooming, exploring, hiding, searching for food, and gnawing.

2.3. Social interactions are an important factor in the overall well-being of laboratory animals. Rats and mice are considered social species, and should be maintained in social groups whenever possible. If there is a requirement to keep them individually housed, the provision of environmental enrichment becomes even more important.

2.4. Changes to the animal's environment, including social housing and environmental enrichment, can alter both physiological and behavioral responses in research animals. Such changes can result in undesirable variation between animals or groups of animals that can confound data collection, interfere with the interpretation of research results, and/or lead to false conclusions.

2.5. The Principal Investigator (PI) has the option to request exemption from these guidelines for specific situations based on scientific justification. Such requests will be considered for approval by the ACC.

3. PROCEDURE

3.1. If a protocol exception to limit or exclude enrichment or social housing is to be included in an ACC submission, the PI should consult with veterinary staff during protocol development to discuss the special circumstances that might limit social housing or participation in the enrichment program.

3.2. The PI will need to include the specific study requirements and scientific justification for the exemption request in the ACC protocol, including the duration of single housing and/or the EE exemptions.

3.3. Enrichment Devices

3.3.1. There are an assortment of enrichment devices and treats. These may include wooden chew sticks, Nyla bones, nesting material, plastic tubes, igloos or other devices that fit in the cages without crowding the animals and can be either discarded at cage change or sanitized.

3.4. If novel enrichment is involved as part of particular research studies, this will be the responsibility of the research personnel.

3.5. If a PI has received approval in a protocol that the mice and/or rats on study will receive edible treats for enrichment, this is best given by the PI or research staff as part of the study.
3.5.1. The administration of these edible treats should be clearly documented in the animal’s records.

3.6. Mice

3.6.1. Compatible mice will be pair- or group-housed if space and body weight allows.

3.6.1.1. Males from aggressive backgrounds (e.g., BALB/c, FVB, etc.), however, may require individual housing since they may show aggression towards other males.

3.6.1.2. Housing in groups of three-four and providing nesting material that is handled appropriately during cage changing is a recommended option to maximize success when housing male mice.

3.6.2. If scientifically justified in an approved ACC protocol, mice may be individually housed in specific situations outlined in the ACC protocol.

3.6.2.3. When possible (depending on the caging system used) individually housed mice should be provided housing that allows visual, auditory and olfactory contact with other mice.

3.6.2.4. Certain medical or compatibility conditions may require that mice be individually housed or that other elements of the enrichment program be changed.

3.6.2.4.1. These determinations will be made by a veterinarian and documented in the animal’s record. Veterinary exemptions to this guideline do not require ACC approval.

3.6.3. Singly housed mice are presumed to need more environmental enrichment than pair- or group housed mice and will be provided with extra cage enhancements unless an exception to limit or exclude EE is justified in an ACC approved protocol for scientific reasons.

3.6.4. Enrichment includes nesting material and/or a shelter type object such as a hut or a tube.

3.6.5. Shelters should be used cautiously in cages holding multiple mice because, in some situations, may increase aggression.

3.7. Rats

3.7.1. Compatible rats will be pair- or group-housed if space and body weight allows.

3.7.2. Retired male breeders, however, may require individual housing since they may be aggressive towards other males.

3.7.3. If scientifically justified in an approved ACC protocol, rats may be individually housed in specific situations outlined in the ACC protocol.

3.7.3.5. When possible (depending on the caging system used) individually housed rats should be provided housing that allows visual, auditory and olfactory contact with other rats.

3.7.3.6. Certain medical or compatibility conditions may require that rats be individually housed or that other elements of the enrichment program be changed. These determinations will be made by a veterinarian and documented in the animal’s record. Veterinary exemptions to this policy do not require ACC approval.

3.7.4. Singly housed rats are presumed to need more environmental enrichment than pair- or group housed rats and will be provided with extra cage enhancements unless an exception to limit or exclude EE is justified in an ACC approved protocol for scientific reasons.

3.7.5. Enrichment should include a shelter-type object (e.g., PVC pipe) and enviro-dry bedding.
4. REFERENCES

