Environmental Enrichment for Laboratory Animals Used in Research and Teaching at EKU

(prepared by the EKU IACUC)

The primary aim of environmental enrichment is to enhance animal well-being by providing animals with sensory and motor stimulation, through structures and resources that facilitate the expression of species-typical behaviors and promote psychological well-being through physical exercise, manipulative activities, and cognitive challenges according to species-specific characteristics. Well-conceived enrichment provides animals with choices and a degree of control over their environment, which allows them to better cope with environmental stressors [National Research Council (NRC). 2011. *Guide for the Care and Use of Laboratory Animals*. The National Academies Press, Washington, D.C.] [hereafter referred to as the *Guide*]

Enrichment programs must be reviewed by the Eastern Kentucky University (EKU) Institutional Animal Care and Use Committee (IACUC**)** on a regular basis to ensure that they are beneficial to animal well-being and consistent with the goals of animal use (the *Guide*, NRC 2011:53).

In general, social animals must be housed in stable pairs or groups of compatible individuals. **It will be standard operating procedure in the animal holding facilities at EKU that social housing be considered the default method of housing unless otherwise justified** based on scientific necessity, social incompatibility resulting from inappropriate behavior, or veterinary concerns regarding animal well-being. When deemed necessary, single housing of social animals should be limited to the minimum period necessary; and where possible, visual, auditory, olfactory and tactile contact with compatible conspecifics should be provided. Male rats and mice, for instance, do not have to be housed socially, but should be able to hear and smell conspecifics. The need for single housing must be scientifically justified in the animal use protocol submitted to the IACUC. Cages and other housing requirements will meet the minimum criteria set-forth in the *Guide for the Care and Use of Laboratory Animals* (NRC 2011).

Components of an enrichment program may include: 1. Social enrichment consisting of either direct or indirect (visual, olfactory, and auditory) contact with conspecifics or humans; 2. Occupational enrichment encompassing both psychological enrichment and enrichment encouraging exercise; 3. Physical enrichment including altering cage size and complexity or adding objects; 4. Sensory enrichment including visual and auditory stimulation; and, 5. Nutritional enrichment involving varied or novel foods or methods of food delivery (the *Guide*, NRC 2011). **It will be standard operating procedure in the animal holding facilities at EKU (unless otherwise justified) that nesting material will be part of the microenvironment for both socially housed and individually housed mice and rats.**

Environmental Enrichment Suggestions for Rodents:

Mice: housing boxes, running wheels, toilet paper or paper towel rolls (may need to be autoclaved prior to use), novel foods. **Rats:** running wheels, toys (especially if they provide tunnels and hiding places), nest boxes, multi-level housing, novel foods. For additional information regarding housing, environmental enrichment and rodents, see the *Guide for the Care and Use of Laboratory Animals* (NRC 2011:173-188).

Environmental Enrichment Suggestions for Aquatic and Semiaquatic Species:

Environmental enrichment strategies for many aquatic species are not well established (the *Guide*, NRC 2011:82). Generally, schooling fish species are housed with conspecifics, and many amphibians, especially anuran species, may be group housed (the *Guide*, NRC 2011:83). Aggression in aquatic animals does occur and appropriate monitoring may be necessary. Some species need appropriate substrate to reproduce or need substrate variety to express basic behaviors and maintain health. Most semiaquatic reptiles spend some time on land and terrestrial areas should be provided as appropriate (the *Guide*, NRC 2011:83). For additional information regarding housing, environmental enrichment and amphibians, reptiles, and fish, see the *Guide for the Care and Use of Laboratory Animals* (NRC 2011:173-188).

Environmental Enrichment Suggestions for Other Animals:

Environmental enrichment for animals not already addressed should be based on the needs of each species. Housing environments should be as naturalistic as possible within the bounds of maintaining cleanliness of the environment and providing safety for the animals, students, researchers and staff. For additional information regarding housing and environmental enrichment for agricultural animals, birds, cats, dogs, rabbits, and wild animals, see the *Guide for the Care and Use of Laboratory Animals* (NRC 2011:173-188).