Enrichment is an important part of responsible laboratory practice. It has been shown repeatedly in the literature that provision of enrichment may be beneficial to the overall health and productivity of animals used in research. It is crucial that the enrichment staff open and maintain lines of communication with investigators and/or their laboratory personnel.

Some of the investigators may not currently have animals involved and understand how enrichment may affect their research outcomes. We encourage any investigator who may have in further research the effects specific enrichment may have on your protocol. If you are interested or if you have any questions, comments or ideas, please contact the Laboratory Animal Resource Center (LARC) Enrichment Staff at 502-6107.

It is crucial that the enrichment staff open and maintain lines of communication with investigators and/or their laboratory assistants and technicians regarding enrichment, as it has been shown repeatedly in the literature that provision of enrichment can and does have an effect on an animal’s well being and physiology. Enrichment is an important part of responsible laboratory animal care, and it is necessary that investigators are involved and understand how enrichment may affect their research outcomes.

We encourage any investigator who may have in further research the effects specific enrichment may have on your protocol. If you are interested or if you have any questions, comments or ideas, please contact the Laboratory Animal Resource Center (LARC) Enrichment Staff at 502-6107.

If you did not receive an update and would like one, we would encourage any investigator who may have in further research the effects specific enrichment may have on your protocol. If you are interested or if you have any questions, comments or ideas, please contact the Laboratory Animal Resource Center (LARC) Enrichment Staff at 502-6107.

Environmental Enrichment News

During the week of April 2-6, updates on environmental enrichment were sent out to many investigators with animals in the Towers, Medical Research (MR) or San Francisco General Hospital (SFGH) facilities. Some of the investigators may not currently have animals involved in these locations but please note they may have an animal protocol approved within the last year. If you did receive this update, please return the enrichment questionnaires as soon as possible.

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American Veterinary Medical Association updates animal euthanasia report

The AVMA has published its 2000 Report of the AVMA Panel on Euthanasia, the sixth edition since its 1963 debut. As in previous years, the report combines a review of scientific literature, experiences of veterinary and other professionals, and ethical considerations. (Journal of the American Veterinary Medical Association, 216: 668-696, 2001; on-line at http://www.avma.org/resources/euthanasia.pdf) Also as in previous years, the Panel emphasizes its role as a guide for professional judgment, rather than hard and fast rules. Nonetheless, this report carries considerable weight as it is directly referenced in the 1996 Guide for the Care and Use of Laboratory Animals and is the standard of practice for enforcement of the Animal Welfare Act regulations. As the Guide states, “Unless a deviation is justified [as in an approved CAR protocol] for scientific or medical reasons, methods should be consistent with” the AVMA Panel.

The primary considerations in evaluating euthanasia methods are rapid induction of unconsciousness with minimal pain or distress for animals. Other considerations include consistency with the reason for euthanasia (such as producing tissues for in vitro assays or for histopathology), personnel safety and emotional reactions, nonreversibility, reliability, and concerns for controlled substances diversions.

Of concern for people who must euthanize animals in the laboratory setting: Carbon dioxide is a widespread but controversial euthanasia method. Studies of different species and with different methodologies suggest that high concentrations of CO2 induce rapid unconsciousness, but possibly more acute distress than gradually increasing the concentration to which animals are exposed. Some animals (rabbits, neonatal rodents) are more resistant to hypoxemia and require longer exposures and/or higher concentrations to effect euthanasia. The report stipulates that “compressed gas in cylinders is the only recommended source of carbon dioxide” and that dry ice is unacceptable as a source of carbon dioxide.

The regulations state that the IACUC must determine whether the PI has considered alternatives to procedures that cause more than momentary or slight pain or distress to animals. Certainly, alternatives to animal use are important considerations; however, the regulations only specify alternatives to painful procedures.

If the IACUC evaluates these sources? It is not easy for the IACUC to evaluate the “written narrative description of the methods and sources used to determine that alternatives were not available.” The intent of this regulation is not that the IACUC evaluate the databases or sources cited, but that the PI consider alternatives to procedures that may cause pain. Questions that should be addressed by the PI are: Is there a nonsurgical or noninvasive model? Is there a model that does not require survival surgery? Is there an in vitro model? The investigator may wish to include the following items in the narrative: the database(s) searched, the keywords used in the search, and selected references on animal models or alternatives. For more information, see USDA Policy 12 http://www.aphis.usda.gov/ac/policy/policy12.html (Continued on page 3, see Alternatives)
Physical methods of euthanasia include decapitation and cervical dislocation of small rodents. Performed correctly, they appear to reduce rapid loss of consciousness, though the data on decapitation is controversial and studies on cervical dislocation virtually nonexistent. For use in conscious rodents, both techniques must be justified for scientific reasons in the CAR protocol, and staff’s high degree of proficiency documented. As an adjunct to other methods (such as CO2 or barbiturate overdose) both are acceptable, and meet campus requirements that all chemical methods of euthanasia be followed by a physical technique from which an animal cannot recover.

Barbiturate injection remains a favored euthanasia technique. Intravenous and intraperitoneal are the only acceptable routes of injection in conscious animals. Intracardiac injection is only permissible in deeply sedated animals. Barbiturates are classified as controlled substances and must be handled accordingly.

Careful attention to animals’ behavioral needs will minimize the distress associated with euthanasia. Handling and talking will calm some species but distress others. In all cases, human skill is essential. In many cases, prior sedation is useful. For some sensitive species, other animals should not be present when an animal is being euthanized, though for others this is a less of a concern. Further, if euthanasia methods are to be validated, the Animal Welfare Assurance Program at UCSF provides a list of validated methods, contact the Animal Welfare Assurance Program at trainerlarc@larc.ucsf.edu.

OVERVIEW OF AN ARTICLE ON ALTERNATIVES FROM THE CANCER BULLETIN


Traditionally, whole-animal studies have provided the seedbed for biomedical progress. All three branches of biomedical endeavors—research, education, and testing—have employed whole-animal models to develop an understanding of human biology and disease. The likelihood of implementing alternatives in each area of biomedical application—research, education, and testing—differs from one area to the next. The article from The Cancer Bulletin explores in detail the potential for replacements for whole-animal models to develop an understanding of human biology and disease.

This exploration has yielded a new methodology known as in vitro toxicity testing. In vitro means “in glass,” but it is generally interpreted to mean research that does not involve whole animals. In vitro systems include bacteria, cultured animal cells, fertilized chicken eggs, and frog embryos that can be employed in education, research, or testing. Ultimately, workers hope to be able to study cultures of human cells from various organs and tissues.

Several factors have paved the way for the advances in in vitro testing. One is the growth of the science of toxicology itself.

A new definition of an animal test establishes the rules for testing new chemicals.

The conclusion indicates that whether or not alternative testing will completely replace in vivo approaches is a question that only time can answer. In the meantime, alternative methods can be employed to improve predictive toxicology and, simultaneously, to reduce pain and distress in animals.

OVERVIEW OF AN ARTICLE ON ALTERNATIVES FROM THE CANCER BULLETIN

New Animal Purchase Order Form

We are pleased to announce the creation of a new Animal Purchase Order Form. The new form is available on our web site and has been streamlined to ease the order submission process. If you would like paper copies of the form, please call 502-5954.

Policy for Allocation of Space for Rodents

Goal: To efficiently utilize available space in a single mouse cage

Background: Rodent space at UCSF is now essentially filled and additional demand is currently not being met. Demand for this space has increased and it cannot be met. Therefore, over the past several years with the advent of powerful new methods for the genetic manipulation of rodents it is becoming more important to reduce the time and effort required to prepare these animals for use. This is being made more pressing by the advent of genetically engineered mice and their use in studies of human disease.

As of July 1, 2001

No more than 5 adult mice in a single mouse cage

The PHS guidelines are very specific and clear in that no more than 5 adult mice can be kept in the size cage used at UCSF. The Laboratory Animal Welfare (OLAW), in its communication with UCSF, did not agree with UCSF’s proposal to achieve a reduction in cage population within an extended period. The Committee fully recognizes that this will create a hardship for investigators, particularly as no additional space will become available soon. We will keep you informed of new space as it becomes available.

The administration is working on a number of ways of providing additional space between now and the beginning of 2003, when barrier mouse space at Mission Bay will begin to come on line. Of course, greater relief for most investigators should become available from the completion of the new animal building at Parnassus, the Parnassus Services Seismic Replacement Building.