

THE **Enrichment** RECORD

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Post-Surgical Environmental Enrichment in Rodents

Surgical procedures and environmental factors produce significant stress in laboratory animals that can affect their biomarkers and thus confound experimental results. It is crucial, therefore, to place even more emphasis on environmental enrichment techniques to reduce stress and improve recovery.



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WE'D LOVE TO HEAR FROM YOU!

We welcome your comments, observations and contributions to *The Enrichment Record*. Contributors include lab animal veterinarians, principal investigators, animal care staff, animal behaviorists, animal technologists and other members of the bioscience community who promote the 4 Rs: reduction, replacement, refinement and respect.

Share your story ideas with Rhoda Weiner, Editor at rmbw@earthlink.net. Guidelines for authors can be accessed at www.gr8tt.com/enrichrecord.html.

Please give credit where credit is due.

Outstanding animal care is truly a team effort, and we ask you to credit colleagues, published reports, articles, and other reference materials that have contributed to your enrichment article. Great ideas don't happen in a vacuum, and we encourage you to list all sources of inspiration.

The Enrichment Record is not a peer-reviewed journal. However, the Editorial Board of this E-Zine is composed of dedicated volunteers who have extensive experience and expertise in the care of laboratory animals. Members of the Board are involved with all aspects of this publication.

The *Enrichment Record* is published in October, January, April and July. If you are interested in advertising in *The Enrichment Record*, please visit: <http://www.gr8tt.com/docs/adrates.pdf>

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Jayne Mackta, President & CEO

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Cover photo courtesy of *Enrichment Adventures* with Chuck and Kim

Kimberly A. Wasko, CVT, VTS, RALAT Department of Surgery, Drexel University College of Medicine, Philadelphia, PA, USA



Join the Discussion!

To facilitate informed discussion about environmental enrichment, we have joined the LinkedIn Group called **Laboratory Animal Sciences**. This group allows members of the laboratory animal science community and our readers to interact over a web-based platform to compare ideas and methods. To participate, you will need to create a LinkedIn account and then join the Laboratory Animal Sciences Group.

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In Other Words



A QUARTERLY E-ZINE/FORUM FOR:
Discussing environmental enrichment
in the optimal care of laboratory
animals

Documenting best practices and
approaches for addressing challenges
of implementation & assessment at
every level

Sharing data on the impact of
environmental enrichment on the
science

Building the case for integrating
enrichment into research design

One of the talking points we frequently use to deflect animal rights arguments and comfort the uninformed is the fact that over 90 per cent of the animals used in research are rodents. Sometimes the percentage used is 95 per cent.

Take a minute to consider what we are saying and put this statement back into context.

Back in 2004, the USDA revised its regulatory definition of "animal" to exclude rats, mice, and birds bred for research. In other words, rodents used for research are not considered "animals" according to the government, so the USDA does not regulate their care and use. The fact that rodents are specifically exempt under the AWA opens the door to critics of animal research, who argue researchers are not accountable for rodent welfare. Despite the fact that activists claim government regulations are weak and poorly enforced, they continue to capitalize on this bizarre legislative strategy. Their simple statement that the majority of animals used in research are not protected by federal law is easily understood and accepted by a public that increasingly mistrusts big government, big science and big business... and probably does not care a great deal about mice and rats.

Regardless of the validity of arguments used to oppose extending AWA coverage to mice, rats and birds, we believe our community has lost credibility by allowing this critical issue to be reduced to a question of semantics.

We know that rodents receive the same consideration and level of care as higher species because good welfare of all animals is better science. Furthermore, institutions accredited by AAALAC and/or that receive PHS funding must adhere to

the Guide, which does not differentiate among species when it comes to implementing best practices. Unfortunately, the public doesn't understand the complexities of animal research oversight or the process itself.

We need to let the public know that we value all of the animals we are privileged to use. And that definitely includes rodents.

What do you think?

Jayne Mackta, Publisher
President & CEO, Global Research Education
& Training, LLC (GR8)

JOIN THE DISCUSSION

According to an article published by NC3Rs entitled *Refinement of rodent research through environmental enrichment and systematic randomization*: "Environmental enrichment has been a topic in rodent research for more than 50 years with increasingly diverse applications." Yet, time and again we hear that we still lack data to support environmental enrichment for rodents without reservation.

Since over 90 percent of the animals used in research are rodents, shouldn't we know more about mice and rats to minimize pain and distress and provide an environment that encourages natural behaviors without interfering with the science?

We welcome your comments. If you are already a member of LinkedIn, consider joining the Laboratory Animal Sciences group, which hosts our Enrichment discussions.

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UPDATE: In our January Enrichment Record interview with Alla Katsnelson, she referenced The Environmental Enrichment Symposium held in Boston last April. Please note that The Environmental Enrichment Symposium was produced by the Massachusetts Society for Medical Research, and sponsored by The Massachusetts General Hospital and The Schepens Eye Research Institute, in addition to Merck.

A photograph of two mice, one white and one black, on a bed of yellowish-brown bedding. The white mouse is in the foreground, looking towards the camera, while the black mouse is behind it. The text 'Post-Surgical Environmental Enrichment in Rodents' is overlaid on the image.

Post-Surgical Environmental Enrichment in Rodents

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Environmental enrichment is a key component of rodent animal welfare since it influences the animal's overall well-being, provides opportunities for activity, and encourages rodent appropriate behaviors¹⁰. Many aspects of rodent enrichment have received a significant amount of attention during the last few years, which has led to great advances in developing a beneficial enrichment program^{1, 4, 7}. AAALAC International encourages the implementation of rodent enrichment and many institutions require justification by scientists stating why animals should not receive environmental enrichment.

One widely accepted reason for eliminating enrichment is surgery. Some Institutional Animal Care and Use Committees (IACUCs) state that withholding environmental enrichment, such as group or pair housing, during the post-surgical period does not require justification by the investigator because single housing is considered within the standard of normal post-operative care. In other words, it will create a safer recovery environment if this form of enrichment is withheld.

Environmental enrichment is intended to decrease stress levels and provide opportunities for rodents to express species-typical behaviors. Therefore, it is possible that depriving an animal experiencing the added stress of isolation, coupled with the catabolic state the animal may already be in because of surgery, may turn an already physiologically abnormal animal more abnormal still. This obviously could lead to confounding data results as well as animal welfare issues.

We have observed that even a change in the animal bedding alters blood pressure measurements¹¹. We conducted an experiment in which we used lean Zucker rats implanted in the abdominal aorta with Data Sciences International PA-C20 tele-metric units interfaced to corresponding radio telemetry receptors, which were stored digitally and displayed on a computer screen. Data were analyzed with the ART 3.1 Analysis software⁶ using technology we previously used in mice.¹⁰

The rats were normally housed on 1/4" bed-o'cobs™ (The Andersons, Inc, Maumee, Ohio) bedding. Once the animals were implanted and their abdominal wound was healed, we replaced the bedding with Enviro-dri™ (Shepherd Specialty Papers, Milford, NJ) for 2.5 days and observed their blood pressure with interesting results. Enviro-dri is a cellulose material consisting of paper strips. We observed that when placed on Enviro-dri, which allows for "tunneling" behavior, the animals initially became more active as they explored their new environment. This activity diminished some as they probably became acclimated to their new environment after the first day. As expected, with this increase in activity we detected increases in heart rate. Interestingly, when the animals returned to the less enriching environment, we did not observe the same "exploratory" behavior with increased activity. The systolic and diastolic pressures, however, were significantly higher in the non-tunneling bed-o-cobs bedding than when Enviro-dri was used. When the animals were returned to the original, less enriching bedding material,

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we observed that their blood pressure elevated gradually. In this pilot study, we concluded that Enviro-dri is a better substrate for chronic blood pressure experiments when compared to bed-o'cobs.

Surgical procedures and environmental factors produce significant stress in laboratory animals that, as in the study described above, can affect their biomarkers and thus can confound experimental results. It is crucial therefore to place even more emphasis on environmental enrichment techniques to reduce stress and improve recovery.

Providing environmental enrichment to rats post-operatively or post-injury has been demonstrated to improve the ability of the animal to heal and recover^{2, 5, 13}. A barren environment is stressful to animals and isolation of social animals can lead to delayed recovery and return to normal physiology. Buchhold et al found enrichment to have a beneficial effect on rat recovery in a stroke model, including a reduction in infarct size, in the number of proliferating astrocytes, and in the volume of the glial scar³. Additionally, enrichment provided in the form of nesting materials improved wound healing in rats recovering in isolation¹².

One of the most effective forms of enrichment is to pair or group house compatible cohorts together. A common practice post-surgically is to remove a rodent from its group housing and isolate it to recover in a new cage. The most common reasoning is the concern that cage mates will remove sutures and/or injure the surgical site. While theoretically possible, in our experience this is an extremely rare occurrence, leading us to question this practice. If suture "picking" by a cage mate is still a concern, then refining surgical technique by using a subcuticular skin closure instead of closure with external sutures or clips may address this concern.

Subcuticular suture technique can be especially challenging with mice due to the thinness of the skin's layers, but with expert training and practice, it can be performed. Levine's study, which supports cohort pair or group housing, found that rats housed individually during physical injury healing had impaired healing compared to rats group housed, emphasizing the negative effect of isolation on wound repair⁹. When recovering rodents are in wired bottom cages, acclimatization should be performed

prior to the surgical procedure to minimize the effects and compilation of stress from anesthesia, surgery and removal of environmental enrichment such as bedding. If post-surgical single housing is the only option, we at least concur with the guide when it states, "It is desirable that social animals be housed in groups; however, when they must be housed alone, other forms of enrichment should be provided to compensate."⁸

Often, after gastrointestinal surgery, food is removed, as well as edible enrichment, in order to prevent post-surgical complications. This can be problematic for recovery, since a post-surgical animal that's already in a catabolic state is in greater need of proper nutrition for post-operative survival and recovery. Post-operative rodent diets in soft pelleted, gelled and liquid forms are available and can typically be provided sooner than traditional hard pelleted diets. These diets can stimulate appetite and provide balanced nutrition to facilitate a quicker recovery and return to metabolic homeostasis.

Therefore, reconsidering the traditional practice of housing rodents individually in a barren environment post-surgery, and implementing pair housing with a compatible companion and enrichment, has the potential to improve post-surgical recovery. Identifying specific environmental and nutritional enrichment, which facilitate a quicker recovery in rodents, will provide further rationale for including them in rodent post-surgical protocols. Further studies are warranted to address this topic; however it is clear that changing a rodent's environment and removing enrichment (including single housing) post-surgically is stressful to the animal, which can lead to delayed recovery and overall well-being.

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Enrichment Adventures: Taking the Initiative— Creating a Program That Works

Background

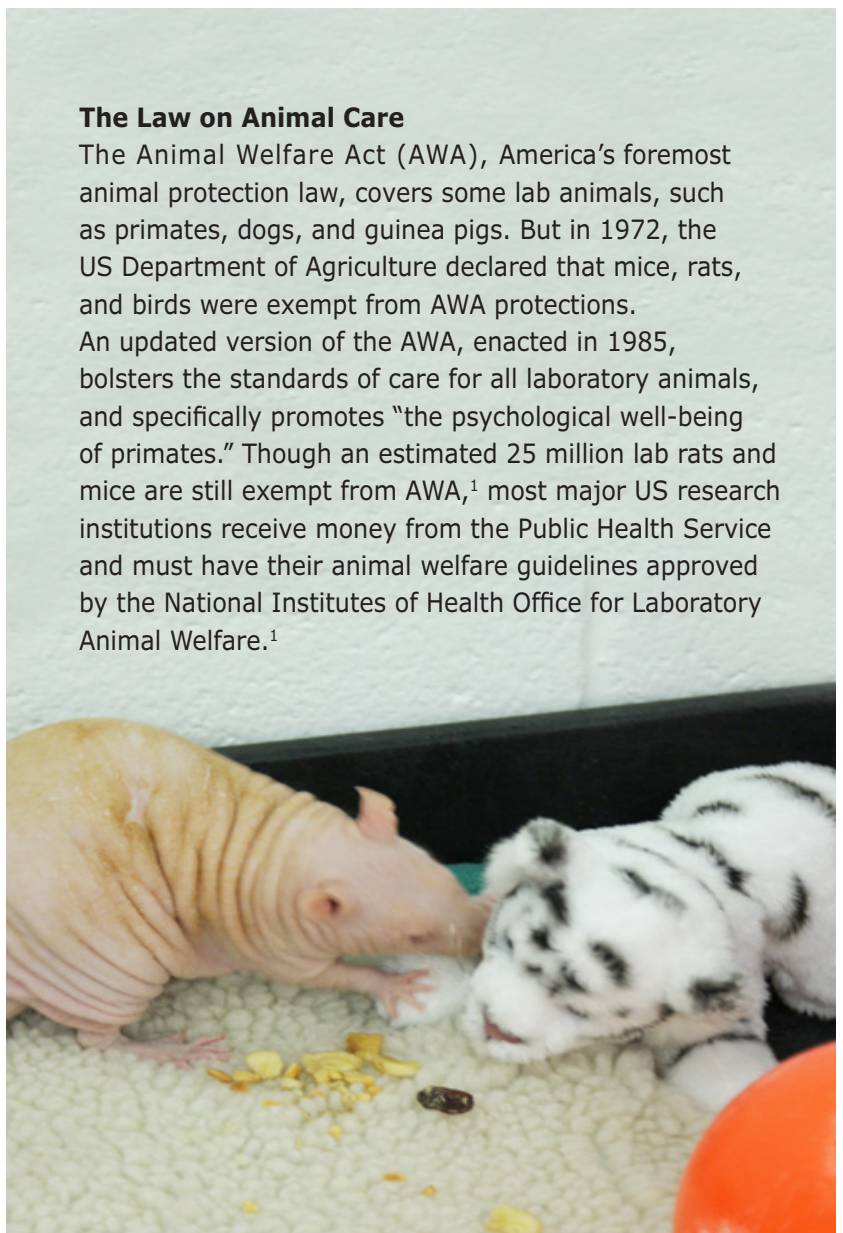
Rodents are the most widely utilized animal model for disease in the world of biomedical research. Despite their essential role, the range of behavior and behavioral needs of these animals is repeatedly under-recognized and under-developed. Providing animals with artificial and natural objects can be considered enriching. Enrichment activities are designed to improve the welfare of animals by reducing the levels of abnormal/injurious behavior while maintaining natural and instinctual behaviors. Understanding the species-specific behaviors in depth will improve animal welfare during captivity or limited environments.

The primary goal is to provide enrichment that benefits the animals and science alike. The implementation of a proactive enrichment/socialization program can reduce atypical convalescence issues and discomfort/distress while facilitating quality care.

In the field of laboratory medicine, federal regulations exist requiring institutions to provide for the psychological well-being of many laboratory animals. Enrichment is an outstanding channel of achieving these objectives. Animal enrichment is not mandated for all animals but animal welfare is emphasized by regulatory agencies.¹ Proper enrichment can reduce stereotypies and other undesirable behaviors while increasing species-typical postures, activities and behavior.²

The Law on Animal Care

The Animal Welfare Act (AWA), America's foremost animal protection law, covers some lab animals, such as primates, dogs, and guinea pigs. But in 1972, the US Department of Agriculture declared that mice, rats, and birds were exempt from AWA protections. An updated version of the AWA, enacted in 1985, bolsters the standards of care for all laboratory animals, and specifically promotes "the psychological well-being of primates." Though an estimated 25 million lab rats and mice are still exempt from AWA,¹ most major US research institutions receive money from the Public Health Service and must have their animal welfare guidelines approved by the National Institutes of Health Office for Laboratory Animal Welfare.¹



continued on page 8

In Europe, the "Convention For The Protection Of Vertebrate Animals Used For Experimental And Other Scientific Purposes" provides guidelines for creating lab environments that allow some freedom of movement, as well as a supply of food, water, and care appropriate to animals' health and well-being. The guidelines, which must be ratified, also state that researchers should check environmental conditions daily and monitor the animals' emotional well-being.¹

With a proper understanding of animal enrichment, researchers will be able to enrich laboratory animals without affecting results or compromising experimental design. Since animals respond differently to social and environmental interaction, a consistent program is essential. Accordingly, the physical and social environment requires evaluation.

Indications—Why We Did It

We sought to provide a proactive enrichment program to reduce stress and facilitate quality care due to two principal distressing conditions our animals were experiencing:

1. atypical convalescence issues
2. administration of chemical restraint to perform non-invasive procedures.

Devising a comprehensive program allowed us to:

- a. provide enrichment that did not alter, compromise or impose a variable to our animal studies and
- b. challenge the rats with enrichment to improve their ability to cope with new situations.

Objective

The goals were to:

1. return the animal to homeostasis as rapidly as possible
2. reduce atypical convalescence issues post-operatively
3. replace the use of chemical restraint with socialization and enrichment to perform non-invasive procedures such as, but not limited to, bandage changes, infra-red/caliper measurements and per os (not gavage) oral medication dosing.

Design—How We Did It

All of our studies were approved and performed according to IACUC and regulatory guidelines. The preliminary step focused on education. Education was fundamental towards devising a comprehensive enrichment program for our

rodents. After our education sessions, we were furnished with the foundation—or "**fundation**" as we refer to it—of enrichment facts and information. Now it was up to us to envision and create it—and we did.

Phase I

The introduction of various food treats and devices was the initial step for phase I. Treats and devices (Bio-Serv, Frenchtown, NJ) were first implemented for our surgical patients. Typically, animals have to rear on their hind-quarters to reach the food pellets and water. After an abdominal invasive procedure, it was not sensible to have our rats stretching and struggling to reach their food. By repetitive motion, the animals experienced increased discomfort thus resulting in decreased appetite and hydration. The solution was to temporarily provide floor feeding with enrichment treats which were certified and nutritionally fortified to support post-operative convalescence and encourage the appetite. We also supplied a re-hydration oral solution in bowls in addition to the water bottle. We offered an array of treats of foraging crumbles, black oiled sunflower seeds, bacon flavored treats, dehydrated fruit and vegetables. We also enhanced the cage environment with hiding retreats, wood blocks and crumble fruit discs to encourage typical psychological behaviors. Treats were extended for 72 hours post-operatively, then twice weekly until the study completion; devices were extended continuously. With remarkable results, 98% of animals experienced substantial decreased complications, such as weight loss, dehydration, lethargy and dull mentation. Because of these results, all current and forthcoming protocols include this new comprehensive enrichment program for any animal undergoing a surgical procedure.

Phase II

The second phase was to implement a socialization and agility program to replace the use of chemical restraint to perform non-invasive procedures such as bandage changes and applications, oral dosing and performing various methods of measurements of the affected surgical sites. Each time an animal would undergo chemical restraint, which could range from two to three times per week, regardless of method (gas an-

esthesia, injectable anesthesia), the risk of morbidity and mortality greatly increased. In addition, animals were experiencing persistent complications: weight loss, dehydration, decreased appetite, lethargy, increased discomfort, increased nervousness/fear and fatality from this type of restraint. In addition to the treat and device regimen, a socialization and agility program was implemented. Socialization occurred at 10-15 minute intervals/per rat three times per week, and included tolerant handling, holding, petting and positive reinforcement food training. The agility course was prepared differently for each set up on an enclosed cart or extra large caging unit. The agility course could include dumbbells, hiding retreats, tubes, crumpled blankets, wood blocks and stuffed animals. Any item could be used for agility as long as it did not impose any physical harm to the animal. The course was set up so the animal could explore and have the space to roam and indulge its curiosity along with physical exercise and mental stimulation. Animals either participated in agility twice weekly for 20-30 minute intervals singly or partnered. Again, the results were significant—100% of the animals responded and we were able to eliminate chemical restraint for non-invasive procedures to date. Animals exhibited and experienced less stress, less fear, increased comfort and became highly sociable. This program has been implemented in current and forthcoming protocols for any animal undergoing a non-invasive procedure.

Discussion

Due to inadequate assessment, there are many opportunities for research in the field of enrichment. Addressing the psychological and physical needs of our research animals created less variability in our results. Most importantly, it improved quality and humane animal welfare. This lessened the need to repeat our experiments and thus allowed the use of fewer animals. Implementing a comprehensive enrichment program and discovering an alternative to chemical restraint decreased atypical convalescence and complications while adding a 'fun' element for our animals.

The most humane habitat possible for *all* research animals should be provided. With a proper understanding of enrichment, animals can be enriched without affecting results or compromising experimental design. GO ENRICHMENT!

Acknowledgements

The author would like to express sincere appreciation to Bio-Serv of Frenchtown, NJ, for laying the groundwork for our enrichment program.

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Searching for Environmental Enrichment Information for Laboratory Animals

Finding info on environmental enrichment for lab animals. At first glance, this seems like a pretty straight forward exercise. Go to PubMed, type in environmental enrichment, click search, be done. That is until you look at that first citation—Oxysterol-binding proteins. Ridgway ND. *Subcell Biochem.* 2010;51:159-82—and realize that unless your mouse enjoys reading about sterol signalling her life is going to remain decidedly unenriched. In fact, of the first 20 citations retrieved using this simple strategy, only one record would provide information to help our mouse. So what do we do? How do we improve our strategy to improve our results?

One simple solution is to know how to search on the database or platform you are using. Most systems, including PubMed (when we talk about PubMed, we also include Medline), allow you to use simple quotation marks to create a phrase; without them the search utility usually assumes you want records containing the words environmental AND enrichment, no matter where they appear in the record. Our mouse is learning to become a biochemist because that first record contained the phrase “enrichment of the plasma membrane” and later “a relatively cholesterol-poor environment.” Consequently, it met the criteria for being included in the retrieved records. To overcome this problem, if you aren’t familiar with how the data-

base finds information, read the help section and learn how to properly use the system so you can search more effectively and more efficiently.

Terminology is also very important. While everyone talks about “environmental enrichment” (EE), not everyone writes about “environmental enrichment.” Databases also have their own way of indexing the topic. While that phrase will certainly find information on the topic, it is not the only useful terminology. A look at PubMed will illustrate this.

One of the wonderful features of PubMed is its MeSH (Medical Subject Headings) terminology. According to their website, “[MeSH](#) is the National Library of Medicine’s controlled vocabulary used for indexing articles for MEDLINE/PubMed. MeSH terminology provides a consistent way to retrieve information that may use different terminology for the same concepts.” When you search PubMed for information on “heart attack,” PubMed uses MeSH to “map” that term to the MeSH term “myocardial infarction” and other related terms. So without the searcher having to do anything, you will find articles related to “heart attack” even if the article doesn’t use that specific phrase. This is a very easy and powerful way to find information and many people rely upon it to ensure a comprehensive search of a topic. (Mapping doesn’t occur if truncation is used, e.g.

heart attack*; the asterisk [*] is a truncation symbol). Unfortunately, there is no MeSH term for our phrase of interest. From a few quick and dirty searches of PubMed, EE-related articles are indexed using a variety of MeSH terms such as "Behavior, Animal," "Environment," "Environment, Controlled," "Play and Playthings," "Social Environment," "Animal Husbandry/Methods," and many others.

I suspect that part of the problem is that PubMed is now indexing more animal welfare and animal husbandry-related articles and having to fit them into MeSH terminology that is geared more toward biomedical and clinical science. As you might imagine, other databases that are more focused on veterinary and animal science topics have an easier time managing this issue. Look at Agricola produced by USDA's National Agricultural Library or CAB Abstracts produced by CAB International and you can jump into the EE literature using the phrase "environmental enrichment" because it is part of each database's thesaurus. The Biosis database uses the phrase also. Knowing how information is indexed in the database you are searching can be useful in helping to retrieve quality information on your topic.

As good as PubMed is, it is not the only source of information. Other databases, such as those mentioned above, will also provide information that may or may not be found in PubMed. While we won't discuss it here, Google can also be very useful. If we use our phrase "environmental enrichment" and add in the terms "animal* or rat or rats or mouse or mice or rodent* or dog or dogs or cat or cats or bird* or avian or gerbil* or hamster* or primate* or rhesus, [The asterisk is a truncation mark and lets us search for plurals and other versions of the word.] and search across PubMed, EmBase, Agricola, CAB Abstracts, Biosis Previews, and PsychINFO, there are 4270 unique articles that are retrieved. PubMed contains 282, EmBase contains 83, Biosis contains 492, Agricola contains 552, CAB has 238, and PsychINFO has 2623. If you only looked in PubMed, you would miss 3,988 unique articles. Just as we emphasize with the search for alternatives, broaden your sources when looking for information whether it is alternatives, enrichment, or your science. As seen from the example, another good source for enrichment information, especially for the effects of enrichment on physiology, behavior, and development, is PsychINFO, produced by the American Psychology Association.

When you're searching for information to establish an enrichment program, to keep up-to-date with the latest findings, or determine the effects of enrichment on an animal model, it is best to use additional terms to find useful information. Enrichment programs can intervene in any aspect of the animal's daily life and should take this into account. Enriched or standard housing, diet and the way it is presented to the animals, social groups vs. pair housing vs. isolation, toys and other manipulanda (HAD to get that word in here!), running wheels, nestlets...All of these things can go into an enrichment program or a study on enrichment. The various databases discussed contain EE information from numerous scientific studies, if you can find it.

Depending upon the platform searched, it can be easy or difficult to create phrases or to tell the system that you want two terms near each other in the article. Learn how the search engine works, so you can have better results. So here's a short list of terms that I have used when searching for enrichment information. Add in your own terms to tailor the search to your specific needs.

General

- Environmental enrichment or enhancement
- Enriched or enhanced environment
- Environmental complexity
- Preference testing

Housing or caging or rearing conditions

- Enriched housing
- Pair or group or social housing or social environment or social groups
- Pair or group formation
- Social isolation or social deprivation
- Complex cage or complex housing
- Nesting material or nestlets (include bedding or substrate if looking for effects of these things)

Enrichment objects

- Toy or toys
- Play or playthings
- Manipulanda
- Foraging boards
- Puzzle feeders
- Nestlets
- Nest box
- Wheel(s) (running wheel(s))
- Chew sticks
- Terms for food items

Animal care is always improved when people have access to the latest information. If you are having trouble finding information or don't have ready access to information sources, feel free to contact AWIC for help. You can reach us at 301-504-6212 or at awic@ars.usda.gov.

SOURCES

Agricola

<http://agricola.nal.usda.gov>

An agricultural and veterinary database produced by the US Department of Agriculture's National Agriculture Library. Free.

Animal Welfare Information Center—Environmental Enrichment and Exercise

<http://awic.nal.usda.gov>

Go to Research Animals then Environmental Enrichment and Exercise

A portal to enrichment information produced by AWIC, Animal Care, and other organizations. Includes "Environmental Enrichment for Nonhuman Primates, 2009," "USDA Perspective on Environmental Enrichment for Animals" and links to other sources of enrichment information. Free.

Animal Welfare Institute—Laboratory Animals

<http://www.awionline.org/ht/d/sp/i/214/pid/214>

This site will provide access to AWI's Primate Enrichment Database and Database on Refinement of Housing and Handling Conditions and Environmental Enrichment for Animals kept in Laboratories, *Environmental Enrichment and Refinement for Nonhuman Primates Kept in Research Laboratories: A Photographic Documentation and Literature Review*, Making Lives Easier for Animals in Research Labs—Discussions by the Laboratory Animal Refinement & Enrichment Forum, Practical enrichment options (2008), *Comfortable Quarters for Laboratory Animals* (2002), and other quality resources. Free.

Bio-Serve

<http://www.bio-serv.com/>

Bio-Serv is a designer and manufacturer of an extensive line of environmental enrichment treats and devices.

BIOSIS Previews

http://thomsonreuters.com/products_services/science/science_products/a-z/biosis_previews

BIOSIS life sciences databases deliver current, multidisciplinary information on agriculture, biodiversity, biotechnology, drug discovery, gene therapy, marine biology, wildlife conservation, zoology, and other topics. Fee.

BVA/FRAME/RSPCA/UFAW

Joint Working Group on Refinement—Refining dog husbandry and care

http://la.rsmjournals.com/cgi/reprint/38/suppl_1/42.pdf

Guidelines from the British Veterinary Association and other UK animal welfare organizations for dogs in research. Chapter 8 covers environmental enrichment specifically but the document, in general, discusses the needs of the dog in the research setting.

Canadian Council on Animal Care—Education, Training, and Communications—Module 7 Environmental Enrichment

http://www.ccac.ca/en/CCAC_Programs/ETCC/Intro-coretopics-Web11.htm

In this online training program, the reader is introduced "to the concept of environmental enrichment, the elements involved in environmental enrichment, the effects of environmental enrichment within the research effort, and examples of environmental enrichment." Examples are provided for all laboratory animals. Free.

Development of an Environmental Enrichment Program Utilizing Simple Strategies

<http://www.nal.usda.gov/awic/newsletters/v12n1/vol12no1final.pdf>

An article from the AWIC Bulletin by Kay Stewart, Associate Director of Freimann Life Science Center, University of Notre Dame, South Bend, Indiana.

Enrichment Online

<http://www.enrichmentonline.org/browse/index.asp?c=Mammals>

A wonderful site provided by the Fort Worth Zoo. According to the website, "The mission of this site is to provide professional animal managers, both in zoo and laboratory settings, a comprehensive resource for incorporating enrichment into the care and husbandry of captive animals." Free.

ILAR Journal—Enrichment Strategies for Laboratory Animals

http://dels.nas.edu/ilar_n/ilarjournal/46_2/html/index.shtml

This issue of ILAR Journal provides valuable points of view about achieving high levels of well-being for animals used for research.

Laboratory Primate Newsletter

Articles on Environmental Enrichment and Psychological Well-Being

<http://www.brown.edu/Research/Primate/enrich.html>

National Center for the 3Rs—Housing and Husbandry

<http://www.nc3rs.org.uk/category.asp?fid=1&catID=42>

"The quality of housing and husbandry has a major impact on laboratory animal health and welfare. There is an expanding body of scientific literature to demonstrate that environments that do not meet animals' physical, behavioural and/or social needs can result in changes in physiology and to abnormal behaviour (e.g. stereotypies) which not only compromise animal welfare but also influence the validity and reproducibility of the scientific data obtained." Free.

PsychINFO

<http://www.apa.org/pubs/databases/psycinfo/index.aspx>

PsychINFO provides systematic coverage of the psychological literature from the 1800s to the present. The database also includes records from the 1600s and 1700s.

PubMed

<http://www.pubmed.gov>

"PubMed lets you search millions of journal citations and abstracts in the fields of medicine, nursing, dentistry, veterinary medicine, the health care system, and preclinical sciences. It includes access to MEDLINE and to citations for selected articles in life science journals not included in MEDLINE." Free.

Refinement in the literature: Searching for environmental enrichment

<http://altweb.jhsph.edu/bin/o/i/paper307.pdf>

An article by AWIC's Kristina Adams from the Proceedings of the 6th World Congress on Alternatives & Animal Use in the Life Sciences held in Japan in 2007.

The Shape of Enrichment

<http://www.enrichment.org>

The purpose behind this non-profit group is to "promote worldwide environmental enrichment efforts for captive animals. The Shape of Enrichment, Inc. encourages improvements in animal welfare through education and international exchanges of enrichment theory and application." An astounding compilation of tried and tested enrichment strategies from zoos and other facilities. Access newsletters, videos, conference announcements, etc. The website includes a safety database which provides anecdotal accounts of problems that have been encountered with the use of some enrichment items. Primarily developed for captive animals but can be useful for programs that use them in the research setting. If it deals with enrichment, it's here!
Free/Fee

Mention of commercial enterprises or brand names does not constitute endorsement or imply preference by the U.S. Department of Agriculture.

Two Different People, Similar Story

Temple Grandin, an HBO biopic, resonates in so many ways

Two years ago, I had the privilege of attending the Enrichment Extravaganza in Fords, New Jersey. To my surprise, the guest speaker that day was a very special woman, even though I did not know her at the time. Her name is Temple Grandin, and she has a Ph.D. in Animal Science, is an associate professor at Colorado State University, designed one-third of all the livestock handling facilities in the United States and around the world, and is a frequent lecturer at autism meetings throughout the country. And yes, she has autism.

Why is this so special and important to me? Well, my youngest son, Joseph, has autism too.

In February, my children and I watched the HBO biopic, "Temple Grandin", and I was amazed by the similarity between Joseph's story and Temple Grandin's story. Like this fabulous woman, the doctors did not know what was wrong with my child. They said that he had mental retardation, that he was a slow learner, that he was very hyper, and that I should put him on medication. I refused to do that until I knew exactly what was wrong with him. They told me to deal with it, that he was a special boy. Yes he was, and is, but I knew that one of the doctors did not know what he was talking about. Let's not forget that we are hearing a lot about autism now, but years ago, most of the doctors did not know what it was.

Many of the symptoms of autism that affected my son also affected Temple, such as delayed speech, and other developmental delays. Joseph, like Temple, could not tolerate human contact. And, like Temple, Joseph learns differently than other children and needs the right tools for learning. In Joseph's case, he learns better if he is read to rather than allowed to read on his own. He is very capable of



Joseph and Connie

reading, but retains knowledge better and faster if he is read to, which was similar to Temple's situation.

Like Temple Grandin's mother, I decided to change my life and take care of my son. I changed my day job to a night job, so that as a single mother I could spend the time going from doctor to doctor. I was determined to find out what was wrong with my child, even if it took the rest of my life. I wanted him to have as normal a life as possible, and to fit in with the rest of the world as much as possible. I read books, researched on the computer and in the library. I needed to educate myself to be able to fight for and help my son.

Refinement of Rodent Research Through Environmental Enrichment and Systematic Randomization

Professor Dr Hanno Würbel,
Division of Animal Welfare and Ethology,
Justus-Liebig-University of Giessen;
Dr Joseph P. Garner, Animal Sciences,
Purdue University
NC3Rs #9 • January, 2007

Abstract

Recently, conventional housing of laboratory rodents has been criticised for inducing abnormal behaviours and poor well-being, which also questions the validity of many animal experiments. Environmental enrichment may prevent abnormal behaviours and improve animal well-being, but concerns have been raised that it might also disrupt standardisation, thereby reducing the precision and replicability of animal experiments. In this article, we review the logic and evidence surrounding this debate. We show that animal welfare can be improved by beneficial enrichments without disrupting standardization. However, we also argue that standardization is a flawed concept, which entails the risk of obtaining results of poor external validity and therefore needs to be profoundly revised.

<http://www.nc3rs.org.uk/news.asp?id=395>

Until I saw the definition of the word "autism," which described my son's condition and behavior, I did not know exactly what was wrong with him. I talked to the doctor that he was seeing at the time, and he said that I did not know what I was talking about. He said that I should stop arguing with him and put Joseph on medication. At that moment, I decided to take my son elsewhere. I politely told the doctor that he was the one who did not know what he was talking about, took my child, left the office and never went back.

I called my insurance company and explained the situation, and they referred me to John F. Kennedy Medical Center in Edison. As soon as the doctor, a child neurologist, saw my son and spoke to me, he said I was right all along. That is when, thank God, my son's life changed for the better. Obviously, this doctor had knowledge of autism and I thank God and this doctor because it took me years to get Joseph the proper help that he needed.

As Temple Grandin was to her family, Joseph is the love of my life, and there is nothing that I would not do to help him. "Temple Grandin" really educated my family and me about autism. I hope the movie and Temple's books have helped many people to learn about autism, to be fair to others with autism and to try to understand and educate themselves, including those in the medical field.

Finally, my son Joseph, a kid that did not talk until four and a half years old, and did not allow people to get very close to him, received this report from his teacher on February 4, 2010:

Dear Ms. Kester,

I just wanted to let you know how great Joseph is doing in his class. He is consistently trying super hard everyday. The work he hands in is of very high quality and his attitude in class, is phenomenal. Joseph is making great strides in both his academic and social school career. I am extremely proud of him and excited for his future.

*Sincerely,
Mr. Burgess*

Lori Austin and CompMed listserv participants, compiled by E G Patterson-Kane

Environmental enrichment is inevitably a team effort. You may or may not have a dedicated enrichment coordinator, but the actual development, approval and provision of enrichment requires coordination on every level from budgeting to research publication. Institutions vary widely in the approach taken to developing a plan and assigning duties to personnel.

A lot can be learnt by comparing how different institutions accomplish this task, and the factors that contribute to successful enrichment provision. Lori Austin (LVMT, RLAT) asked participants in the AALAS CompMed™ listserv to share information about how their enrichment team works. The answers illustrate some of the key features of establishing and maintaining an effective enrichment program.

Enrichment Teams Ideally Include Different Disciplines and Professions

Enrichment is an ongoing process that needs to embrace both gradual and sometimes (such as when refurbishing a facility) rapid change. People from different disciplinary backgrounds and at different levels of the organization need to remain involved in enrichment as a process, not just a result.

"We have enrichment teams—primate, cat & dog, and rodent (includes rabbit, hamster, rats & mice). Meet monthly."

"...In a nutshell we have a committee that consists of two veterinary technicians and about five toxicology people."

"The enrichment program is developed by the Veterinary Medicine department, approved by the IACUC and run by the facility manager."

Have a Written Enrichment Plan and Standard Operating Procedures

There is an advantage to having a formal enrichment plan that establishes minimum levels for all animals rather than providing enrichment on the basis of time and

availability of resources. That helps ensure enrichment is provided based on animal needs and that minimum standards are established.

"Veterinary Technicians and Husbandry managers write the SOPs for enrichment."

"We're a modestly sized contract research organization (few hundred monkeys & dogs and a dozen or so rodent rooms and maybe as many rabbit rooms at any given time), and all our animals receive some sort of enrichment. Everyone gets "toys" of some sort (chew bones for rats, Nestlets for mice, Kongs or balls for dogs, etc), and some species get food treat enrichment as well (I am a huge fan of at least twice weekly fresh kale for rabbits). We do have a formal enrichment plan in place, but actual handing out of enrichment is done by the animal care staff."

'Hands On' Staff Are Crucial for Effective Enrichment

No matter how good your equipment and how thorough your plans are, staff who carry out day-to-day care are crucial when it comes to enrichment. Enrichment materials are almost always provided, monitored and maintained by the animal caretaking staff. So for a plan to be effective these staff members need to be given the time in their working day to carry out enrichment tasks. This is of benefit not only to the animals but also the staff—as enrichment is a positive experience and helps strengthen the human-animal bond and increase overall standards of care.

"Our animal care techs are responsible for implementing the EE plan. It involves fruits and/or veggies daily and usually tactile, visual, auditory or aromatic stimulation (i.e. Radio, TV, foraging boards, puzzle feeders, etc)."

"We have pigs that we rotate toys through—at a minimum it's once a month, but most have multiple types of toys in the cage at a time (dumbbells, Kongs, suspended triangles, etc). We also give treats and group house when possible. The staff that primarily is

in charge of rotating the toys are the animal care staff (as they are the ones who typically clean them). For our rats we offer Nestlets, Nylabones, and red see-through rectangular huts for them to sleep and hide in."

"For each room there is a single tech assigned. The techs supervise the husbandry staff in feeding. The techs do all the enrichment themselves. We have a room of special food and toys."

"We don't have any of the big species, but we do provide enrichment for our rodents and rabbits. My technicians do that as part of their regular work schedule. I always allow my regular employees to provide enrichment if at all possible. It is one of the positive things they can do to help their animal colonies well-being, and as such, I think it is enriching to them too. I know when I was working as a vet tech I loved doing the extra things like training dogs, and group play time as well as working with primates providing positive reinforcement. The technicians involved with those animals would work alongside and did other enrichment activities during their cleaning routines etc. Nothing beats setting up a new configuration for a colony play room to make the day more interesting and rewarding."

Appoint Dedicated Enrichment Personnel

Just like any other aspect of research, enrichment is a specialty. Whenever possible a facility should have a team member whose primary focus is environmental enrichment. The advantage of having dedicated enrichment staff is not only that it ensures these tasks will not be 'crowded out' by other duties, but also that you have someone on staff qualified to carry out behavioral assessments and deal with problems that arise when animals have special vulnerabilities and needs.

"A prior institute I worked with (larger contract research organization, almost completely primates) did have a pair of full-time enrichment specialists that did behavioral evaluations as well as prescribed proper

enrichment for the monkeys. Likewise, the last big university I was with had one full-time professional and one assistant tech dedicated to enrichment. The more complex your enrichment plan is, and the more likely you are to have "problem" animals (e.g., chronic NHP studies), the stronger the recommendation to have personnel dedicated to this."

"We have an awesome Behavioral staff (five people including the manager) who take care of our NHP, canine and rat enrichment needs. We house ~3400 NHPs, ~120 dogs, and ~400 rats; facility size is ~450,000 square feet. As I'm sure you are aware enrichment includes commingling, forage boards, grooming bar access (all NHP); safe toys, commingling, and supervised play time (dogs); nylabones, round PVC tubing and commingling(rats)."

There is Potential for Greater Involvement of Veterinary Technicians

The role of behavioral specialists in developing enrichment programs and solving enrichment problems is now widely recognized. However there may still be a need to develop 'on the ground' veterinary expertise so that veterinary expertise is not involved only at the development or approval process, but staff with veterinary training are available throughout the day.

"The enrichment program is developed by the Veterinary Medicine department, approved by the IACUC and run by the facility manager. We have 10 Animal Care Technicians."

"We have only one vet tech right now and we currently house ~70 or more pigs and ~20 rats (though these numbers change fairly often)."

"We have all nonhuman primates, and run around 2500 animals. We have currently one veterinary technician running our enrichment program, and will

continued on page 18

be expanding it to have a second veterinary technician to help her. We have another site that also has a team of vet techs running the enrichment program (I think 3), and they have about the same numbers of nonhuman primates. We also assign certain tasks to the husbandry staff such as distribution of fruit/vegetables or other food stuff three times a week."

Where veterinary technicians are involved this seems to help in developing and establishing safe provision plans for new enrichment opportunities, rather than continuing to use the same products.

"Mostly the vet techs handle ordering the new things to try but we all try to meet monthly to talk about new products or projects."

"Vet techs are responsible for ordering all enrichment for all species—including rodents."

Enrichment Objects and Supplementary Food Are Routine Basic Enrichment for All Species

A barren cage should no longer be the norm. As a minimum, animals need to be provided with objects that support species-typical behaviors, such as gnawing or nest building. For many species, food items other than standard lab diets are highly beneficial. However, enrichment programs should also be extending into areas such as social contact, human interaction, cage and room designed and more...

"For the pigs/ ferrets/ rabbits (not the same room), toys are rotated on a daily basis and cleaned for the pigs as for ferrets and rabbits. Their toys are rotated on a weekly basis or as needed. Special food is given on a weekly basis to the pigs/ ferrets/rabbits."

"We have about 3000 animals = 40 dogs, 30 guinea pigs and the rest rats and mice. The caregivers are responsible for giving the enrichment, following the rotation of enrichment devices and recording that it was done for their rooms."

"We do enrichment for all of our species and generally house over one hundred of each. No pigs though. Rodents also have enrichment with Nylabones, treats, balls etc."

"As I'm sure you are aware enrichment includes commingling, forage boards, grooming bar access (all NHP); safe toys, commingling, and supervised play time (dogs); Nylabones, round PVC tubing and commingling (rats)."

Human Contact Is Part of Enrichment

Domesticated species often have a need for human contact, or at least benefit from it. Often human time is the most expensive option for enrichment, but when combined with husbandry tasks it can be the most rewarding and effective method for improving the animal's experience of its life as well as improving the animals' hygiene and ease of handling.

"All species have HI (human interaction) 2-3 times a week with fresh veggies/fruit."

"We have designated Thursday "pig day" and every pig is handled, examined by the techs and weighed. Every Tuesday is "rabbit day" and every rabbit is groomed/handled, examined by the techs and weighed. As for the ferrets the tech plays with them on a daily basis and lets them run out of their cages."

If you have examples of effective methods for developing a plan, drawing people into the enrichment team, making basic enrichment routine, making advanced enrichment possible and integrating the roles of animal care, behavioral and veterinary staff... please send us your story!

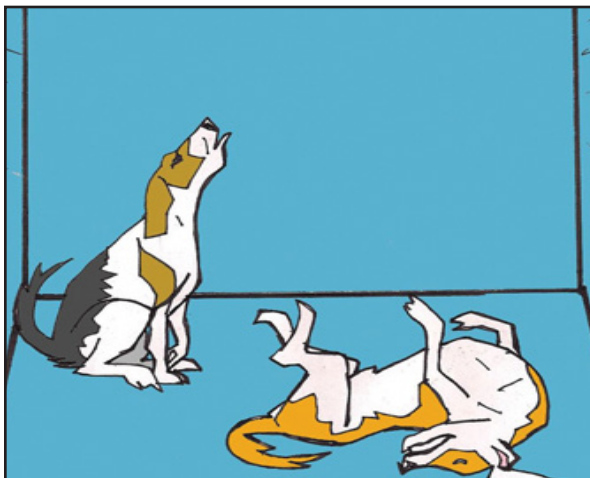
http://www.aalas.org/Online_Resources/listserves.aspx#compmed

Funny Stuff | Caption Reports

Cartoonist: Danny Kelly

We all agree that animal research is serious business. But there is still a place for laughter in our lives... even in the lab. So, in the spirit of good fun, we invited our readers to explore their lighter side and to share their worldview from the perspective of our mascot beagle. Happily, clever captions came in by the crateful.

THE WINNING CAPTION



"It's complicated.
Measure yourself
from your nose
to your butt,
add 6 inches..."

THIS ISSUE'S CONTEST



Please submit
your captions to
rmbw@earthlink.net



Share your ideas with Rhoda Weiner,
Editor at rmbw@earthlink.net

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There's an old saying that "You can't dance at two weddings at once."

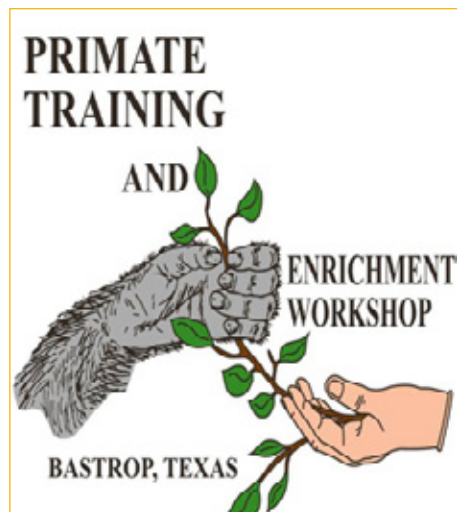
You also can't attend all the meetings and conferences taking place that offer the latest information in the field of laboratory animal science. **Meeting Up** will provide summaries of panels, workshops and symposia covering topics relevant to Environmental Enrichment. If you want more information about any of the presentations described or want to contact the presenters, let us know and we will be happy to connect you: info@TheEnrichmentRecord.com

The Primate Training and Enrichment Workshop

By Steven J. Schapiro, Ph.D., Associate Professor, Michale E. Keeling Center for Comparative Medicine and Research, The University of Texas M. D. Anderson Cancer Center

Since 1992, The University of Texas M. D. Anderson Cancer Center (UTMDACC), in conjunction with the Yerkes National Primate Research Center, and Active Environments, has been offering the 4.5-day Primate Training and Enrichment Workshop (PTEW) in Bastrop, TX. As the name implies, the PTEW focuses on the behavioral management of captive nonhuman primates and emphasizes the theory and application of environmental enrichment and positive reinforcement training techniques. The PTEW is taught by four primary instructors (Mollie Bloomsmith, Gail Laule, Steve Schapiro, and Margaret Whittaker) with considerable assistance from the Behavioral Management staff in the primate colonies at UTMDACC's Keeling Center.

During the first week of March, 2010, we completed our 19th PTEW in Bastrop. Thirty-four participants from the US, Canada, and Denmark (a) received hands-on training experience while applying positive reinforcement training techniques in our squirrel monkey colony and (b) designed, built, and evaluated enrichment devices in our rhesus monkey and chimpanzee colonies. Over 570 participants from 19 countries on six continents have now completed the PTEW in Bastrop, and it is likely that tens of thousands of captive nonhuman primates living in laboratories, zoos, primate centers, contract research organizations, quar-



antine facilities, sanctuaries, and breeding colonies have benefited from the experience gained by workshop attendees. While most of the attendees over the years have been caregivers and zookeepers, many veterinarians, principal investigators, managers, curators, and supervisors have also participated.

When the PTEW was initially conceived, one of our primary goals was to make certain that the group of participants in the workshop included individuals working with

primates in laboratories and in zoos. The instructors had experience in both zoos and labs, and we knew that the behavioral management problems encountered across work environments were similar. In addition, we were hoping to promote better communication and greater understanding between zookeepers and laboratory animal caregivers. These goals were admirably achieved for many years. Recently, however, we have had very few PTEW participants from zoos. It seems quite likely that recent fiscal constraints, rather than lack of interest in the topics, are the reasons that members of the zoo world have not been attending the PTEW.

In 2004 and 2007, we were able to offer Advanced PTEWs (designed specifically for 'veterans' of the basic PTEW) at the Yerkes National Primate Research Center in Atlanta, GA. These workshops addressed behavioral management issues related to enrichment, socialization, and positive reinforcement training in considerably greater depth than the basic PTEW. Participants were able to train animals in

Zoo Atlanta's collection and completed a 'behavioral management exercise' in which they devised and evaluated a behavioral management plan to address a specific problem in one of the primate colonies at Yerkes. The next Advanced PTEW will take place at Utah's Hogle Zoo in Salt Lake City in mid-April, 2010. No firm date has yet been set for the next basic PTEW, but in all likelihood, it will take place in late February or early March, 2011 in Bastrop, TX.

Quite a number of sponsors support the PTEW with either direct financial contributions and/or materials for workshop participants. Our most recent PTEW was sponsored by Bio-Serv, Lomir, LabDiet, ClearH2O, Harlan Teklad, Primate Products, Allentown, Edstrom, LGL, and A.P.E.S. In addition, Priority One Services contributes a scholarship in honor of a former employee, Rodger James, for one participant at each workshop (Basic and Advanced).

If you're reading this and you work with primates, then in all likelihood you know someone who has attended the PTEW. If you get a chance, ask around and see what people have to say about the experience.

This has just been the briefest of overviews of the PTEW program. Additional information concerning the Primate Training and Enrichment Workshops can be found on our website: ptew.kccmr.org

Although the information currently contained on this webpage refers to our recently completed PTEW, most of the information will be relevant for the 2011 PTEW as well. If you have any questions concerning this, or related, programs, please contact Steve Schapiro at: sschapir@mdanderson.org

Primadaption

"Training and Enrichment that is constantly evolving to meet the realistic needs of nonhuman primates in laboratory settings."

By Genevieve Andrews-Kelly, BS, LAT, Veterinary Associate, Merck & Co., Inc.

In February, I attended the Primadaption Workshop, held at Primate Products' Panther Tracks Learning Center in Immokalee, Florida. The goal of this four day workshop was to "create a realistic enrichment and training program that has room to change and grow, but is capable of being easily instituted at your facility."

As we all know, the world of nonhuman primate research is full of behavioral and enrichment challenges, and Primadaption workshop is an answer to such challenges. The importance of going beyond adequate care and providing optimal care for nonhuman primates was a central

theme in Primadaption and this workshop certainly provides attendees with the tools to venture toward that goal.

The organizer of the workshop, Stefanie Nelsen, led many of the sessions, but also included guest lecturers Don Bradford, president of Primate Products, and Dr. William Singleton of ACTS Training.

The curriculum of Primadaption consisted of classroom lectures, roundtable discussion, and practical training exercises. Some of the topics that were covered included "Operant Conditioning", overviews of "Environmental Enrichment and Behavioral Management", "Eliminating Unwanted Behaviors", "Calculating the Costs of an Effective Enrichment Program" and "Achieving Buy-In".

The highlight for me was the opportunity to apply our newly learned techniques by training naïve monkeys in the afternoons. We trained our monkeys to target, present limbs, to eat cooperatively while paired, and to sit in a restraint chair.

Although I am familiar with many of the topics and concepts that were presented, Primadaption allowed for a deeper exploration and understanding of the concepts of training, enrichment, and animal welfare, and the practical primate training exercises afforded greater opportunity to understand and practice these techniques, as well as a platform for interaction between colleagues to exchange information and discuss various techniques and success stories.

Attendees, selected to represent different facets of the research environment, included veterinarians, research technicians, veterinary technicians and animal care technicians. There was representation from academia as well as pharmaceutical companies. This diversity created a dynamic which enabled lively and valuable discussions and a wealth of information exchange.

Of course, there is a lot to be learned at workshops like Primadaption, but that knowledge doesn't help if we cannot implement it when we return to our daily routines. An interesting and valuable aspect of this workshop were the lessons on "Achieving Buy In", "SWOT Analysis" and "Calculating the Costs of an Enrichment program", as these topics in particular, help attendees to formulate a plan for introduction of new techniques/training/ enrichment at their facilities.

For more information on the Primadaption Workshop, please visit <http://www.primateproducts.com/cms.php?top=10>, or contact Stefanie Haba Nelsen at stefaniehaba@primateproducts.com

Dawn Conover, LATG, LVT

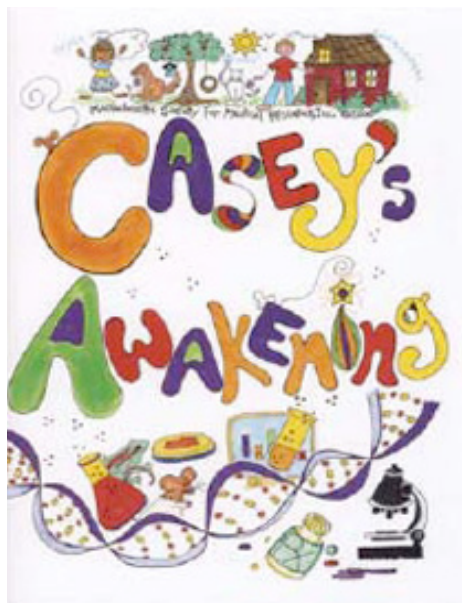
Program Director—Biological Research Facility,
SUNY State College of Optometry

It is our responsibility to enrich the lives of our research animals. For me, the 4th R stands for Respect.—Dawn Conover

An ardent supporter of environmental enrichment, Dawn Conover is totally dedicated to ensuring that her research family of 45 primates, 4 cats and a breeding colony of rodents receive the best of all possible care. The 2010 recipient of the Metro NY AALAS Bio-Serv Animal Welfare Award sums up her heartfelt philosophy in one simple phrase: "While they're with us, spoil them rotten!"

Environmental enrichment comprises 98% of Dawn's program. "Happy animals produce better research results," she says. "There is no set hour for environmental enrichment. From spoken interaction to visual enrichment, it is an all-day process and I encourage my staff to take advantage of this opportunity whenever they have a chance."

Dawn has made some interesting enrichment discoveries. "Our larger Primates love TV," she notes. "Most particularly, our Rhesus monkeys enjoy Disney Pixar films. Their all-time favorite is Finding Nemo!" Dawn maintains a library of movies...so her primates are never bored.



Artwork © 2000 Lynne Walsh

"Cats love human contact," she says, "as well as contact with one another." Dawn's cats live in group housing, always surrounded by company and toys. They are free to roam



their room on a daily basis. And...her rodents enjoy nestlets, bio-huts and Nylabones. "No animal species is too small for enrichment," she notes. "You just need to take the time and observe what is best for that species." From Dawn's perspective, enrichment is a 2-way street. "It is good for the technicians and good for the animals," she declares. "Everyone benefits!"

Grief Solutions

By combining her love and respect for animals, the need for public outreach and her concern for the technician's emotional health, Dawn created "Grief Solutions", a consulting service dedicated to encouraging laboratory workers to express their feelings about the animals they care for and to deal with euthanasia while continuing their vital work. This consulting adventure has given her the opportunity to speak to all levels of professionals in Lab Animal Science and to help mentor possible recruits for the field's future.

Casey's Awakening

Her proudest moment to date is the publication of *Casey's Awakening*® an educational tool for middle school students about the use of animals in biomedical research. Distributed by the Massachusetts Society for Medical Research, and now celebrating its 10th anniversary, this beautifully illustrated storybook takes its characters—a classroom of students—on

a fascinating tour of a laboratory animal research facility. A "labor of love" for the children and the animals, *Casey's Awakening* gives children an understanding of laboratory animal sciences and the important role of animals in biomedical research.

Thoughts on the Future

As to the future of environmental enrichment, Dawn believes enrichment will continue to grow in importance. "Knowledge of enrichment," she says, "will become an essential component in the education and training of Laboratory animal staff everywhere. If we teach the benefits and importance of animal enrichment from the beginning, we can help our staff understand it is more than just a daily chore."

Dawn Conover is a Laboratory Animal Technologist and New York State Licensed Veterinary Technician who has been in the field for twenty years. She has been active both nationally and locally as a member of the Board of Trustees for The American Association for Laboratory Animal Science (AALAS), a member of the Board of Directors for the AALAS Foundation, and Technician Branch Representative, council member and Public Education Chair for the Metro NY AALAS. Dawn has spent the latter part of her career studying and observing the effects of the human animal bond issue through personal and professional experience. Past awards include the Metro NY AALAS branch "Technologist of the Year" award, National AALAS "Technician of the Year Award", Purina Mills "Technician of the Year Award" and the George R. Collins award for outstanding contributions in the field of Laboratory Animal Technician Training.

Upcoming Events

Meeting the Information Requirements of the Animal Welfare Act: A Workshop

The Animal Welfare Information Center (AWIC) teaches a one and a half day workshop at the National Agricultural Library (NAL) in Beltsville, Maryland, for individuals who are responsible for providing information to meet the requirements of the Animal Welfare Act (AWA). This workshop is targeted for principal investigators, members of IACUCs, information providers, administrators of animal use programs, and veterinarians. It has been approved for 13.5 continuing education units (CEUs) by the Medical Library Association.

The regulations of the AWA require that investigators provide Institutional Animal Care and Use Committees (IACUC) with documentation demonstrating that alternatives to procedures that may cause more than momentary pain or distress to the animals have been considered and that activities do not unnecessarily duplicate previous experiments. A thorough literature search regarding alternatives meets this Federal mandate. An alternative is any procedure which results in the reduction in the numbers of animals used, refinement of techniques, or replacement of animals.

Representatives from USDA-Animal Care and NIH-OLAW will provide regulatory updates and be available for questions.

Objectives

The objectives of the workshop are to provide:

- An overview of the AWA and its information requirements;
- A review of the alternatives concept;
- A comprehensive introduction to NAL, AWIC and other organizations;
- Instruction on the use of existing information databases/networks; and
- On-line database searching experience.

Upcoming Dates

May 5-6, 2010

October 20-21, 2010

SPACES ARE AVAILABLE FOR THE WORKSHOP ON May 5-6, 2010

To register, go to <http://awic.nal.usda.gov/workshops>

The workshop is limited to 20 participants.

Contact AWIC for more information:

Animal Welfare Information Center (AWIC)

USDA, National Agricultural Library

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Tel: 301-504-5486 • Fax: 301-504-7125

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Please send upcoming event notices to Rhoda Weiner,
Editor at rmbw@earthlink.net



National Centre for the Replacement, Refinement and Reduction of Animals in Research

The National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs), established by the UK Government, is an independent scientific organisation, and the largest funder of 3Rs research in the UK. The Centre's mission is to use the 3Rs to support science, innovation and animal welfare in the biosciences.

Dedicated to all 3Rs—replacing, refining and reducing the use of animals in research and testing—NC3Rs works in partnership with bioscience research funders, academia, industry, regulators and animal welfare organisations, both in the UK and internationally, to advance the 3Rs by:

Driving new approaches—inspiring scientists and fostering innovative thinking;

Aligning science and technology with the 3Rs—bringing together experts from a range of disciplines and sectors to explore the 3Rs potential of new or under-exploited technologies;

Stimulating changes in practice—working with scientists and regulatory authorities to highlight opportunities for implementing the 3Rs;

Integrating 3Rs research into the mainstream life sciences—funding high quality 3Rs research in universities and industry;

Working with the UK's major funders of bioscience research—through peer review and best practice guidelines;

Organising and funding events—including scientific symposia and focused workshops as part of integrated programmes, providing unique forums for discussion and interaction;

Recognising and rewarding excellence—by awarding an annual prize for a publication that has positive 3Rs and scientific impacts;

Profile raising and disseminating information—via an information portal, range of publications, peer reviewed articles and expert working groups.

<http://www.nc3rs.org.uk/>

I got into trouble recently when I decided to give kitties in my care some catnip. The AV passed by and had conniptions. I feel terrible and want to understand what was wrong with this treat. Abashed in Atlanta.

Dear Abashed,

First, you're to be congratulated for wishing to enhance the environment of your kitties. In the future, one way to avoid causing the AV a conniption fit is to discuss with the AV any changes being considered in the environmental enrichment program at your animal facility. Also, any changes should be approved by the Institutional Animal Care and Use Committee. Finally, any time you want to make a change in procedure you should ask yourself what impact the change may have on the outcome of the experimental data.

Catnip has been studied rather extensively. It is a plant (*Nepeta cataria*) that many have used to treat human disease and used in pet toys. Catnip has been found to decrease sleep time following administration of sodium pentobarbital, and it also increases susceptibility to seizures. In large quantities, it has been shown to be toxic in children. Catnip has also been used by people as a tea to produce a calming effect. It is the main active compound (nepetalactone) found in catnip that causes these effects. So ask yourself, if nepetalactone can cause these effects, could it impact the experiments that are being carried out on cats at your animal care facility? Your response would now most likely be "yes". It would be difficult to control for this variable; thus I would not recommend the use of catnip as environmental enrichment within a research facility.

Keep learning and caring...

Dr. Sol Utions

REFERENCES

Catnip Side Effects, Interactions and Warnings—Uncertainty exists regarding the ability of catnip (*Nepeta cataria*) to affect human consciousness. We report a case of a toddler exhibiting central nervous system depression after consuming a large quantity of catnip. His obtundation was not attributable to another cause. We review the published literature describing the alleged psychoactive capabilities of catnip and present our case as further information for use in this ongoing controversy.

Vet Hum Toxicol 1997 Dec;39(6):373-5—*Catnip and the alteration of human consciousness.*—Osterhoudt KC, Lee SK, Callahan JM, Henretig FM.

Acute exposure to catnip increased stereotyped behavior and susceptibility to seizures, did not interfere with haloperidol-induced catalepsy, and decreased sleeping time after sodium pentobarbital administration. Long-term exposure induced tolerance to stereotypic behavior, catalepsy and sleeping time, and increased the susceptibility to seizures induced by picrotoxin and strychnine. An amphetamine-like effect of catnip was suggested to explain the acute effects, while dispositional and functional adaptive changes were considered involved with the long-term effects.

Vet Hum Toxicol 1995 Dec;37(6):530-3 —*Behavioral effects of acute and long-term administration of catnip (Nepeta cataria) in mice.*—Massoco CO, Silva MR, Gorniak SL, Spinosa MS, Bernardi MM.

Not recommended if you are pregnant or nursing.

Another source of information

<http://chemistryabout.com/b/2003/07/12/the-many-uses-of-catnip.htm>

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