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Pain & Distress Report is available online at www.hsus.org/pain_distress_report.



Policies & Perspectives

NEW MOU BETWEEN NIH, USDA, AND FDA

The National Institutes of Health (NIH), U.S. Department of Agriculture (USDA), and Food and Drug Administration (FDA) recently released a new Memorandum of Understanding (MOU) designed to enhance agency effectiveness and avoid duplication of efforts in achieving required standards for the care and use of laboratory animals. The agencies agree to share information (particularly in regard to animal welfare concerns and institutional noncompliance) and to consult and coordinate on policy changes involving animal care and use, among other issues. Updated every five years, the new MOU no longer says that adherence to the policies and regulations of the agencies is achieved through voluntary compliance. A new section addresses procedures for Freedom of Information Act (FOIA) requests. The new MOU can be found at <http://grants.nih.gov/grants/olaw/references/finalmou.htm>.

Noteworthy

GENE CHIP REDUCES ANIMAL USE

A new gene chip created by researchers at the University of Nebraska Medical Center allows researchers to view all 20,000 genes of a rhesus monkey at once, as opposed to one at a time. Researchers can readily study all proteins

produced by a specific animal in reaction to an illness, as opposed to using many animals to study each gene separately. The gene chip is a thumb-sized microarray composed of a quartz chip with molecular probes bonded with fluorescently labeled DNA or RNA samples from various tissues, revealing gene patterns. For more information go to http://app1.unmc.edu/publicaffairs/todaysite/sitefiles/today_full.cfm?match=2482.

WHAT FISH FEEL

Researchers at the University of Guelph in Canada studying highly domesticated rainbow trout found that fish behavior is more complex than previously acknowledged. The fish's suffering capacity is compared to that of "higher" vertebrate animals, who are considered sentient and have the ability to subjectively and consciously experience things. The fish were trained to swim away from an aversive stimulus and to press a lever to obtain a reward. The purpose of the experiment was to study the phenomenon of fear and determine which of the fish's responses to negative stimuli were reflexive and which were deliberate. The results indicate that trout have a cognitive capacity comparable to that of mammalian laboratory animals such as rats, and they have the ability to learn, remember what they have learned, and anticipate events to adjust their behavior accordingly. These "purposeful" behaviors are potential evidence of "conscious" behavior. When frightened,

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Noteworthy

trout follow behavioral patterns similar to those of sentient beings like mice. While these findings suggest consciousness in fish, their level of consciousness remains to be determined so that guidelines tailored to the specific needs of fish can eventually be developed.

(Source: www.avionline.org/pubs/Quarterly/05_54_04/05_54_4p19.htm)

Statistics on Animal Use Pain & Distress

BRITISH ANIMAL USE STATISTICS FOR 2004

Statistics of Scientific Procedures on Living Animals: Great Britain 2004 was recently released by The British Home Office. The total number of animals used during 2004 was 2,778,692, an increase of 2% since 2003. In 2004, 60% of procedures were performed with no anesthesia, 20% with general anesthesia with recovery, 11% with local anesthesia, 6% with general anesthesia at end of procedure without recovery, and 3% with general anesthesia throughout without recovery. Mice, rats, and other rodents comprised approximately 86% of the animals used, followed by fish (7%); birds (4%); large mammals such as sheep, cattle, horses, pigs, and ungulates (1.4%); rabbits (0.53%); amphibians (0.39%); dogs (0.20%); primates (0.19%); and cats (0.02%). From 2003, the use of fish, dogs, and rodents increased by 11%, 9.5%, and 3%, respectively, while the use of reptiles decreased by 95%, cattle by 63%, primates by 15%, birds by 14%, and rabbits by 13.5%. Approximately 31% of procedures were related to fundamental biological research, 29% to applied research (including human and veterinary pharmaceutical development and testing), 34% to breeding, and 4% to “protection of man, animals, or the environment.” Thirty-two percent of all procedures involved genetically modified animals. The full text of this report can be found at www.official-documents.co.uk/document/cm67/6713/6713.pdf.

CANADIAN ANIMAL USE STATISTICS FOR 2004

The Canadian Council on Animal Care (CCAC) has released its annual report of animal use statistics for 2004. The number of animals used in scientific procedures for research, testing, and education in Canada totaled 2,307,232, a 7% decline from 2003. Similar to previous years, the four main types of animals used in 2004 were mice, rats, fish, and domestic birds. These animals accounted for 89% of the total number of animals used. The most severe “categories of invasiveness” in the Canadian system are categories D (experiments that cause moderate to severe distress or discomfort) and E (experiments that cause severe pain to unanesthetized, conscious animals). Categories D and E, respectively, accounted for 775,144 animals (34%) and 102,333 animals (4.4%), both slightly up from 2003. The CCAC attributes the greater number of animals in category D than category B (experiments that cause little or no discomfort or stress) to an increase in the use of genetically engineered animals. No nonhuman primates, dogs, or cats were used in category E procedures. To view the results in their entirety, visit www.ccac.ca/en/Publications/New_Facts_Figures/intro.htm.

From the Technical Literature

ENRICHMENT STRATEGIES FOR LABORATORY ANIMALS

In a recent article, Overall and Dyer (2005, *ILAR Journal*, 46: 202–215) stress the need for understanding normal animal behavior in order to properly address enrichment in all research animals, regardless of whether they are housed in a laboratory. They also address training staff to assess behavior changes that might be due to research constraints. The authors discuss normal behavior, the effects of environmental and behavioral stress, environmental conditions, species-specific behavior, feeding, housing, training and handling, novelties and other manipulanda, and socialization and stimulation,

specifically for dogs and cats. The authors note that quality of experimental data is likely to be enhanced when cats are housed in enriched environments that meet their behavioral, social, and physical needs. They also note that all dogs should receive some kind of mental stimulation and behavioral enrichment. Summaries of recommendations for enrichment in dogs and cats are provided. The authors conclude that enrichment reduces struggles with research animals, reduces worker hours, enhances worker satisfaction, prevents job burnout, and produces higher quality data.

Recent Publications

Ceyhan, A., Ustun, H., Altunatmaz, K., Ide, T., & Unal, N. (2005). Is metoclopramide an alternative to tramadol in management of post-operative pain? An experimental study. *Journal of Veterinary Medicine Series A: Physiology, Pathology, Clinical Medicine*, 52(5): 249–253.

Mason, G., Wilson, D., Hampton, C., Würbel, H. (2004). Non-invasively assessing disturbance and stress in laboratory rats by scoring chromodacryorrhoea. *Alternatives to Laboratory Animals*, 32(Suppl. 1): 153–159.

Möllenhoff, A., Nolte, I., & Kramer, S. (2005). Anti-nociceptive efficacy of carprofen, levomethadone and buprenorphine for pain relief in cats following major orthopaedic surgery. *Journal of Veterinary Medicine Series A: Physiology, Pathology, Clinical Medicine*, 52(4): 186–198.

Phillips, B., Smith, D., Combes, R., Descotes, G., Jacobsen, S. D., Hack, R., Kemkowski, J., Krauser, K., Pfister, R., Rabemampianina, Y., Sparrow, S., Stephan-Guedner, M., & von Landenberg, F. (2004). An approach to minimise dog use in regulatory toxicology: Production of a best practice guide to study design. *Alternatives to Laboratory Animals*, 32: 447–451.

EFFECTS OF INDIVIDUAL HOUSING ON BEHAVIOR IN MICE

Võikar et al. (2005, *Genes, Brain and Behavior*, 4: 240–252) investigated the effects of individual housing on mouse behavior in C57BL/6J and DBA/2 strains. Fifteen mice were housed singly, and 15 were housed in groups of five for each strain prior to testing. Each mouse was subjected to various tests to examine anxiety, exploration, nociception, motor coordination, learning, novel object recognition, spatial learning, and behavioral despair. Single-housed mice displayed hyperactivity and reduced habituation in tests for activity and exploration, reduced anxiety in the elevated plus-maze (although other tests revealed high anxiety), reduced immobility in the forced swim test, and increased anxiety in the dark-light exploration test and the novelty-induced feeding suppression tests. DBA/2 single-housed mice displayed higher anxiety in the plus-maze, dark-light exploration, and novelty-induced feeding suppression tests. Compared to B6 mice in isolated housing, they were more strongly affected, as evidenced by their exploratory and emotional behavior. All of these findings suggest that isolation can affect emotional behavior and impair memory and is an important factor to consider when designing protocols, since data can vary between isolated and group-housed mice and among strains.

While The HSUS believes that there are much better means of examining the effects of isolation versus group housing in mice—including methods that do not harm the animals in any way—these findings should be seriously considered, as they support similar findings in various studies.

Resources & Services

CARBON DIOXIDE ARTICLE AVAILABLE ONLINE

“Carbon dioxide for euthanasia: Concerns regarding pain and distress, with special reference to mice and rats” (2005, *Laboratory Animals*, 39: 137–161) is now available for free at www.ingentaconnect.com/content/rsm/lab/2005/00000039/00000002/art00001. This paper reviews published evidence regarding the effects of carbon dioxide (CO₂) in both humans and animals. Alternatives to the use of CO₂ as a sole agent for euthanasia are also recommended and discussed.

PROCEEDINGS OF WORKSHOP ON CLONING NOW AVAILABLE

The proceedings of the workshop entitled Exploring the Moral and Ethical Aspects of Genetically Engineered and Cloned Animals, held in January 2005 in Rockville, Maryland, are now available. Hosted by the Pew Initiative on Food and Biotechnology, the workshop brought together animal biotechnology researchers, representatives from the biotechnology and food and agriculture industries, consumer and animal welfare advocates, ethicists, and federal and state regulatory officials. The goal of the workshop was to discuss whether or not the moral and ethical issues relative to genetically modified and cloned animals differ from the questions raised regarding conventional animal use. The proceedings are available online at <http://pewagbiotech.org/events/0124/proceedings.pdf>.

ALTERNATIVE FOR VETERINARY STUDENT TRAINING

Rescue Critters, LLC, now has K-9 models designed to move and resist as a live dog would. “Emily,” the K-9

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Upcoming Conferences

25th ACLAM Forum: New Frontiers in Education & Training

- ▶ Hosted by the American College of Laboratory Animal Medicine
- ▶ June 25–29, 2006
- ▶ St. Pete Beach, Florida
- ▶ For more information, go to www.aclam.org

IACUC 101

- ▶ Hosted by the NIH Office of Laboratory Animal Welfare (OLAW) and the University of New England
- ▶ July 13, 2006
- ▶ Biddeford, Maine
- ▶ For more information, go to http://grants.nih.gov/grants/olaw/Biddeford_042406.doc

IACUC 101

- ▶ Coordinated by the California Biomedical Research Association
- ▶ September 26, 2006
- ▶ San Francisco, California
- ▶ For more information, go to <http://grants.nih.gov/grants/olaw/workshop.htm>

IACUC 101/201 Plus

- ▶ Coordinated by the OLAW, Tripler Army Medical Center, and University of Hawaii at Manoa
- ▶ November 8–9, 2006
- ▶ Manoa, Honolulu
- ▶ For more information, go to <http://grants.nih.gov/grants/olaw/iacuc101s.htm>

Pain & Distress Report

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Resources Services

Positioning Mannikin, has joints that allow students to practice positioning dogs for various procedures. "Rufus," the K-9 Bandaging and First Aid Mannikin, prepares students for critical care procedures such as bandaging and resuscitation. For more information, go to www.rescuecritters.com.

NEW GUIDE FOR EXERCISE PROTOCOL DESIGN

Published by the American Physiological Society, *Resource Book for the Design of Animal Exercise Protocols* is for use by researchers, Institutional Animal Care and Use Committees (IACUCs), and oversight committees when considering the welfare of animals used in exercise research. Authored by exercise physiologists and laboratory animal veterinarians, the book examines topics such as animal stress, exercise paradigms in the context of U.S. animal welfare policies and laws, promotion of informed dialogue between researchers and IACUCs when considering animal welfare, and common protocols for using rats and mice (the most commonly used species in exercise studies). The book can be downloaded at www.the-aps.org/palaction/exercise. E-mail OLAW@od.nih.gov to receive a free copy while supplies last, or purchase a copy at www.the-aps.org/store.

Pain & Distress Report

The *Pain & Distress Report* provides laboratory animal veterinarians, technicians, oversight committees, and others with up-to-date information on issues regarding pain and distress in laboratory animals.

E-mail ari@hsus.org for a free subscription to the electronic version of the newsletter; copies are also available online at www.hsus.org/pain_distress_report. Please share this report with your colleagues and IACUC members.

ECVAM: CALL FOR EXPRESSION OF INTEREST

The European Commission Joint Research Centre (EC-JRC) Institute for Health and Consumer Protection, in Ispra, Italy, has launched a call for institutions active in the field of animal testing alternatives to indicate their interest in collaborating with the European Centre for the Validation of Alternative Methods (ECVAM). Institutions will be included on a list of service providers interested in the validation of alternative test methods. For more information, go to <http://ecvam.jrc.it/index.htm>, click on "News, Events and Meetings,"

and scroll down to "Call for expression of interest (CEI) to participate in ECVAM Projects."

AWEN PAIN AND DISTRESS CONFERENCE PROCEEDINGS

Materials and presentations from the AWEN Group's recent Assessment and Treatment of Pain and Distress in Animals (ATOP) conference series are now available on CD-ROM. This annual conference gathers experts in pain assessment and treatment of research animals in order to bring best practices to the research community. To order, e-mail info@theawengroup.com.

Helpful Websites

Pharmacology and Physiology Simulations

The Strathclyde Pharmacology Simulations package, created by the University of Strathclyde Glasgow, is a compilation of programs that simulate pharmacological experiments on isolated tissues or whole animals. Researchers can apply a range of drugs in varying concentrations and observe the effects. Access the program at http://spider.science.strath.ac.uk/PhysPharm/showPage.php?pageName=software_sims.

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