Animal Source

PSU Animal Resource Program

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Management of Surgical Pain in Research Animals

An important component of research animal welfare is the alleviation of pain resulting from surgical procedures. PI's should be aware of three basic principles concerning pain management in animals undergoing surgery:

1. **Pain management should start before pain occurs.**
   Recent studies have shown that animals receiving analgesics before pain occurs (i.e., prior to surgical manipulation) experience less post-operative pain and require less analgesic medication than animals who do not receive analgesic medication until after surgery. Animals must still be assessed during and after recovery for signs of pain so that additional pain relief may be provided if needed.

2. **Pain treatment should be multimodal when possible.**
   Different types of analgesics work to inhibit pain in different ways. Administering more than one type of analgesic medication may result in less post-operative pain while using lower dosages of each type of medication.

3. **In cases where it is unclear whether or not an animal is in pain, response to analgesic medication may be useful in pain assessment.**
   Animals perceive and react to pain differently than humans. This sometimes makes it difficult for observers to determine if an animal is in pain. Observing changes in animal behavior (i.e., return to normal activity levels) after the administration of appropriate post-operative analgesic medication can assist investigators in assessing how much pain is present after a surgical procedure.

Further information on specific analgesic drugs and other aspects of pain management in research animals may be obtained from ARP veterinarians or on the ARP website.

Visit the ARP website at www.research.psu.edu/arp for answers to your animal use questions

Inside this issue:

Handling Mice Housed in Microisolator Cage Systems

The majority of mice at PSU are housed in microisolator caging, either static microisolator boxes or ventilated rack systems. Microisolator cage systems provide mice with a controlled environment that minimizes the risk for spread of infectious agents between cages. Specific handling techniques must be used to ensure that these systems are effective.

The main points to remember when working with microisolator caging are:

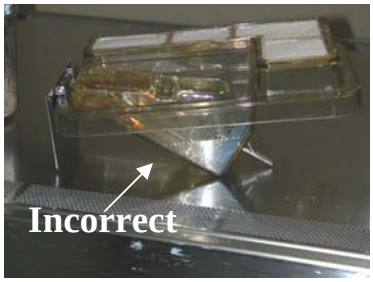
- Each cage is its own microenvironment and should receive minimal exposure to the room environment.
- Cages should be opened within a functioning ventilated hood.
- Personnel should only handle animals with disinfected gloved hands.

A step-wise summary of correct microisolator technique follows:

1. Turn on the changing hood or biosafety cabinet fan prior to starting work. Wear clean gloves and a long sleeved lab coat or gown. Disinfect the interior hood surfaces with the available disinfectant solution and prepare the equipment you will need in the hood.

2. To open a mouse cage, set it inside the hood on the solid stainless steel work area. Do not work on top of or otherwise cover the airflow grate. Remove the filter top lid and place it, top down, next to the cage. Place the water bottle tip up next to the cage.

3. Do not place the filter top bottom down or let the sipper tube touch the hood surface.



4. Spray your gloved hands with disinfectant prior to touching the interior parts of the cage.

4. Lift the wire cage lid to remove mice. The lid can be placed sideways on top of the cage if desired. Do not set the wire lid on the hood surface.

5. Handle mice with gloved hands coated with disinfectant.

- Reverse procedures to replace the cage lid, filter top and water bottle.
- Spray hands with disinfectant before touching the interior surfaces of *each cage*.
- When finished working, wipe the hood interior surfaces with disinfectant followed by water moistened paper towels.
- Turn off the hood blower and lights.

Three R's Co-developer Dies at Age 81

The zoologist and sociologist William Russell, who co-wrote *The Principles of Humane Experimental Technique* in 1959 with Rex Burch, died on July 27, 2006. In their book, Russell and Burch introduced the three R's of experimentation: "replacement" of experimental animals with insentient materials or less sentient species; "reduction" in the number of animals used to obtain information; and "refinement" of experimental procedures to minimize the infliction of pain and distress. Although the book did not receive much attention when first published, the three R's have since become the cornerstone on which most European and North American experimental animal regulations and guidelines are based.

Dr. Russell studied and wrote about many aspects of behavior, including the origins and nature of violence (*Violence, Monkey and Man,* 1968), the role of overpopulation in civilizational collapse (*Population Crises and Cycles,* 1999), and the historical value of folklore. He was featured in a children's book written by Christie Davies, a former colleague, as the cake eating, problem-solving Professor Russell character in *Dewi the Dragon* (2005).

Professor William Russell-Obituraries-Times Online. http://www.timesonline.co.uk/article/0,,60-2322677.html

Animal Resource Program

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The Animal Resource Program (ARP) is committed to providing PSU research personnel with high quality animal care services and facilities, to facilitate and improve animal research, and to ensure the health, well-being and humane treatment of all animals at PSU. ARP provides veterinary and diagnostic services, personnel training and expertise in laboratory animal, agricultural and wildlife technology and medicine. ARP veterinarians have specialized training and are available to assist with animal model development, experimental design, budget projections and grant preparation. Participation in collaborative research projects is welcomed.

Mouse Biomethodology Seminar
September 15, 2006
1-4 pm
Centralized Biological Lab
Call 865-1495 to
register to attend

Are these mice male or female?

Determining sex in mice, especially juveniles, can be challenging. Investigators are generally taught to look for greater distance between the anus and urogenital orifice to distinguish males from females. It may be difficult to appreciate this in young mice such as those pictured on the right.

The presence of nipples indicates that the mouse in the top photo is a female. Male mice do not have nipples. This anatomical fact can be useful when anogenital distances are hard to interpret.