



# ANIMAL TRACKS



A newsletter for the Duke research community

May 2007

<http://www.duhs.duke.edu>

## WE DID IT! WE DID IT! THE AAALAC REPORT IS IN!

Many will recall the fevered summer and fall of 2006, as we made final preparations for Duke's triennial (once every three years) Site Visit by AAALAC, International. A few days ago we received a letter from AAALAC advising us that Duke has achieved **FULL ACCREDITATION** for the next three years!

This is a special accomplishment for a number of reasons:

A. While Duke has been continuously accredited since 1976, our history has not been stellar. Previous AAALAC reviews have resulted in numerous concerns and corrections to maintain our accreditation. This time the news is different. This year's report from AAALAC is a 'CLEAN LETTER.' AAALAC has no mandatory requirements nor are there any 'suggestions for improvement' that our campus must consider to remain accredited.

B. The Duke Lemur Center, a well respected member of the Duke community, has never been accredited by AAALAC ... until now. This Site Visit cycle included the Duke Lemur Center as part of our campus-wide accreditation. The quality care program at the Lemur Center was recognized by AAALAC with special commendation.

C. The preparation for accreditation included not just the animal program leadership (IACUC, DLAR, OAWA), but also representatives from the Medical Center and the University (e.g. facilities, OESO staff, Public Affairs) and every research laboratory on campus! Our success is indeed a total team effort! Everyone had a specific and critical role to play in the accreditation process, and everyone did well.

This is an important accreditation for our research community. AAALAC, International is a private, nonprofit organization that promotes the humane treatment of animals in science through accreditation and assessment programs [AAALAC = Association for Assessment and Accreditation of Laboratory Animal Care]. While there are approximately 10,000 organizations using animals in the world, Duke is one of only 724 companies, universities, hospitals, or government agencies in 27 countries that have earned AAALAC accreditation by demonstrating our continued use.

Continued on page 4 ... See 'AAALAC Accreditation'

## New Institutional Policy! When an Animal Use Protocol is Required For Animal Work Off Campus (or when a protocol is not required)

Animal protocols are not always required. Under certain circumstance, animal work performed at another institution does not require a Duke animal protocol. Even when a Duke animal protocol is not required, Duke researchers should alert the IACUC/OAWA of their desire to collaborate with scientist on other campuses (animal-related research). This will enable the IACUC/OAWA to confirm the appropriateness of 'no protocol' and determine what regulatory/education resources would be helpful to the Duke member. To view the complete policy, visit the Duke Animal Care Program website policy page at:

[http://vetmed.duhs.duke.edu/index\\_of\\_program\\_policies.htm](http://vetmed.duhs.duke.edu/index_of_program_policies.htm)

Click the link under 'Protocol Management Policies' for 'Working With Animals At Other Institutions (No Protocol Required).'

## CO<sub>2</sub> Euthanasia Training is Now Available Online!

The required CO<sub>2</sub> euthanasia training is now available on the OESO website: <http://www.safety.duke.edu/OnlineTraining/Default.asp>. To take the training, enter your Duke Unique ID and your last name. Then click on courses available online on the left hand side of the screen. Click on the module CO<sub>2</sub> Euthanasia of Animals. Follow instructions on the screen. The module consists of a slide presentation, a video clip, and a 10-question quiz.

### Inside this issue:

AAALAC .....	1
New Policy .....	1
CO <sub>2</sub> Training Module .....	1
Supportive Care of Rodents .....	2, 3
Disease Outbreaks on Campus .....	4
Upcoming events .....	4
NIH Rules on Recombinant DNA .....	5
May Brown Bag Seminar Flyer.....	6

## Postoperative Supportive Care of Rodents

It is often not practical or feasible to provide the same intensity of surgical/post-surgical supportive care to rodents as is commonly provided to larger, non-rodent species. Since survival surgery is often done on multiple rodents during one anesthesia/surgery period, methods for intra-operative/post-operative care need to be applicable to multiple, simultaneous, animals.

**Maintenance of Body Temperature:** Because the ratio of body surface area to body mass is greater in rodents than in larger species, thermal support is often critical to the successful recovery of rodents from anesthesia than larger animals. Hypothermia leads to a decrease in metabolism of anesthetic drugs and urinary excretion of such drugs with resulting prolongation of anesthesia. Particularly in rats and mice, body heat may be dissipated from the tail/soles of the feet/ ears can result in a significant decrease in the core body temperature. Methods to minimize heat loss to the external environment (during surgery and post-surgical recovery of rodents) include:

- ◆ Increasing the ambient temperature of the surgical room/procedure room.
- ◆ Placement of a thermal blanket (such as a recirculating warm water heating pad) between the animal and heat-absorbing surfaces.
- ◆ Careful and controlled use of incandescent or heat lamps during surgery and post-surgical recovery. BE CAREFUL OF BURNS!
- ◆ Minimization of organ exposure from body cavities during surgery.
- ◆ Post-surgical recovery of the animal on a warming blanket or within a temperature-supported cage (such as a human infant incubator).
- ◆ Administration of warmed subcutaneous or intraperitoneal fluids intra- and/or postoperatively.
- ◆ Post-surgical recovery on bedding to provide thermal insulation.

The best option? A combination of all of the above. It is important to monitor the animal's internal body temperature, at regular intervals, during the surgical and post-surgical recovery period. Digital rectal thermometers may be used on adult rodents.

### **Normal Body Temperatures**

Mouse.....	98.8-99.3 F (37.0-37.2 C)	Rat.....	99.3 –99.5F (37.2-37.5C)
Hamster.....	97.1-99.5 F (36.2-37.5 C)	Guinea Pig.....	98.9-103.1 F (37.2-39.5 C)

**Ocular Care:** Rodents are frequently anesthetized with anesthetic drugs which inhibit blinking and associated ocular lubrication. This lack of blinking results in drying of the cornea and increases the risk of postoperative corneal ulceration. Regaining of the blink reflex often does not occur until late in the post-anesthesia period (may be out to 6-8 hours). The Duke animal program recommends ocular lubrication (with an appropriate sterile ocular lubricating ointment) while the animal is under general anesthesia with repeat application administered during the postoperative period until spontaneous blinking is resumed.

**Nutritional Support:** Rodents have high energy requirements due to their small size and high metabolic rates. They also often have minimal fat reservoirs that can be mobilized to supply needed energy. Nutritional support is critical on recovery to avoid hypoglycemia (especially if the animal was fasted prior to anesthesia induction). Methods to provide nutritional support include:

- ◆ Providing a high-quality rodent diet as soon as the animal has recovered sufficient to ambulate and eat;
- ◆ Administering supplemental fluid and nutritional support by feeding gelatin or agar-based diets, ground moistened feed, or small amounts of peanut butter or other high caloric paste-type diets (dietary supplements must be approved on the protocol); or
- ◆ Injecting small volumes (3-12 mls, depending on the size and species) of a warmed 5% w/v dextrose solution subcutaneously (these should also be approved on the protocol).

### **Normal Daily Food Consumption**

Mouse.....	12-18 gm/100 gm body weight	Rat.....	5-6 gm/100 gm body weight
Hamster.....	10-14 gm/100 gm body weight	Guinea Pig.....	6 gm/100 gm body weight

**Fluid Support:** Volume deficits can be estimated by comparing pre-surgical body weight and post-surgical/post-anesthesia recovery body weight of an individual animal. Regular, frequent weighing of animals can be used to assess both nutritional and fluid intake deficits during the longer-term postoperative recovery period. Decrease in skin turgor/skin elasticity (which is best assessed by "tenting" the skin over the dorsal lumbar area and evaluating how quickly it returns to its normal position) corresponds to mild to moderate (10%-20%) dehydration. Volume deficits can be corrected by the subcutaneous or intraperitoneal injection of warmed saline, warmed lactated Ringer's solution, or other warmed balanced replacement fluids. If fluids cannot be administered intravenous, the intraperitoneal route provides the most rapid absorption into the vascular system. If significant blood loss has occurred, blood transfusions can be administered (usually via the lateral tail vein or jugular vein). With transfusions into inbred and F1 hybrid rodent strains, as well as naïve, animals, blood typing is usually not needed and transfusion reactions seldom occur.

**Continued on the next page ... See 'Postoperative Support Care of Rodents'**

## Postoperative Supportive Care of Rodents—continued from the previous page

Animals that do not have normal daily water consumption within 24 hours of recovery from anesthesia must have the estimated water intake deficit administered to them parenterally or orally (i.e. such as via oral gavage), on a daily basis, until normal intake has resumed. Animals that do not exhibit normal intake of water will not have corresponding normal intake of solid food.

### **Total Blood Volume**

Mouse.....	5.85 ml/100 gm body weight	Rat.....	57.5-69.9 ml/100 gm body weight
Hamster.....	65-80 ml/kg body weight	Guinea Pig.....	69-75 mg/kg body weight

### **Normal Daily Water Consumption**

Mouse.....	15 ml/100 gm body weight	Rat.....	10-12 ml/100 gm body weight
Hamster.....	7-10 ml/100 gm body weight	Guinea Pig.....	10 mg/100 gm body weight

**Postoperative Pain Management:** Because the anatomical structures and neurophysiological mechanisms leading to the perception of pain are similar in humans and non-human mammals, it is reasonable to assume that if a stimulus is painful to humans, if a stimulus is damaging or potentially damaging to tissues, or if a stimulus would induce escape or emotional responses, then it must be considered to be distressful or painful to that animal. The choice of postoperative analgesic drug must take into consideration (and be appropriate for) the estimated level and duration of post-surgical/post-procedural pain and/or discomfort associated with the specific surgery/procedure. For best pain control results, analgesics should be administered as early in the painful procedure as possible. Providing analgesia prior to the initiation of the painful stimulus is preferred. Providing analgesia during the end of the time period of the procedure or during the post-procedural anesthesia recovery period is considered the minimal standard when pre-procedural analgesia is not possible. For specific information about analgesic drugs available for use in rodents, refer to the document “Guidelines for Rodent Analgesia” (under “Care & Use Guidelines” on the Duke Animal Care & Use Program web site).

**Management of Postoperative Infections:** The routine use of postoperative antibiotics is not recommended in lieu of strict adherence to aseptic surgical techniques. If there is a concern that necessary asepsis has been compromised during the surgery/procedure, the investigator should consult with a Duke veterinarian to determine appropriate broad-spectrum antibiotics.

**Care of Surgically-Implanted Devices:** Catheters and implanted devices should be appropriately maintained. The manufacturer of such devices is usually able to provide specific information on post-implantation care of the device. Vascular catheters should be aseptically flushed with a diluted anticoagulant (such as heparin) a minimum of 1 to 2 times daily. Exteriorized portals of implanted devices (such as skull caps) should be cleansed with a topical bacteriocidal disinfectant solution and the surrounding hair clipped on a regular basis (2 to 4 times per week the wound should be cleaned and treated). Caging for animals with implanted devices may also need to be changed more frequently than normal to decrease local contact to debris and contaminants. Miniaturized splints and bandages should be removed (and replaced, if needed) frequently (minimum of once every 5 to 7 days) with the underlying tissue visually examined for irritation, ulcers, or signs of infection. Materials used to discourage self-trauma to surgical wounds (such as Elizabethan collars or whole body casts) should be sized/shaped such that they do not inhibit eating, drinking, or the animal’s mobility. Because self-grooming is an important component of the normal behavioral repertoire of a rodent, such devices should be removed frequently (minimum of once every 2 to 3 days).

**Special Considerations for Neonatal Rodents:** Postoperative, neonatal rodents should be kept warmer than adult animals (80-85 F ambient temperature recommended). It is crucial to incorporate behavioral modification of the mother to decrease the risk of cannibalization of her offspring when they are returned to the cage. Various methods have been recommended for this purpose, including:

- ◆ rubbing soiled material bedding (from the maternal cage) on the neonates.
- ◆ placing nesting material in the cage to preoccupy the mother with nest building when the neonates are returned.
- ◆ placing an appropriate, highly odorous substance on the nostrils of the mother (e.g. perfume, scented oils) prior to return of the neonates to the cage (to “mask” the “foreign” odors on the neonates).

It is important that persons handling neonates wear gloves at all times. Neonates must be carefully inspected before being returned to the dam to make sure that all traces of blood (or other tissues) have been entirely removed from their skin surfaces. If neonates are unable or not permitted to nurse following anesthesia recovery, gastric feeding or IP injections of 5% dextrose (approximately 0.05-5.0 ml, depending on the species) may help maintain homeostasis.



(Continued from Page 1 ... AAALAC)

### Why is Duke AAALAC accredited?

- **Accreditation promotes scientific validity.** AAALAC engages scientists, managers, and administrators in an independent, rigorous assessment of the animal care program—an assessment that ultimately results in better research practices and outcomes through enhanced animal care.
- **Accreditation, a symbol of quality, can be used by Duke as a recruiting tool to attract the best and brightest of researchers.** Talented professionals look for high quality programs, and seeing the accredited status of our campus, assures the candidate of our institutional commitment to progressive animal care and use in a strong research program.
- **Accreditation demonstrates accountability.** Although animal based research can be a controversial issue, most people support biomedical research if it is conducted humanely. Accreditation demonstrates a willingness to allow independent peer review of our program, and confirms for the public and funding agencies that the Duke program of animal care and use is above reproach, ethical in its use of animals, compassionate toward animals being used, and provides a strong and secure foundation for cutting edge research.
- **Accreditation is recommended by many funding agencies** such as the American Heart Association, Cystic Fibrosis foundation, etc. Others, such as the NIH, DoD, NASA, VA, and NSF regard accreditation as evidence of a commitment to program excellence and fiduciary integrity.

The bottom line is simple: **Accreditation shows the world we are serious about our commitment to humane animal care in a progressive and successful research environment!**

In just under three years AAALAC will be back, and while today each of us can take a few moments to enjoy the success of a stellar AAALAC Council report, the long-term challenge is simple. Together we must maintain the quality animal care and use program that was the basis for the AAALAC accreditation report findings. Everyday is a new opportunity to confirm AAALAC's report—we have a great program of animal care and use!

Well Done, Duke Research Community, Well Done! 

## Upcoming Dates & Deadlines

May 3	Significant Change (SC) Meeting
May 7	New Protocol & SC Deadline
May 17	Significant Change Meeting
May 24	IACUC meeting
May 28	Significant Change Deadline
June 7	Significant Change Meeting
June 11	New Protocol & SC Deadline

**Deadlines are 5 PM on the date listed! No exceptions!**

## Online Information for Researchers With Animals or Animal-Related Activities in More Than One Area or Building

If you are a researcher working with research animals in multiple locations, it is important for you to adhere to precautions for accessing animal housing and procedure areas.

- ◆ **Personal Protective Equipment (PPE)**
  - ◆ Always wear appropriate PPE for the area.
  - ◆ Always follow posted entry requirements for quarantine rooms.
  - ◆ When entering areas that are identified as quarantined, wear two pair of shoe covers and two pair of gloves. Upon exiting the quarantined area, remove only the outer layer of gloves and shoe covers.
- ◆ **Traffic flow**
  - ◆ Do not enter other animals areas on the same day after working in a quarantined area.
  - ◆ Attempt to confine your work to one room each day.
  - ◆ When it is necessary to enter more than one animal area, follow the facility traffic flow listed on the website at: <http://vetmed.duhs.duke.edu/documents/dlar/pdf/DLAR%20Facility%20Flow%20Pattern.pdf>
- ◆ **Miscellaneous**
  - ◆ Do not take any equipment to the animal room that is not disposable or cannot be sanitized.
  - ◆ Animals removed from GSRB II, GSRB II Annex, CCIF, and other designated barrier areas cannot be returned to those facilities.
  - ◆ Current disease outbreaks by facility are continuously updated and may be found online at: <http://vetmed.duhs.duke.edu/documents/dlar/pdf/DLAR%20List%20of%20Current%20Pathogen.pdf>
  - ◆ Arrange all animal transfers with DLAR.

For more information, contact DLAR.

## Deadlines For Submitting IACUC Documents

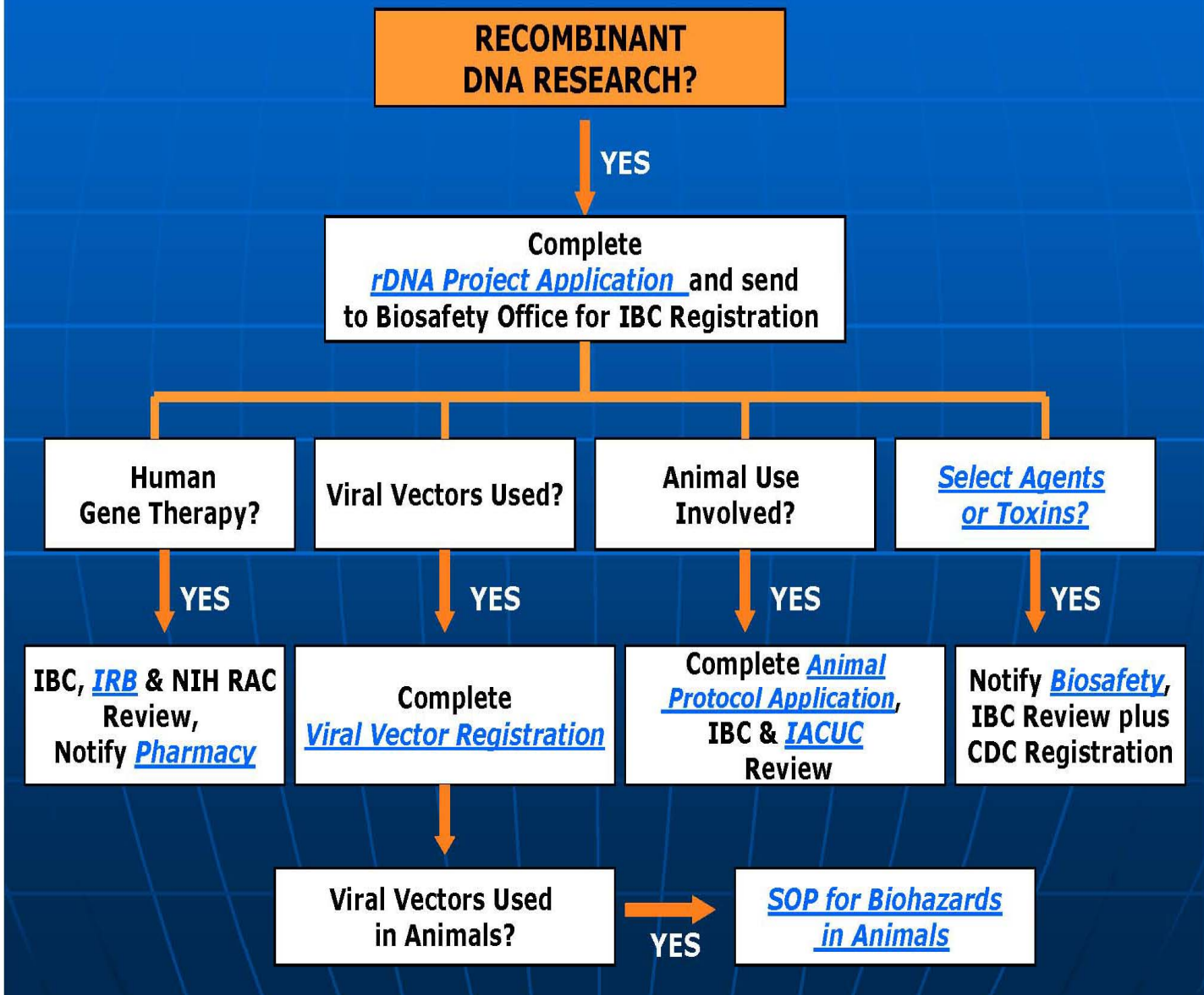
New protocols and amendments to existing protocols (changes) can be submitted to the OAWA/IACUC at any time during the month. OAWA/IACUC encourages PIs submit any new protocol or change document AS SOON AS POSSIBLE rather than waiting until the deadline. With a very small staff, large numbers of protocols received at the deadline creates significant problems for timely review and processing.

If you live by deadlines as some do, please note that the deadline is firm! Documents submitted BEFORE 5 PM on the deadline day will be accepted. Those submitted AFTER 5 PM on the deadline day will be placed on the next meeting agenda.

## NEW NIH Rules for Recombinant DNA Research

The NIH has recently published new rules for research involving recombinant DNA. At Duke, the Institutional Biosafety Committee and OESO are responsible for assessing when special procedures and steps are necessary for researcher using animals in recombinant DNA research. It is important to note that NEW transgenic animal creations are covered by these new rules, while EXISTING transgenics have been 'grandfathered' into the system. The issue of what is or what is not covered is too complicated to fully discuss in the 'Animal Tracks,' so researchers are encouraged to review the flow chart below and inquire about requirements for their specific activity.

### Approval Process for Research Involving rDNA Duke University





## OAWA's Brown Bag Seminar

Monday, May 7<sup>th</sup>, 2007

Noon – 1 p.m.

Bryan Research Building: Room 103

Dr. Rich Frothingham  
will be presenting:

# “Animal Research Opportunities in Duke’s New Regional Biocontainment Laboratory, GHRB”

Duke has completed construction of the Global Health Research Building (GHRB), which is one of thirteen Regional Biocontainment Laboratories (RBL) in the United States. Dr. Rich Frothingham, Director of the GHRB, will be discussing the GHRB research program, what types of research it is designed to perform, and what assets it will bring to the Duke research community.

The session will be held in room **103 of the Bryan Research Building**, located at 421 Research Drive, on Duke University's West Campus.

Attendees are encouraged to bring a lunch.

OAWA will provide drinks and desserts.

Please plan on arriving prior to noon in order to get refreshments, sign in, and be seated.

For those who will be coming from off campus, driving directions and parking information can be found at the following link: <http://neuro.duke.edu/Links/map.htm>