

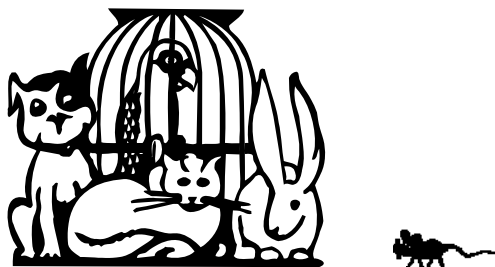
# DIVISION OF LABORATORY ANIMAL RESOURCES

## INVESTIGATOR INFORMATION

### HANDBOOK

University of Kentucky

May, 2011



Prepared by The Division of Laboratory Animal Resources  
May, 2011

# Table of Contents

## DIVISION OF LABORATORY ANIMAL RESOURCES INVESTIGATOR ORIENTATION PROGRAM

- Division of Laboratory Animal Resources (DLAR) Mission Statement
- Division of Laboratory Animal Resources Staff and Contact Information
- Facility Access and Security Protocols
- Training

## DIVISION OF LABORATORY ANIMAL RESOURCES SUPPORT UNITS

### Animal Husbandry and Support

- Housing and Animal Facilities
- Procedure Rooms
- Storage of Drugs or Biologics
- Special Diets

### Animal Health Division

- Veterinary and Veterinary Health Technician Services

### Experimental Surgery

- Scheduling
- Anesthesia
- Other Services

### Technical Services

- Breeding Colony Management
- Sample Collection
- Other Services

### Animal Procurement

- Ordering animals
- Quarantine and Acclimation
- Cage Cards, Census, and Per Diems

### Training

### Occupational Health and Safety

### Forms and Resource Material

## REGULATORY AGENCIES AND OTHER OVERSIGHT

- USDA/Animal Welfare Regulations (Title 9 CFR parts 1 and 2)
- Public Health Service (PHS)
- Office of Laboratory Animal Welfare (OLAW)
- National Academy of Science (NAS)/Institute for Laboratory Animal Research (ILAR)

Veterans Administration (VA)/ Department of Defense (DOD)  
National Institutes of Health (NIH)  
Association for Assessment and Accreditation of Animal Care, International (AAALAC)

## INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE

Contact Information  
Animal Protocols  
Necessary Elements of a Literature Search  
Alternatives to the Use of Animals  
USDA Pain Categories  
Reporting Concerns  
Veterinary Consultation

## REFERENCES

## LIST OF ACRONYMS AND ABBREVIATIONS USED OR REFERENCED IN THIS HANDBOOK

<b>AAALAC International</b>	<b>Association for Assessment and Accreditation of Laboratory Animal Care, International</b>
<b>AALAS</b>	<b>American Association for Laboratory Animal Science</b>
<b>ACLAM</b>	<b>American College of Laboratory Animal Medicine</b>
<b>Ag GUIDE</b>	<b>Guide for the Care and Use of Agricultural Animals in Research and Teaching</b>
<b>ANSI</b>	<b>American National Standards Institute</b>
<b>APHIS</b>	<b>Animal and Plant Health Inspection Service</b>
<b>AVMA</b>	<b>American Veterinary Medical Association</b>
<b>AWIC</b>	<b>Animal Welfare Information Center</b>
<b>AWR</b>	<b>Animal Welfare Regulations</b>
<b>CDC</b>	<b>Centers for Disease Control</b>
<b>CFR</b>	<b>Code of Federal Regulations</b>
<b>COA</b>	<b>College of Agriculture</b>
<b>DEA</b>	<b>Drug Enforcement Administration</b>
<b>DLAR</b>	<b>Division of Laboratory Animal Resources</b>
<b>DOD</b>	<b>Department of Defense</b>
<b>EHS</b>	<b>Environmental Health and Safety</b>
<b>EPA</b>	<b>Environmental Protection Agency</b>
<b>FASS</b>	<b>Federation of Animal Science Societies</b>
<b>FDA</b>	<b>Food and Drug Administration</b>
<b>FOIA</b>	<b>Freedom of Information Act</b>
<b>GLP</b>	<b>Good Laboratory Practices</b>
<b>GUIDE</b>	<b>Guide for the Care and Use of Laboratory Animals</b>
<b>IACUC</b>	<b>Institutional Animal Care and Use Committee</b>
<b>IBC</b>	<b>Institutional Biosafety Committee</b>
<b>ILAR</b>	<b>Institute for Laboratory Animal Research</b>
<b>IO</b>	<b>Institutional Official</b>
<b>LATG</b>	<b>Laboratory Animal Technologist</b>
<b>NAS</b>	<b>National Academy of Science</b>
<b>NIH</b>	<b>National Institutes of Health</b>
<b>NRC</b>	<b>National Research Council</b>
<b>NSF</b>	<b>National Science Foundation</b>
<b>NSF, Int</b>	<b>National Sanitation Foundation, International</b>
<b>OSHA</b>	<b>Occupational Safety and Health Administration</b>
<b>OHSP</b>	<b>Occupational Health and Safety Program</b>
<b>OLAW</b>	<b>Office of Laboratory Animal Welfare</b>
<b>PHS</b>	<b>Public Health Service</b>
<b>RSC</b>	<b>Radiation Safety Committee</b>
<b>RVT</b>	<b>Registered Veterinary Technician</b>
<b>SCAW</b>	<b>Scientists Center for Animal Welfare</b>
<b>UK</b>	<b>University of Kentucky</b>
<b>USC</b>	<b>United States Code</b>
<b>USDA</b>	<b>United States Department of Agriculture</b>
<b>VA</b>	<b>Department of Veterans Affairs</b>

## **Division of Laboratory Animal Resources Mission Statement**

### **MISSION:**

The mission of the Division of Laboratory Animal resources is to provide animal care, veterinary services, and technical services in support of biomedical research using vertebrate animals. The Division is committed to humane animal care and compliance with all regulations in support of the biomedical research mission of the University.

### **VISION:**

The Division of Laboratory Animal Resources will be viewed as an essential and valued component of the biomedical research enterprise by the faculty researchers at the University of Kentucky and the unit will be considered among the top 25% of programs regarding laboratory animal medicine, facility management, and laboratory animal research.

### **VALUES:**

- The use of vertebrate laboratory animals is essential and appropriate for the conduct of scientifically valuable research relevant to human or animal health, the advancement of knowledge, or the good of society.
- Optimal animal care, health, and well-being are essential for valid leading edge biomedical research when laboratory animals are used.
- Personnel involved in the care and maintenance of animals are essential partners in, and valuable contributors to, the biomedical research enterprise.
- Comparative medical scientists are valuable contributors to the overall biomedical research effort at the University of Kentucky.
- Training and instruction in laboratory animal and comparative medicine is valuable and necessary for the continued rapid advancement of biomedical research using vertebrate animals.

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**Training Coordinator**

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Additional information and other useful resources can be found in the DLAR web page located at the following address:

<http://www.research.uky.edu/dlar/index.html>

**FACILITY ACCESS AND SECURITY PROTOCOLS**

**ACCESS TO DLAR FACILITIES IS RESTRICTED**

**DO NOT "LOAN" YOUR ID BADGE TO ANYONE, EVEN MEMBERS OF YOUR  
LABORATORY.**

**Badges belonging to individuals who have "loaned" them to co workers will be  
confiscated. If you have lost or forgotten your badge, please obtain a visitor badge  
from our main office. This badge will not access the facility, but will allow you to  
work inside the facility after one of our staff escorts you through the door. These  
badges must be returned to our main office when you leave. They are only valid for  
24 hours.**

**If you will be working in the Medical Center, Central Animal Facility and the Combs Facility after 4:00 PM and any time on the weekends you will need your UK ID badge with DLAR access and a second form of picture ID. You MUST sign in on the DLAR Access Log at the security desk and sign out when you leave the facility.**

**Depending on the facility you will be working in, there are additional security protocols to follow. Check with the supervisor of that area.**

**ALL PERSONNEL MUST SWIPE THEIR BADGES AT THE DOOR. DO NOT ALLOW INDIVIDUALS TO “TAIL GATE” IN WITH YOU.**

Access to the DLAR animal facilities is limited to authorized personnel only. Authorized users must not “loan” their badges to others at the risk of having their access revoked. “Tail-gating” or following others into the facilities without swiping your badge is not permitted. Request forms for access into the DLAR facilities are available on our website at <http://www.research.uky.edu/dlar/forms.html> . These forms may be printed directly from the page. They require signature approval prior to submission to the UK Security office. All authorized persons must wear their badges in plain sight as stated in UK Policy and those individuals having access to the DLAR facilities must have a Red DLAR sticker in reasonable condition on their UK ID badge. Examples of sticker condition are illustrated below. New DLAR stickers are visible on both the front and the back of UK ID badges. As older red stickers are replaced, they will be replaced with the new dual view stickers.



Good condition



Reasonable condition



Must be replaced



Badge with new dual sticker

There is no charge for replacement of Red Stickers. If you replace your UK ID badge, you must go to our DLAR main office HSRB 204 to obtain a new sticker for your badge. Without the red DLAR sticker properly affixed to your ID badge, you may be asked to leave the facilities until you have obtained one. Should you access the Med Center, Combs and Central Animal facilities after hours without a red DLAR sticker, the security guard will not admit you.

### **Accessing the DLAR Med Center, Combs and Central Animal Facilities After Hours**

If your work brings you into the animal facilities after 4:00 PM on weekdays, or anytime, day or night on weekends or holidays, you must sign in and out with the security officer. You will be asked to provide a second form of identification in addition to your UK identification badge with red DLAR sticker such as a driver's license or other photo ID. If you do not have a second form of identification, you will be asked to leave the facility. If you have “borrowed” another persons' identification badge in order to gain access, the badge will be confiscated and you will be required to leave the facility.

### **Temporary Badges**

Temporary badges are issued to visitors and vendors who will be here a short while (from hours to a day or two for equipment service). There are a few requirements that must be met prior to the issue of a temporary badge. In the case of both visitor and vendor, they will receive a copy of the Occupational Health and Safety information for Visitors and Vendors along with a form to sign that they have received the information. This information page is part of our overall occupational health and safety program to inform visitors and vendors of any potential exposure to allergen or other hazards that may or may not be encountered in an animal facility. This information will be supplied to persons

requesting temporary badges for the DLAR facility. The temporary badges are available in our main office in the Health Sciences Research Building (HSRB) Room 204 between the hours of 7:30 AM and 4:30 PM Monday through Friday. This building is also known as the Bosomworth Building. For your convenience, this information is available by email. A link to request the information can be found on our webpage on the Frequently Asked Question page <http://www.research.uky.edu/dlar/faq.html> . There are two types of Temporary Badges issued by DLAR. One is made of yellow plastic and may be clipped onto your clothing and the other is a sticker type badge. Neither of the Temporary badges has entry or room door access capabilities and are only valid for the day they are issued. Should you need to make arrangements for your visitors ahead of time, please contact our Facility Manager, one of our DLAR veterinarians, our office staff, or our training coordinator. Their contact information is available in the beginning of this handbook in the **How To Contact Us** section. It is also available on our website [http://www.research.uky.edu/dlar/contact\\_us.htm](http://www.research.uky.edu/dlar/contact_us.htm) .

### Plastic Badges

Front of  
Temporary  
Badge



Back of  
Temporary  
Badge



Expired  
Temporary  
Badge



### Sticker Badges



Sticker-type badge

The yellow plastic temporary badges are to be turned back into DLAR at the end of the visit. The sticker-type badges may be discarded. If the office is closed before your guest leaves, you may leave the temporary badge with a supervisor, our facility operations manager, you may drop it in campus mail, or return it on your next visit to our main office. If you require a temporary badge for more than one day, it must be renewed each day. Visitors to our facilities must be escorted by their hosts or a member of the hosts' staff. Vendors must be escorted by appropriate personnel as well. All photography must be with approval of the Director of the Division of Laboratory Animal Resources and the Principle Investigator. Media representatives must also be cleared and approval obtained through the Office of the Vice President for Research and UK Public Relations.

### Training

Training is available on a wide range of subjects by contacting our Training Coordinator, any of the DLAR Supervisors, or our DLAR Veterinarians. Basic micro-isolator techniques, working under the laminar airflow work stations and Biosafety cabinets, as well as animal handling, routine procedures such as oral gavage, injection and blood collection, are just a few of the techniques available. These can be scheduled as an individual or group session and can be arranged with our training coordinator. Additional techniques may be available on request. It is recommended that all new staff members attend a basic procedures training session. All personnel must participate in the Occupational Health and Safety program if they will be working with or around laboratory animals or their tissues. Please contact our Training Coordinator for more information on training opportunities for your staff.

## DIVISION OF LABORATORY ANIMAL RESOURCES SUPPORT UNITS

### Animal Husbandry and Support

#### Housing and Animal Facilities

The location of animal housing will be determined by DLAR with the consideration for the investigator and his/her needs. Space within the animal facilities may be limited at times, but every attempt will be made to work with the investigators to ensure adequate space. All animals must be housed in DLAR facilities unless special permission has been obtained from the Institutional Animal Care and Use Committee and the requirements for their care have been addressed. **If you will be working with non-human primates, you will have to consult with the DLAR veterinary staff for the requirements for being granted access to this area. Additional training and current negative tuberculin testing and measles titer are required for all personnel.**

#### Social/Group housing and Enrichment

**Following the recommendations outlined in the 8<sup>th</sup> Edition of the ILAR [Guide for the Care and Use of Laboratory Animals](#), and other regulatory and accrediting bodies, group housing of social mammalian species and enrichment of these animals is the default for the Division of Laboratory Animal Resources.**

A variety of suitable, species appropriate, enrichment items will be provided. We will separate or regroup incompatible animals if needed. You may request individual housing if appropriate to your study. Enrichment items will be provided regardless of housing type unless specific instructions for your cohorts are received. If you request single housing or alternatives to micro-environment (within the housing unit) enrichment, including the withdrawal of enrichment, please understand that this deviation **MUST** be indicated and listed in, scientifically justified, and approved by the IACUC in your current approved animal use protocol. A Special request form must be filled out and presented to the DLAR staff indicating which caging this deviation involves, the length of time it will be in effect, and current contact information for your staff responsible for the group of animals involved. This information must be provided whether it is individual housing of animals on arrival, or from established groups already being housed in DLAR, withholding or limiting the enrichment items, and the dates the Special Request is to begin. If you have questions regarding this policy, please contact DLAR. The default enrichment for each species is listed below.

Species	Default Enrichment	Optional Enrichment
NHP	Minimum two toys in cage produce fed daily; playpen access on a rotational basis within cage quadrant; daily human interaction.	Destructible toys such as chew sticks; mirrors; food/foraging; swimming pool; swing.
Sheep	Stainless Steel Mirror; forage feeder; Hay bag w/timothy orchard grass mix hay	Hanging apple milk jug toy

<b>Swine</b>	<b>Rubber or plastic balls, heavy chains, empty plastic milk jugs; Forage feeders</b>	<b>Assorted fresh fruit and vegetables, 3 Musketeers® candy bars, and Milk Bone Dog Biscuits® offered on occasion Brooms fixed to side of cage for scratching</b>
<b>Chicken</b>	<b>Feed is placed out for them to forage</b>	<b>Enviro-dry®</b>
<b>Cat</b>	<b>Elevated plastic resting shelf; Corrugated paper and commercially available cat toys</b>	<b>Cat pillow</b>
<b>Dog</b>	<b>Toys, nylabones, raised beds</b>	<b>Starch Bones</b>
<b>Rabbit</b>	<b>Timothy cubes, assorted fresh greens and fruit, Bunny Blocks™ in various flavors, Veggie Bites™, commercial rabbit treats; Timothy Mini hay bales</b>	<b>Toys such as a jingle ball</b>
<b>Guinea Pig</b>	<b>Sterilized paper tubes, Polycarbonate Guinea Pig Huts® and Rodent Retreats</b>	<b>Commercial Guinea Pig treats, apples, and carrots</b>
<b>Gerbil</b>	<b>Sand is offered as bedding</b>	<b>Sterilized paper tubes and tissues, Rodent Retreats®, Crawl Balls® Commercial Gerbil treats</b>
<b>Hamster</b>	<b>Nestlets®</b>	<b>Sterilized paper tubes and tissues, Rodent Retreats®, Crawl Balls®</b>
<b>Rat</b>	<b>Enviro-dry®</b>	<b>Sterilized paper tubes and tissues, Rodent Retreats®, Nylabone®, Crawl Balls®</b>
<b>Mouse</b>	<b>Nestlets® Enviro-dry®</b>	<b>Sterilized paper tubes or tissues, Shepherd Shacks® , Mouse Igloos® with or without Fast Tracs®, and mouse houses</b>
<b>Mouse; Nude or Hairless</b>	<b>Enviro-dry®</b>	<b>Sterilized paper tubes or tissues, Shepherd Shacks® , Mouse Igloos® with or without Fast Tracs®, and mouse houses</b>

### **Caging for Rodents**

The majority of rodents housed in the DLAR facilities are in ventilated caging to maximize biosecurity at the cage level. These cages are changed under laminar air flow and Class II Biosafety cabinets facility wide. Any and all manipulations of caging and animals will be accomplished using the hoods. This will include changing cages, weaning, pairing for breeding,

sexing of weanling, medical examination and treatment, and all procedures done within the animal housing areas. Prepared clean caging is available in the hallway. Should you need more than just a few cages for weaning or separating animals, please submit a request to the area supervisor using the Special Request form. Cages manipulated outside the hoods will be marked as CONTAMINATED and should be handled last after all other animals have been manipulated.

### Working in Rodent Rooms

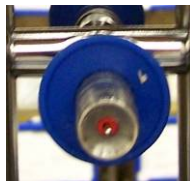
All work with mice and rats must be done in the hoods. The micro-isolator lid should not be opened unless the cage is in the hood. Disinfect all work areas before and after use. Before placing a cage on the ventilated cage rack, check to ensure that a water valve is present and activate it to ensure that water is flowing from the water valve. When replacing a cage back into the ventilated cage rack, be sure that it is properly “docked” so that the animals can obtain water from the automated water lines and the water valve is not compromised.



No water valve in place



Water valve is in place and ready to use



Activate the water valve with gloved hand to ensure water is flowing. You should see water dripping almost immediately



Back



Front



NOT properly docked



Properly docked

Be sure that the cage is pushed all the way back in order to provide air changes and water. If the cage is “sticking out” from the line of cages on the rack you should push it all the way back

**\* If you are working with breeding colonies you must take special care when weaning pups. \***



Food should be placed on the bottom of the weanling cage to ensure that they have food available. Young mice may sometimes not be able to bite off pieces of food from the food hopper since many of them feed from the bottom on pieces their parents break off. It may be necessary to place moistened food in the bottom of weanling mouse cages particularly if the weanlings are small. It is important to remember that weanling mice do not do well alone. They should always have a cage mate until they have acclimated to being on their own. Place a water bottle on the cage until they have learned to use the automated water valve. This could take a week or two and be sure to mark the cage with a newly weaned card so they can be monitored by the technicians.

If you need instruction in this procedure, please contact the supervisors, training coordinator, or a member of the animal care staff. Micro-isolator technique is easily accomplished. There is a presentation on the DLAR webpage outlining the basics of good micro-isolator technique. This proven method of working with rodents is highly effective when used properly in the prevention or containment of murine pathogens. When used improperly or not at all, it jeopardizes not only the results or health of your colonies, but the health and study results of potentially the entire facility. Here are a few simple rules to follow when using micro-isolator technique.

- Always turn on the hood or Biosafety cabinet and allow it to run for a few minutes. This enables the air flow to begin to circulate properly.

- Be sure the shield is at the proper working height. An alarm will sound if it is not



- Always wear a dedicated lab coat and sleeves and gloves, be sure that the cuffs of your sleeves are covered by the cuff of your gloves



- Always wipe down the work surface with appropriate disinfectant



- When using a “dip tray” be sure that you have fresh disinfectant in the tray so you can dip your fingers/hands when working between different cages of animals



- Do not over fill the work surface or block the vents in the front of the cabinet



- Wipe the work surface when you are finished your work with appropriate disinfectant



followed by clean water

### Procedures in rodent housing rooms:

This section is to provide guidance to investigators regarding performance of procedures in animal holding rooms versus designated vivarium procedure rooms.

DLAR animal rooms are primarily intended for animal housing. Husbandry and research procedures, as well as in-house transport of animals, can cause changes in physiological parameters such as heart rate, blood pressure, plasma corticosterone levels, and blood glucose levels. Providing stable, consistent environmental conditions in these rooms minimizes variability in research results and disruption of the animals' normal functions such as breeding and sleep patterns.

However, it is understood that both research procedures and husbandry tasks are necessary parts of the research enterprise. It is also difficult to determine if these physiologic changes are indicative of a negative impact on the animal since presumably “positive” stimuli can elicit some of the same responses as “negative” stimuli. In an effort to minimize these variables, the following recommendations are intended to provide guidance to researchers on performing these tasks in the vivarium.

Certain minor procedures may be performed in the animal housing rooms, such as injections, blood collection, tissue sampling for genotyping (e.g., tail biopsy, ear punching), and weighing.

However, procedures that may be harmful to other animals in the room such as the use of volatile chemicals, surgery, euthanasia or generation of excess noise, etc. may not be performed in animal housing rooms. Such activities should be done in procedure rooms which are available in DLAR for more complex, noxious, or time-consuming procedures.

In particular, when working with or around more sensitive species, such as rodents or rabbits, work quietly to avoid disturbing or distressing the animals. Any excessively distressing procedures, such as invasive or anesthetized blood collection or surgery, are to be done outside of the animal housing rooms, to avoid unnecessary stimulation of the animals.

Many DLAR facilities have associated procedure rooms. These rooms must be scheduled by investigators, usually through a sign-up sheet on the room door or through an online reservation system. Please contact the DLAR Animal Care Supervisor of the facility for assistance with scheduling procedure rooms. : [http://www.research.uky.edu/dlar/contact\\_us.htm](http://www.research.uky.edu/dlar/contact_us.htm)

#### **Additional considerations:**

When you are planning procedures, please also consider the length and timing of your tasks with consideration for animal husbandry activities as well as those of other researchers sharing the housing room. The DLAR technicians working in the rooms and the DLAR Supervisor of the area can both provide information on cage change schedules as well as the location of procedure rooms.

Many species can hear frequencies of sound outside the range of humans. Research equipment can generate this type of noise, especially those with video display terminals or processors. To the greatest extent possible, activities that might be noisy should be conducted in areas separate from those used for animal housing.

If you have unique procedural needs that cannot be performed by the guidelines above, please also feel free to contact one of the DLAR Veterinarians for further assistance.

#### **REFERENCES:**

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Baumans, V. and Castelhana-Carlos, M J. The impact of light, noise, cage cleaning and in-house transport on welfare and stress of laboratory rats. *Laboratory Animals* 2009 43: 311-327.

Gilmore A J, Billing R L and Einstein R. The effects on heart rate and temperature of mice and vas deferens responses to noradrenaline when their cage mates are subjected to daily restraint stress. *Laboratory Animals* 2008 42: 140-148

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Ramsey, N and Van Ree, J M. Emotional but not physical stress enhances intravenous cocaine self-administration in drug-naive rats. *Brain Research* 1993 608: 216-222

Sharp, J, Zammit, T, Azar, T, and Lawson, D. Are "By-stander" Female Sprague-Dawley Rats Affected by Experimental Procedures? *CT/JAALAS* 2003 Jan 42 (1): 19-27

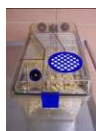
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Verwer C, van der Ark A, van Amerongen G, van den Bos R and Hendriksen C F M. Reducing variation in a rabbit vaccine safety study with particular emphasis on housing conditions and handling. Laboratory Animals 2009 43: 155–164

### Examples of rodent caging:



The **Top Flow** IVC cage can convert to a standard micro-isolator cage if necessary and is able to be placed on a shelf rack. The large filter enables the cage to allow sufficient air flow to prevent excessive CO<sub>2</sub> buildup. These cages can be used in this manner for a number of days if required.



This IVC Mouse cage is an example of a “**Safe Seal**” cage and **DOES NOT** convert to a standard micro-isolator cage. It should **NOT** be used on a shelf rack or bench top for any length of time. There is a danger of **toxic CO<sub>2</sub> buildup** due to the restricted air flow in a relatively short time (6-8 hours depending on the number of mice in the cage) when not used in a ventilated cage rack system.



This is a standard static micro-isolator cage. These cages may be used for regular long term housing on shelf racks.



The “**Red Line**” from Allentown and the “**Green Line**” from Tecniplast are two other types of IVC caging used in the DLAR Animal Facilities. Both types convert to static micro isolators if needed.



Rack configuration, cage types, water valves, Housing Density Policy, and other useful information, including the use of color-coded Special Alert Cards and Service Request forms can be found in the Reference Section of this Handbook.

Additional types of caging for both rat and mouse are used in the DLAR facilities. Please contact the animal care supervisor in the facility your animals are housed for additional information on the housing used with the animals on your study. Housing needs for species other than rodents should be discussed with our facility manager, animal care supervisors, or our DLAR veterinarians.

### Inquiries and Problems

“We can’t fix it if we don’t know it’s broken!” If you have a problem, please let us know.

If you have a concern or a question with husbandry care or animal caging or other equipment, or you see a potential problem, please do not correct it yourself unless the animal's life is in danger.

Instead, contact one of the DLAR supervisors so that they can evaluate the problem firsthand. A DLAR supervisor is always on duty. Instructions for contacting them are located in the DLAR entryway and the DLAR web site on the Intranet. [http://www.research.uky.edu/dlar/contact\\_us.htm](http://www.research.uky.edu/dlar/contact_us.htm)

Our ability to directly observe the problem greatly aids us in trouble-shooting the situation and making sure that the problem doesn't happen again.

### Unresolved problems.

If you have repeated or unresolved problems with the daily care of your animals, please bring your problem to the attention of our Animal Care Supervisors. They can often resolve issues in short order, but they must be made aware that a problem exists. Please allow them to assist you by informing them of the nature of your difficulties. If the situation is still not addressed to your satisfaction, please contact our DLAR Facility Operations Manager. The contact information is listed in our staff section of this manual.

### Transportation of Animals

Live animals may not be removed from the animal facility without prior approval of the Institutional Animal Care and Use Committee. Under no circumstances can rodents or other laboratory animals be transported by personal vehicles. If animals must be moved to other facilities for housing or transfer to another investigator, DLAR must transfer them. Transfers from one investigator to another must be done by filling out a Transfer of Ownership form found on our website on the "Forms" page at the following web address <http://www.research.uky.edu/dlar/forms.html>

Animals that are being transported to investigator laboratories MUST be **COMPLETELY** covered or in a closed transport cart and can **ONLY** be transported in the service/freight elevators. They must not be transported into or through any patient areas like waiting rooms or clinics under any circumstances. When returning dirty caging to the animal facilities, they must be covered as well to protect personnel from potential exposure to animal allergies.

### Examples of what you CAN use to completely cover cages:



Drapes



Towel be sure it covers COMPLETELY



Pillow Case most mouse cages will fit rat cages will not fit



Closed cart



Cabinet type cart

### Examples of what NOT to use to cover cages



DO NOT USE "YELLOW GOWNS"



DO NOT USE YOUR LAB COAT



DO NOT USE WATER BOTTLE BASKET COVERS These are custom made to fit over clean/sterile water baskets and belong to DLAR



DLAR has stainless steel enclosed transport carts if investigators must travel between buildings or in high traffic areas. These carts may be reserved by contacting the Animal Care Supervisors. Transportation of laboratory animals housed in the DLAR facility by private vehicle is strictly prohibited. Please refer to the Office of Research Integrity, IACUC section on the web page address listed below.

<http://www.research.uky.edu/ori/univet/>

### **Procedure Rooms**

There are a number of Procedure Rooms in the DLAR animal facilities that are available to research staff. These rooms may be reserved using our Microsoft Outlook calendars. Please contact our Facility Operations Manager for access to these calendars.

### **Special Requests**

The Division of Laboratory Animal Resources is able to meet a number of investigator needs with regard to the animals housed in our facilities. The requests routinely carried out by DLAR are, transferring ownership, transportation of research animals, special observations and attention to chronic issues such as teeth clipping, the administration of medicated water, and a wide range of other simple procedures associated with routine animal care.

- \* Please see the reference section in the back of this handbook for samples of these forms and a brief explanation of the various forms used
- \* Please note that Special Requests should be submitted AT LEAST 24 hours prior to the effective start date and should be delivered to the supervisor of the area your animals are housed in.

### **Storage of Drugs or Biologics**

Due to space considerations, the storage of drugs and biologics in the DLAR facilities is very limited. Investigators are encouraged to bring these items with them when they are needed. There is limited space available in some of the Procedure Room on an assigned cabinet space basis as these become available. DLAR must have a key to any locked cabinets that you have been assigned. This would include the combination to any combination lock placed on the cabinets. Please note that **ALL** drugs and biologics should be securely stored and **ALL packages, bottles, vials and other containers MUST BE CLEARLY LABELED with substance and expiration date and contact information. NO EXPIRED MATERIAL is allowed to be stored in DLAR and may not be used in live animals.** Absolutely **NO ETHER** may be stored or used in DLAR.

### **Special Diets**

**All Special diets must be listed in your approved animal use protocol.** If there is a need for Special Diets, it may be ordered and delivered with our regular feed delivery if ordered from the same vendor. DLAR will notify you when it arrives so that you may take it to your lab or arrange for it to be stored in the DLAR food storage area. You will need to coordinate this with our supervisors and Facility Manager. Their contact information appears on our webpage ([http://www.research.uky.edu/dlar/contact\\_us.htm](http://www.research.uky.edu/dlar/contact_us.htm)) and in the reference section of this handbook. We have limited storage for small amounts of food that needs refrigeration in specially marked refrigerators. All food must be clearly marked with investigator name, manufacture date, storage conditions, expiration date for the food and the type of food contained in the package. The container must be secured with a lid or if in a plastic bag, it must be sturdy and closable ( "Ziplock®" freezer bag type) . Should the bag tear it must be replaced. Please try to avoid using glass whenever possible. Improperly labeled feed will be discarded if no contact information is available.

## **Animal Health Division**

The health of all of the animals in our care is very important to us. We do extensive health monitoring using sentinel animals in each rodent room to ensure the health of our rodent colonies. In addition to our monthly in-house testing, we submit samples for independent surveillance of the health of the colonies at UK.

## **Veterinary and Veterinary Health Technician Services**

Our DLAR Veterinary Staff is ready to assist you in the design of protocols for animal research, surgical consultations, treatment alternatives, locating animal-related services not available at UK, and participation in collaborative research. Please contact them to arrange for a consultation

We have a staff of 4 full-time registered veterinary technicians whose primary focus is the well-being of our animals. Under the guidance of our DLAR veterinarians, our veterinary technicians routinely respond to all reports of animals in distress or reported to be ill or “not quite right”. The reports generated by our animal care technicians, several of whom are registered veterinary technicians, or research staff are attended to as soon as they are reported. Our veterinarians are available for consultations, to prescribe treatments, and to respond to emergencies.

## **Experimental Surgery**

Our Experimental Surgery Unit offers 3 fully equipped surgery suites and one diagnostic/surgical area. One suite is dedicated for multi-species sterile surgery, one suite may be used for sterile or non-sterile surgical procedures, and the third suite is a dedicated species sterile surgery. We have a wide variety of instruments available for use, and do steam, gas and chemical sterilizations. They are fully equipped and are maintained at the highest standards for sterile surgery. Our diagnostic area/surgery is dedicated as an imaging room and contains Cardiac Fluoroscopy, digital imaging and dental x-ray equipment. Should you wish to visit the surgery suites, please contact our surgical team coordinator or either of our surgical technicians. You will find their contact information on our Surgery Resources page of the DLAR website <http://www.research.uky.edu/dlar/ExperimentalSurgeryResources.htm> or on the Contacts page. Access to the surgical facility is restricted. You must have an IACUC approved animal protocol with a surgical component. Additional approval forms are available from the DLAR office which must be approved by our veterinarians prior to access being granted.

### **\* Of special note:**

If you will be doing survival surgery on any species of animal(s) (rodents, rabbits, etc.) please remember that the procedure **MUST** be on your IACUC approved protocol, appropriate analgesics are listed and provided to the animal pre and/or post-operatively and that all animals are closely monitored during and after surgery until they are totally ambulatory. No animal is to be left unattended while still in an anesthetized state. A chart of recommended anesthesia and analgesics is available on the DLAR webpage address [http://www.research.uky.edu/dlar/animal\\_health.html](http://www.research.uky.edu/dlar/animal_health.html) If you require further information or guidance, please contact one of our DLAR veterinarians.

## **Scheduling the Surgical Area**



Surgical suites may book as much as 3 months in advance so the earlier you reserve your dates, the better. We prefer to do survival surgery toward the beginning of the week if possible. Please contact: our Experimental Surgery unit. If there are specific questions that you need an answer to immediately you may telephone 859-323-5829. If you are unable to reach our surgery technician, please try to contact one of the following individuals;

Wade Washington [washing@email.uky.edu](mailto:washing@email.uky.edu) Phone: 859-323-6027 or Daria J Cloyd [daria@email.uky.edu](mailto:daria@email.uky.edu) Phone: 859-323-6225. The fee schedule for the Experimental Surgery use can be found in the Per Diems and Other Service Fees section

<http://www.research.uky.edu/dlar/PerDiemandOtherServices.htm> . Technical assistance is available on a fee for services basis if needed.

The complete text of the **IACUC Guidelines for Rodent Surgery** may be found at the following: [http://www.research.uky.edu/ori/univet/resources/sop/IACUC\\_102\\_Rodent\\_Surgery.pdf](http://www.research.uky.edu/ori/univet/resources/sop/IACUC_102_Rodent_Surgery.pdf)

**Excerpt from IACUC Guidelines for Rodent Surgery pertaining to post-operative monitoring and care** is as follows:

**Post-surgical anesthetic recovery period**

Frequent and documented observation of animals during the post-surgical anesthetic recovery period is important. The animal, in or out of its cage, must be kept warm. Warm water pads, blankets, or the blue "diaper" pads work well. The use of electric heat pads or heat lamps may overheat the animal and their use is discouraged. If electric heat pads or heat lamps must be used, provision must be made to make frequent observations and turning of a somnolent animal so that the animal will not be overheated. Provision must also be made so that an awake animal can escape the heat source when it becomes too warm. Warmed fluids can be administered subcutaneously, intravenously, or intra-peritoneally if there is any suspicion the animal may be dehydrated. A recovering animal should be watched very closely until securely in sterna recumbency, and able to move around without plugging its nostrils with bedding. Some rodents left overnight on pads or paper bedding will eat that bedding.

**Post-surgical period**

Daily postsurgical observations should, at a minimum include observations of the condition of the animal and the surgical site. Sutures and/or staples need to be removed by two weeks following surgery, if the rodent has not already done so. Any foreign substance, including sutures, catheters, implants, etc., left in the incision for long period of time can serve as a nidus of irritation and infection. A veterinarian should examine incisions that do not appear to be healing.

Animals found dead during the post-surgical period should be submitted for diagnostic necropsy.

Rapid identification of infectious diseases, post-surgical infections, surgical problems, etc., permits responses by the veterinary or research staff to improve the surgical outcomes, minimize variability, and enhance the research results.

## **Post Operative Monitoring of Rodents**

### **Post-Operative Recovery and Care of Mice and Rats**

Following all procedures, animals will need to be directly and continuously observed and monitored in a warm environment until they are fully recovered from anesthesia. Unless prior arrangements for continuous monitoring have been made with DLAR Veterinary Services for monitoring, research staff are expected to monitor their animals. Animals are considered recovered from anesthesia when they

can ambulate fully, maintain themselves upright in sternal recumbency and are attempting to move purposefully ( see [IACUC Policies, Procedures and Guidelines 102 Rodent Surgery](#)). At a minimum, rodents should be observed frequently postoperatively for recovery, once recovered at about 6 hours and again at 18-24 hours post-operatively for signs of pain, infection or dehiscence (opening up of the incision). Animals should be observed daily for the first 7 days after surgery. The surgery and the date should be noted on the cage card. Dates, and times, and findings of each post-operative observation and the dates, dosages, and times of each analgesic administration should be maintained on the cage card in a form clearly legible for the Facility Veterinarian. Wound clips and non-absorbable skin sutures are to be removed at 7-14 days post-surgically.

Frequent and documented observation of animals during the post-surgical anesthetic recovery period is important. The animal, in or out of its cage, must be kept warm. Warm water pads, blankets, or the blue "diaper" pads work well. There are special rodent surgery tables also. The use of electric heat pads or heat lamps may overheat the animal; their use is discouraged. If electric heat pads or heat lamps must be used, provision must be made to make frequent observations and turning of anesthetized animal so that the animal will not be overheated. Provision must also be made so that an awake animal can escape the heat source when it becomes too warm. Warmed fluids can be administered if there is any suspicion the animal may be dehydrated. This may be done by giving 1 to 2 ml of warm sterile fluids (0.95% NaCl or equivalent) per 100 gm of body weight by subcutaneous injection. If blood loss occurred during the surgical procedure, or if the animal is slow to recover from anesthesia, provide additional fluids.

It is essential for a recovering animal to be watched very closely until ( **walking or securely in sternal recumbency, and able to move around without plugging its nostrils with bedding if present**). Therefore it is best to perform surgery as early in the day as possible. Animal recovery can vary greatly, so you should always plan on a minimum of two hours post surgery to allow enough time to monitor your animals.

A postoperative record on DLAR surgery cards must be started and affixed to the animal's cage. Having the record in the room accomplishes several functions. 1) It explains the condition of the animals to animal care staff (a sedated animal may otherwise be thought to be ill), 2) It assures animal care staff and USDA Animal Welfare inspectors that the animal is being cared for, and 3) It informs animal care staff how recently the investigator has seen the animal; this knowledge helps them decide whether or not there is a need to contact the investigator to inform him or her of the present condition of the animal. Although individual records are desirable, USDA allows a composite post-operative record to be used for a group of rodents.

## Anesthesia



The Experimental Surgery Unit has a number of anesthesia machines available to investigators on a fee for services basis. The rodent anesthesia machines may be rented by contacting our Experimental Surgery unit. The rental fee includes setup and training if needed. Please contact them using the information provided in the above paragraph for further information and to make reservations for these machines. Training on the use of these machines is available from our research analysts or surgical technicians. All users of the anesthesia machines are encouraged to take advantage of the training in order to be sure that you are familiar with the equipment so you will be able to operate it safely for yourself and your animals during anesthesia.

## **Other Services**

Technical/surgical/monitoring/post-surgical monitoring assistance is available on a fee for services basis if needed.

## **Technical Services**

The Division of Laboratory Animal Resources has a team of Research Analysts available on a fee for services basis. A wide variety of services are available to you from individual animal micro chipping to surgical assistance, post operative monitoring, and administration of post-operative medications. Should you require extra assistance with your studies, or additional expertise, please contact Daria Cloyd, in Experimental Surgery to discuss your needs. Examples of Animal procedures include:

- Injections
- Blood or urine collection
- Tail biopsies
- Specialized techniques (implantation, surgical procedures)
- Tissue collection from euthanized animals
- Breeding colony management and maintenance
- Special Observations and monitoring

**Note:**           **Requests for services must be submitted at least 48 hrs in advance.**  
                      **Requests for euthanasia require a signature.**  
                      **DLAR cannot guarantee that the same person will perform the service each time.**  
                      **Anesthesia always involves a risk of animal death.**

## **Breeding Colony Management**

One of the most labor intensive tasks for any lab is the management of their breeding colonies. We offer this service to our investigators on a fee for services basis. Our research analyst in charge of breeding colony management has a wealth of experience and has attended the Jackson Laboratories Breeding Colony Management course in Bar Harbor, Maine. He is also an AALAS Certified Laboratory Animal Technologist. He is available for consultation and assistance along with our DLAR veterinarians, to address your breeding colony needs. Please contact Glenn Florence at 257-1026.

## **Sample Collection**

Our team of research analysts can provide a variety of sample collections such as blood collection, tissue collection for genotyping, data collection and other services.

## **Other Services**

Other services performed by our research analysts include routine weighing, observation of animals, post-surgical monitoring, assistance with surgical procedures, dosing, medications, and other data collection your lab may require. They are also available for training in the use of anesthesia machines and basic procedures.

## **Animal Pathology Division**

Diagnostic veterinary services are available including tissue or organ collection and full pathology and histopathologic services by the Laboratory Pathology Unit at the University of Kentucky

Veterinary Diagnostic Laboratory (UKVDL) under the direction of Dr. Kathryn Coyle. Dr. Coyle is available to assist in interpretation of clinicopathologic findings in animals. Research pathology services are available through this fee for services unit. Please contact them at (859) 257-6732 for additional information on available services. Forms for submission can be found on the DLAR website at the following address: <http://www.research.uky.edu/dlar/forms.html>

### **Animal Procurement**

All animal procurement must be coordinated through the Division of Laboratory Animal Resources (DLAR).

Animals cannot be procured until an approved protocol is available on line in eSirius®.

All animal procurement, regardless of source or cost, must be processed through DLAR.

All animal orders must be submitted electronically through eSirius®.

All animals being received into or shipped from the facility will be scheduled by DLAR personnel.

All animals being received into the facility will be required to have a certificate of health status.

Under no circumstances may animals of any kind, other than those ordered from approved vendors or animals that are currently housed in DLAR facilities, be brought into DLAR by research or non-DLAR personnel. This applies to research, pet, stray or injured animals.

### **Importing or Exporting of animals**

Please refer to the Quarantine and Acclimation section. You may, also, contact Ronda Combs by email [rkcomb1@email.uky.edu](mailto:rkcomb1@email.uky.edu) or 859-323-6018.

### **Ordering animals**

**All animal orders must be submitted electronically through eSirius.**

**Mice:** Orders must be placed by Wednesday, 12:00 p.m. for the following Monday delivery from Harlan and Jackson Laboratory and Tuesday for delivery from Charles River and Taconic. If animals are ordered from NIA (National Institute on Aging) they must be in the DLAR office before 10:00 AM on Tuesday for placement.

**Rats: the same as mice**

**Please contact Janet Osborne in our main office if you have questions.**

**Other species: Contact the DLAR office for information.**

### **Quarantine and Acclimation**

All animals received from other institutions or vendors other than Charles River, Jackson Laboratory, Taconic Farms or Harlan Sprague Dawley are held in quarantine after receipt. During quarantine, animals are screened for selected pathogens.

The length of quarantine depends on the species origin and/or the intended use of the animals.

Quarantine is a minimum of 45 days for rodents. Rodent breeding stock and animals from non-standard vendors, and animals from outside the U.S. may require an extended quarantine.

Quarantine for non-human primates will be the length of time it takes for successful completion of the required TB testing, approximately 60 days. This process could require some length of time. Please consult with DLAR veterinarians on this matter.

Animals cannot be used experimentally nor used as breeding stock while in quarantine. Please plan accordingly.

If you wish to obtain animals from another institution or you will be sending animals to another institution, please contact our Animal Import Coordinator, Ronda Combs by email or telephone, [rkcomb1@email.uky.edu](mailto:rkcomb1@email.uky.edu) or 859-323-6018. Her contact information appears on our Contact page on the DLAR website as well. Our Request to Import Rodents form appears in the Reference section of this handbook and can be found on the Forms page of the DLAR website <http://www.research.uky.edu/dlar/forms.html>.

### **Cage Cards, Census, and Per Diems**

All cages must have a proper cage card issued by DLAR. The information on the cards indicates the following:

- Principle Investigator
- Protocol Number
- Cage Description
- Requisition Number
- Who to Notify
- Date Received
- Strain/ Species
- Account Number
- Age and Date of Birth
- Sex and Weight (if appropriate)
- Identification Number
- Vendor
- And a Miscellaneous category
- Bar Code Number for activation and deactivation of per diems

The cage cards are divided close to the top and the top section contains pertinent information as well as a bar code. This bar code is critical to accurate animal census and should be dated and returned to the main office when the cage card is removed and the animals are used. If the top portion of the card is damaged, please request a new card from Janet Osborne to ensure accurate accounting of the animals. Please do not place tape on the cage cards or cover the bar codes.

The cage cards are scanned every week and missing cards or damaged cards that do not scan are still charged per diem for up to two weeks unless the bar codes are deactivated. The DLAR staff checks the bar code drop envelopes twice daily during the week and bar code tops are returned to the office for deactivation. The bar code tops are not routinely collected on the weekends.

When turning in the top portion of the bar codes please be certain that you write the date of removal on the top for proper deactivation date. This simple practice will save you per diem charges for cages that are not there or bar codes that are deactivated when they appear in the envelopes during regular collection.

Our current Per Diem chart is located at the following web address on the DLAR webpage <http://www.research.uky.edu/dlar/PerDiemandotherServices.htm>

### **Training**

## Requirements for personnel who use animals in research at University of Kentucky

The University of Kentucky Institutional Animal Care and Use Committee has outlined minimum requirements for training for investigators and has outlined those requirements in the following document:

[http://www.research.uky.edu/ori/univet/resources/sop/IACUC\\_106\\_Training%20and%20Continuing%20Education%20Requirements.pdf](http://www.research.uky.edu/ori/univet/resources/sop/IACUC_106_Training%20and%20Continuing%20Education%20Requirements.pdf)

- Must complete required online training modules through the AALAS Learning Library
- Must participate in the Occupational Health and Safety Program
- Must complete requirements to be listed on an approved animal use protocol
- Must be listed on an IACUC approved animal care and use protocol
- Must obtain access into the facilities through the DLAR office
- Must participate in Continuing Education requirements

All personnel working with animals must receive appropriate training in the use of animals. Assurance of training for research personnel is primarily the responsibility of the Principle Investigator or protocol director. Training is also available through the Division of Laboratory Animal Resources Veterinary staff and our training coordinator.

DLAR has a variety of books, CD's, DVD's and publications in our library located in H41A of the Chandler Medical Center. Individual training sessions can be scheduled on a variety of basic and species specific procedures. We have several PowerPoint presentations available to your lab as requested.

DLAR also conducts workshops from time to time on basic procedures and anatomy of rats and mice. Contact the DLAR Training Coordinator for more information and other available resources.

### Occupational Health and Safety

No consumption of food or beverages is allowed in the animal facilities or laboratories, except in designated areas. Opened/uncovered containers of food or beverages cannot be transported through the hallways or into the animal housing rooms, experimental surgery or laboratories.



Do not attempt to go over, under, or through hallways that have been blocked by yellow chains. These areas are blocked off when dirty/contaminated nonhuman primate caging is being moved through the hallways.

**Do Not Wear Open Toed Shoes, Sandals or “Flip Flops” or any other shoe that does not provide adequate foot protection in The Animal Facility as This Constitutes a Personal Safety Hazard.**

Do not wear or carry umbrellas, outer coats or jackets into the animal rooms. Personal items such as purses or backpacks cannot be taken into the animal room – please leave personal items in your lab.

Wear dedicated lab coats or disposable gowns when entering animal areas. Remove and discard disposable lab coats and gowns in DLAR when leaving the facility. Do not wear your dedicated lab coat into the public areas of the hospital as this may put some patients at risk. Clean or launder lab coats whenever they become soiled or at least weekly.

**ALWAYS** wear gloves and other personal protective clothing as indicated while handling animals.

Wash your hands before leaving the area or use the hand sanitizers located throughout the facility

### **Allergies**

Allergies are the most common human health problem associated with laboratory rodents. People that already have allergies may be more likely to develop rodent allergies. The allergens are proteins in the urine and dander. Prudent practices involve wearing protective clothing (gown or lab coat, gloves, and mask) and working with animals in hoods whenever possible. Remember to always wear appropriate personal protective equipment when working with laboratory animals.

### **Bites and Scratches**

A common human health problem associated with laboratory animals Avoid injury by learning how to properly handle and restrain animals; if you are unsure about correct procedures or need assistance, ask at the DLAR office, or contact the DLAR Training Coordinator to arrange for training in the procedures. If you are bitten or scratched, regardless of the perceived severity of the injury:

- \* Clean the injured area appropriately, remembering that any bite or scratch wound can easily become infected.
- \* Report the accident to an Animal Care Supervisor as well as your own Supervisor, lab manager or Principal Investigator.
- \* Contact UK Workers Care for further instructions 1-800-440-6285.
- \* Remember that ALL accidents regardless of the severity should be reported to UK Environmental Health and Safety. If the injury involves an animal bite or other injury, you must fill out the Accident Report involving animal injury and forward it to the UK Biosafety officer. <http://ehs.uky.edu/ohs/form6.php>

### **Sharps Containers**

Always dispose of all sharps such as needles, scalpel blades, etc. in sharps containers and remember **DO NOT RECAP NEEDLES**, they must be placed in the appropriate sharps container located in the procedure rooms. Remember to keep sharps containers as close to your work area as possible to avoid having to walk across the room to dispose of sharps. If you cannot locate a sharps container, please let one of our technicians or supervisors know.

## **REGULATORY AGENCIES AND OTHER OVERSIGHT**

**The United States Department of Agriculture** conducts visits to every institution that uses a USDA covered species in any way in any IACUC approved protocol. United States Department of Agriculture regulations refer to the Animal Welfare Act governing the transportation, handling, housing and sale of

certain species of animals. View the [APHIS - Animal and Plant Health Inspection Service](#) USDA regulations.

**USDA/Animal Welfare Regulations (Title 9 CFR parts 1 and 2)** The Animal Welfare Regulations cover the use of animals in teaching, testing and research. It is administered by the United States Department of Agriculture (USDA). The provisions of the law set standards for the purchase, housing, and use of laboratory animals and requires prior approval of all animal use by the IACUC. It, also, requires training of all personnel. The University of Kentucky must submit an annual report to the USDA, listing numbers of animals used, species, and how many received pain-relieving drugs. The USDA conducts unannounced inspections annually to insure compliance. During these inspections, records of covered species are checked, selected protocols are reviewed, and The Institutional Animal Care and Use reports as well as other pertinent data are reviewed by the inspectors. Species covered under the Animal Welfare Act include:

- Rabbits
- Cats
- Dogs
- Ferrets
- Hamsters
- Gerbils
- Guinea Pigs
- Wild-caught rodents
- Non-human primates
- Laboratory sheep and goats (farm animals not used for food or fiber)
- Laboratory Swine (farm animals not used for food or fiber)

**The Public Health Services Policy** covers all animals used in any way on all IACUC approved protocols regardless of species View the [Public Health Services Policy](#). Institutions must meet federal guidelines before applying for federal funds to conduct animal research. These guidelines apply to all vertebrate animals, and to all animal research, regardless of the source of funding. The University of Kentucky must submit an annual assurance to the PHS stating that it adheres to these guidelines.

**OLAW - Office of Laboratory Animal Welfare** is an office of the National Institutes of Health responsible for implementation of the Public Health Service Policy You may view the OLAW website at the following web address, <http://grants.nih.gov/grants/olaw/olaw.htm>. This site contains multiple links to various resources available to the investigator outlining many of the policies and procedures which must be followed in order to research on vertebrate animals.

National Academy of Science (NAS)/Institute for Laboratory Animal Research (ILAR)  
Veterans Administration (VA)/ Department of Defense (DOD)  
National Institutes of Health (NIH)

**The Guide for the Humane Care and Use of Laboratory Animals** outlines requirements for many aspects of care, housing and environmental requirements and training of personnel who use them. View [The Guide](#).

**The Centers For Disease Control (CDC)** is a government organization that is dedicated to protecting health and promoting quality of life through the prevention and control of disease, injury, and disability. It provides information on many aspects that can pertain to laboratory animal research. One of its publications in collaboration with the National Institutes of Health and others is **The Biosafety in Microbiological and Biomedical Laboratories (BMBL) 5th Edition**. This publication contains

guidelines for the proper containment of biologic agents used in research and can be viewed at the following web address, [http://www.cdc.gov/biosafety/publications/BMBL\\_5th\\_Edition.pdf](http://www.cdc.gov/biosafety/publications/BMBL_5th_Edition.pdf).

**The Association for Assessment and Accreditation of Laboratory Animal Care, International** is a voluntary peer review organization that conducts in depth reviews of all aspects of an institutions' animal care and use program including veterinary care, husbandry practices, animal housing facilities, training, and institutional policies. The University of Kentucky Division of Laboratory Animal Resources has had continuous accreditation since 1966. You can view the AAALAC site at the following web address <http://www.aaalac.org/>.

**The AVMA Guidelines on Euthanasia 2007**, while not strictly a regulatory agency, it is important to know that humane euthanasia of all animal species fall under the guidelines and regulations of all of the regulatory agencies governing the humane care and use of laboratory animals in all protocols approved by the Institutional Animal Care and Use Committee. This document can be viewed at the following web address, [http://www.avma.org/issues/animal\\_welfare/euthanasia.pdf](http://www.avma.org/issues/animal_welfare/euthanasia.pdf)

## **INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE**

Mandated by both the Animal Welfare Act and NIH policy  
Must review and approve all proposals for animal use before animals are purchased  
Must re-review protocols annually  
Must conduct facility inspections and to review the animal use program twice yearly.

**Contact Information for the IACUC:**  
<http://www.research.uky.edu/ori/univet/>

### **Animal Protocols**

**All use of animals requires prior approval by the Institutional Animal Care and Use Committee.**

Research must not be unnecessarily duplicative.  
Alternatives must be considered before animals are used.  
All procedures that cause more than momentary pain **require** the use of anesthetics or analgesics, or scientific justification for withholding of analgesics or anesthetics.

### **Necessary Elements of a Literature Search**

The literature search is one of the most important parts of any Institutional Animal Care and Use Protocol and is a requirement of the Institutional Animal Care and Use Committee. It is important to note that a current literature search is more useful than a "from the beginning of recorded history" search. The essential features of a good literature search are;

Date of search  
Databases searched, or other sources consulted  
Years covered in the search  
Key words or search strategy used

For compliance with USDA and OLAW requirements, the search must clearly document a good-faith effort to find alternatives to painful or distressful procedures.

**Personal experience can be used, but it cannot be your only source.**

References spanning the past 15 to 30 years is generally sufficient for most research projects, A comprehensive literature search needs to be done at the beginning of the protocol. Subsequent renewals of the same protocol, in the majority of cases, need only an updated search to include results of studies that have been done from the time of the previous full search. Included here are several sites to enable you to perform a search of available of pertinent information related to the area of your study.

- [Web SPIRS](#)
- [CAB](#)
- [Biosis](#)
- [MedLine](#)
- [Agricola database](#)
- [PubMed](#)
- [Web of Science](#)

Assistance can be obtained by contacting the following individuals in the University of Kentucky Libraries.

- Valerie Perry [vperry@uky.edu](mailto:vperry@uky.edu) 257-2758 at Agricultural Information Center
- Frank Davis [fdavi2@email.uky.edu](mailto:fdavi2@email.uky.edu) 323-3983 at Medical Center Library
- Rick Brewer [rabrew02@email.uky.edu](mailto:rabrew02@email.uky.edu) 323-5296 at Medical Center Library

Assistance with and training in literature searches can be obtained by contacting the University of Kentucky Libraries at the following addresses:

MCL homepage: [www.uky.edu/libraries/MCL](http://www.uky.edu/libraries/MCL)

Ask a Librarian form: [http://www.uky.edu/Libraries/libpage.php?lweb\\_id=211&llib\\_id=12](http://www.uky.edu/Libraries/libpage.php?lweb_id=211&llib_id=12)

MCL classes page: [http://www.uky.edu/Libraries/libpage.php?lweb\\_id=33&llib\\_id=12](http://www.uky.edu/Libraries/libpage.php?lweb_id=33&llib_id=12)

In addition, you may contact any of the DLAR veterinarians or the Office of Research Integrity [http://www.research.uky.edu/ori/univet/db/db\\_help/db\\_help.htm](http://www.research.uky.edu/ori/univet/db/db_help/db_help.htm) to assist with protocol design.

Information, including literature searches, can also be obtained by contacting information specialists at:

Animal Welfare Information Center  
National Agricultural Library  
10301 Baltimore Boulevard  
Beltsville, MD 20705-2351  
Phone 301-504-6212  
FAX: 301-504-7125  
E-mail: [awic@nal.usda.gov](mailto:awic@nal.usda.gov)  
Homepage <http://www.nal.usda.gov/awic>

National Library of Medicine  
National Institutes of Health  
Bethesda, MD 20894  
(301) 496-3147  
Fax: (301) 480-3537

## **Alternatives to the Use of Animals**

Replacement - use non-animal models whenever possible

Reduction - use the fewest number of animals consistent with good science

Refinement - use the most humane methods available

For assistance in this subject, please visit the following website for information on alternatives to the use of animals.

[http://awic.nal.usda.gov/nal\\_display/index.php?tax\\_level=1&info\\_center=3&tax\\_subject=183](http://awic.nal.usda.gov/nal_display/index.php?tax_level=1&info_center=3&tax_subject=183)

You will find resources and information on refinement, alternatives as well as other useful information.

## USDA Pain Categories

According to regulatory agencies, all vertebrate animals used in research, teaching or testing must be assigned to an appropriate pain category. The chart below outlines these categories and a few of the examples for each. If you are in doubt as to which category your animals may fall under, please contact the DLAR veterinarians.

USDA Category B	USDA Category C	USDA Category D	USDA Category E
Breeding or Holding Colony Protocols	No more than momentary or slight pain or distress and no use of pain-relieving drugs, or no pain or distress. For example: euthanized for tissues; just observed under normal conditions; positive reward projects; routine procedures; injections; and blood sampling.	Pain or distress appropriately relieved with anesthetics, analgesics and/or tranquilizer drugs or other methods for relieving pain or distress.	Pain or distress or potential pain or distress that is <u>not</u> relieved with anesthetics, analgesics and/or tranquilizer drugs or other methods for relieving pain or distress.

(Note: there is no USDA Pain Category A.)

A simple definition of a painful or distressful procedure on an animal in this:

“A procedure that would cause pain or distress in a human.”

It is important to remember and understand that if an animal will need to undergo multiple procedures, it must be placed in the category indicated for the most painful/distressful procedure it will be experiencing. Also note that a single animal cannot be placed in multiple categories.

Pain categories are described as follows:

**Category B** animals are those that are being “bred”, conditioned, or held for use in teaching, testing, experiments, research, or surgery but not yet used for such purposes.” These animals have not been used for any research procedure, however minor. Category B is the place to put breeders and other animals that are not undergoing any experimental procedures.

**Category C** animals are not subjected to procedures that involve pain or distress or would require the use of pain-relieving drugs. Routine procedures such as injections and blood sampling from veins that produce only mild, transient pain or discomfort are reported in this category. Another example of Category C procedures is an observational study of animal behavior. Animals that are euthanized before tissue collection or other manipulations are also commonly placed in this category, if no other procedures performed that put them in a higher pain/distress category.

**Category D** animals are those subjected to potentially painful procedures for which anesthetics, analgesics, or tranquilizers will be used. The important concept is that animals are given appropriate anesthesia and/or pain relief to limit their pain and distress as much as possible.

Examples of category D procedures are

- Surgery conducted with appropriate anesthesia and postoperative analgesia;
- Rodent retro-orbital eye bleeding performed under anesthesia;
- Non-human primate tattooing performed for identification under anesthesia;
- Removal of small tumors under local or general anesthesia, and use of analgesia after an animal's skin is exposed to ultraviolet light to cause a "sunburn"; and
- Terminal exsanguinations (euthanasia by removal of blood) under anesthesia

**Category E** animals are those that are subjected to painful or stressful procedures without the use of anesthetics, analgesics, or tranquilizers. Withholding of anesthetics, analgesics, or tranquilizers can only be allowed if it is scientifically justified in writing and approved by the IACUC. Examples of category E procedures are lethal dose studies (e.g. LD50 studies) that allow animals to die without intervention, pain studies that would not be possible if pain-relieving agents were administered, and psychological conditioning experiments that involve painful stimuli such as noxious electrical shock that cannot immediately be avoided by an animal.

By law, the institution must annually report all category E procedures to the USDA and include a scientific justification supporting the IACUC's decision to approve them. It is important for the information on category E procedures to be complete and accurate <sup>1</sup>.

1. Descriptive text from AALAS Learning Library training module

## Reporting Concerns:

All animals owned or used by the University of Kentucky for research or training will receive proper care, and will be used humanely in accordance with approved protocols, federal laws, and University of Kentucky regulations and guidelines. Any person who witnesses or suspects abuse of said animals is encouraged to report their concern to any IACUC member or to:

Dr. Abhijit Patwardhan, Chairperson  
UK Institutional Animal Care and Use Committee  
(859) 257-2728  
Dr. Harold Stills, University of Kentucky Attending Veterinarian  
(859) 323-5885  
Dr. James Tracy, University of Kentucky Vice President of Research  
(859)257-5294

Or contact the Office of Research Integrity anonymously at  
1- (866) 400-9428 (toll free call)

Written concerns may be sent to the  
UK Institutional Animal Care and Use Committee

Room 322, Bosomworth Health Sciences Research Building  
Lexington, Kentucky 40536-0305

**No adverse action will be taken against anyone making a report. You are NOT required to give your name.**

### **Veterinary Consultation:**

Veterinary consultations are available from the DLAR veterinary staff to assist you. Additionally, the DLAR veterinarians may also serve as collaborators or co-investigators on your protocols when requested. Please refer to the DLAR website for contact information.

[http://www.research.uky.edu/dlar/contact\\_us.htm](http://www.research.uky.edu/dlar/contact_us.htm)

### **eSirius®:**

[eSirius®](#) is UK's on-line IACUC protocol management and animal ordering system. New Principle Investigators can request an eSirius user account by sending/faxing a completed and signed [eSirius Account Request Form](#) to the Office of Research Integrity (ORI). Questions regarding user accounts can be directed to [Jill Esham](#) in the Office of Research Integrity @ 859-257-5977. The Office of Research Integrity staff is responsible for administrative protocol development assistance, processing and routing for review of new protocols, amendments, 3rd year re-submissions and annual reviews. Please refer to the Office of Research Integrity website for additional information

[http://www.research.uky.edu/ori/univet/db/db\\_help/db\\_help.htm](http://www.research.uky.edu/ori/univet/db/db_help/db_help.htm) and a list of specific responsibilities, SOP's, Guidelines, training contacts and eSirius® user manuals. You may alternatively access the DLAR website at the following web address: <http://www.research.uky.edu/dlar/eSirius.htm>

### **RESOURCES:**

The weight and food and water consumption is dictated by age and sex. Further information can be obtained by contacting the DLAR veterinary staff or the Training Coordinator. Strain specific information is also available on various vendor websites.

Taconic Farms      [www.taconic.com](http://www.taconic.com)

Harlan              [www.harlan.com](http://www.harlan.com)

Charles River      [www.criver.com](http://www.criver.com)

Information on mice can be found at the Jackson Laboratory website: [www.jax.org](http://www.jax.org)

AALAS Learning Library On-Line Learning <http://www.aalaslearninglibrary.org/> User names and passwords can be obtained by contacting Angie Croucher in the Office of Research Integrity [aric2@email.uky.edu](mailto:aric2@email.uky.edu)

Division of Laboratory Animal Resources Training Coordinator JoeAnn Croxford  
[ejcrox2@email.uky.edu](mailto:ejcrox2@email.uky.edu)

### Cage Densities for Mice being housed in DLAR Facilities

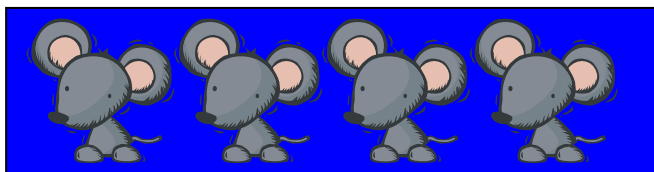
\* PLEASE NOTE THAT THESE CAGE DENSITIES REFER TO ONLY ADULT MICE AND DO NOT TAKE INTO ACCOUNT BREEDING CAGES OR CAGES WITH LITTERS. \*

In order to comply with space requirements of *The Guide for the Care and Use of Laboratory Animals* and other regulatory agencies, we have outlined the number of mice that can be housed in our various caging systems. Please refer to IACUC Guidelines and Standard Operating Procedures 110 Mouse Housing Density. This document can be found by going directly to the IACUC page <http://www.research.uky.edu/ori/univet/> and clicking the appropriate link on the right side of the page.

Below are examples of the different types of mouse housing caging used in the DLAR facilities, including the number of adult animals that can be housed in each type of caging  
**Standard Static Micro isolator cage** This cage holds **4** adult mice. These cages are most often used on shelf racks.



60 usable sq. in

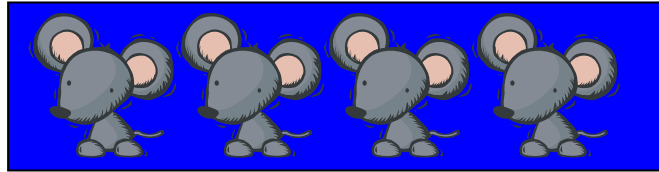


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**Small Tecniplast PIV cage** This cage holds **4** adult mice. There are 144 of these cages per rack



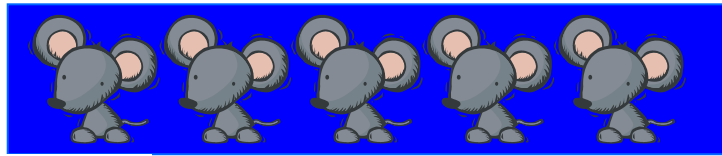
65 usable sq. in



**Large Tecniplast PIV cage** This cage holds **5** adult mice. There are 112 cages of this type on a rack.



78 usable sq.in.



**The “Green Line” Tecniplast PIV cage** This cage holds **5** adult mice.



77.6 usable sq. in.



**The “RedLine” Allentown cage** The cage holds **5** adult mice.



78 usable sq. in.



If you have a breeding colony, please check with the Supervisor, our Facility Manager, our Training Coordinator or any of our DLAR Veterinarians for specifics regarding the requirements for breeding cages. If you have questions concerning a certain type of cage, please contact the Supervisor of the area where your animals are housed, our Facility Manager, or any of our DLAR veterinaria

**The Chart below is from the new 8<sup>th</sup> edition of the ILAR publication *The Guide for the Care and Use of Laboratory Animals (2010)***

Animals	Weight in grams	Floor Area/Animal, <sup>a</sup> in. <sup>2</sup> (cm <sup>2</sup> )	Height, <sup>b</sup> in. (cm)	Comments
Mice in Groups <sup>c</sup>	<10	6 in <sup>2</sup> (38.7)	5 (12.7)	Larger animals may require more space to meet performance standards
	Up to 15	8 in <sup>2</sup> (51.6)	5 (12.7)	
	Up to 25	12 in <sup>2</sup> (77.4)	5 (12.7)	
	>25	≥ (≥96.7)	5 (12.7)	
Female + litter		51in <sup>2</sup> (33) (Recommended space for the housing group)	5 (12.7)	
*Guide for the Care and Use of Laboratory animals: 8 <sup>th</sup> edition (2010)				

## Rat Caging

The housing density for rats is outlined in *The Guide for the Care of Laboratory Animals* and states that housing density is determined by several factors, the size of the cage and the weight of the animal. Each IVC Rat cage is different in floor space and the typical rat static micro-isolator can hold two adult rats weighing up to 500 grams each. Breeding animals or breeding pairs may have different space requirements to allow for optimum growth of young. If you will be working with rats, please consult the area supervisors as to the number of rats that can be housed in each cage type so as to remain in

	Weight	Floor Area/Animal		Height		Comments
		in <sup>2</sup>	cm <sup>2</sup>	in	cm	
Rats in Groups	<100	17	109.6	7	17.8	Larger animals may require more space to meet performance standards. This is particularly true with breeding pairs, trios, or females with litters
	Up to 200	23	148.35	7	17.8	
	Up to 300	29	187.05	7	17.8	
	Up to 400	40	258.0	7	17.8	
	Up to 500	60	387.0	7	17.8	
	>500	>70	>451.5	7	17.8	

compliance with the IACUC and other regulatory agencies.



Tecniplast IVC Rat Cage  
124 usable sq in.



Lab Products IVC Rat Cage  
140 usable sq in.



Static Micro-Isolator Rat Cage  
143 usable sq. in.

### Other Species

DLAR has the ability to house a variety of common laboratory animals including rabbits, dogs, hamsters, guinea pigs, as well as mice and rats, birds and, on a limited basis non-human primates, sheep and pigs. When planning your studies, please consult with our veterinarians for further information.

Additional resources available from the Division of Laboratory Animal Resources include but not limited to:

- Micro Isolator presentation
- Recommendations for analgesia and anesthesia
- Breeding Colony Management presentation and Workshop
- Outline for managing breeding colonies
- Pup aging chart
- List of Special cards and their usage
- links to the various forms and examples
- CD's on Biostatistics in Mice and Rats, Rodent Survival Surgery
- Aseptic Surgery presentation and Workshop