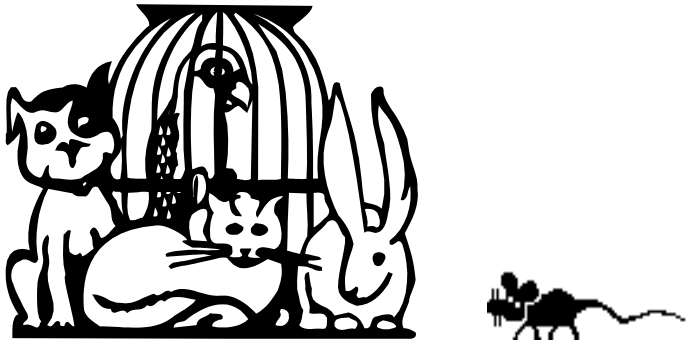
Division of Laboratory Animal Resources

INVESTIGATOR INFORMATION HANDBOOK



Prepared by The Division of Laboratory Animal Resources
September 2024

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Division of Laboratory Animal Resources Investigator Orientation Program

MISSION STATEMENT:

We support research at the University of Kentucky by providing the highest quality veterinary services and humane care and treatment to all research animals. We strive to assist in the continued advancement of scientific knowledge for the benefit of humans and animals. We abide by the ethical principles of humane animal care and good science in accordance with all regulatory agencies. We serve as a resource for knowledge and technical expertise and provide an atmosphere of mutual respect and cooperation with our researchers.

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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FACILITY ACCESS AND SECURITY PROTOCOLS

Access to the DLAR animal facilities is limited to authorized personnel only. Authorized users must not "loan" their badges to others or allow others to use their credentials at the risk of having their access revoked. "Tailgating" or following others into the facilities without swiping your badge is not permitted. The DLAR facilities have a variety of security measures to enter a facility.

- Med Center, Combs and HSRB require badge and Iris Scan for facility entry and badge out of facility (some rooms in Combs have badge access)
- Lee T. Todd (Bio Pharm) requires a badge, and 5-digit PIN followed by the # sign for facility entry, badge out of facility and badge to enter animal rooms
- Sanders Brown requires badge and 5-digit PIN for facility entry and badge out of facility
- BBSRB requires badge and Iris Scan for facility entry and 4-digit PIN to enter animal housing rooms
- MDSB requires a key for facility entry and 4-digit PIN to enter animal housing rooms
- Spindletop requires a key for facility entry
- HKRB requires badge and Iris Scan for facility entry in and out of facility and badge to enter animal and procedure rooms

Access to DLAR facilities can be obtained once someone is added to your protocol. All access requests go through the DLAR main office in HSRB 204. See instructions for facility access on the DLAR web page under forms: https://www.research.uky.edu/division-laboratory-animal-resources/dlar-forms

- The EyeLock enrollment for the iris scan is located in HSRB 204. Enrollment only takes a few minutes. Please schedule a time for your enrollment by contacting the DLAR Business Office (HSRB room 204) 323-7132, 323-2934, or 323-5885
- PIN numbers for facility access and Lee T. Todd animal room access are assigned by the DLAR Main Office. The same 5-digit PIN will work for any of our facilities requiring a 5-digit PIN.
- BBSRB and MDSB room entry 4-digit PINs are assigned by the area supervisor. The forms may be accessed on the DLAR Forms page under DLAR Access.

Visitor Badges and Procedures

Visitor badges are issued to visitors and vendors who will be here for a short while (from a few hours to a day or two for equipment service). To access any DLAR facility, there needs to be a Visitor/Vendor Occupational Health form on file in DLAR. 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.

Visitor Badges have **NO** entry or room door access capabilities and are only valid for the day they are issued. If you require a temporary badge for more than one day, it must be renewed each day.

Visitor Badges are available in the following DLAR locations:

- The Main Office in the Health Sciences Research Building (HSRB) Room 204 between 7:30 AM and 4:30 PM Monday through Friday.
- BBSRB DLAR office (B036) Between 7:00 AM thru 3:15 PM Monday thru Friday
- Lee T. Todd Building DLAR office (030H) between the hours of 7:00 AM and 3:15 PM Monday through Friday.
- H41A training room 7:30 AM – 4:00 PM

The DLAR Visitor/Vendor Occupational Health and Safety Form is available by on The DLAR Forms page under **DLAR Visitors**. For more information regarding accessing into DLAR facilities please review the Guidelines and Policies for Accessing DLAR Facilities.

Visitors/Vendors to our facilities must be escorted by their hosts or a member of the hosts' staff or appropriate personnel.

All photographs must be with the approval of the Director of the Division of Laboratory Animal Resources and the Principal Investigator.

Note: Media representatives must also be cleared, and approval obtained through the Office of the Vice President for Research and UK Public Relations. Media representatives MUST be accompanied by a member of the DLAR staff or the Investigator staff. Should you need to plan for your visitors ahead of time, please contact our Facility Manager, one of our DLAR veterinarians, our office staff, or our Training Team.

Training

Training is available on a wide range of subjects by contacting the DLAR Training Group, any of the DLAR Supervisors, or our DLAR Veterinarians. Basic micro-isolator techniques, working under the laminar airflow workstations 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 team. 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 the DLAR Training Group for more information regarding 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, mumps, and rubella (MMR) titer are required for all personnel.**

Caging for Rodents

Most rodents housed in the DLAR facilities are in ventilated caging to maximize biosecurity at the cage level. These cages are changed under animal transfer systems and Class II Biosafety cabinets facility wide. All manipulations of caging and animals will be accomplished using the hoods. This will include changing cages, weaning, pairing for breeding, sexing of weanlings, medical examination and treatment, and all procedures done within the animal housing areas. Prepared clean caging is available in the hallway for weaning. 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

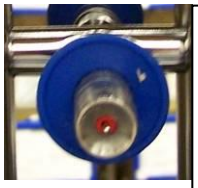
All work with mice and rats must be done in the hoods. The micro-isolator lid should not be opened unless the cage is in the hood and the hood/change station motor is running. Disinfect all work areas before and after use.

Cage Docking Procedures for IVC Racks

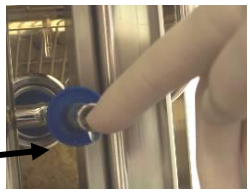
Ensure that a water valve is present and activate it to ensure that water is flowing from the water valve

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



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



Water valve is in place and ready to use

Back

Front

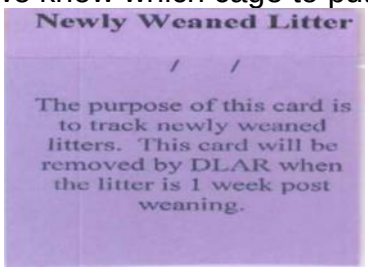
NOT properly Docked

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

Breeding Colony Management and 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 two weeks. Be sure to mark the cage with a newly weaned card so they can be monitored by the technicians. Make sure to enter the date of birth and cage card number. This way if the card falls off the cage, we know which cage to put back on.

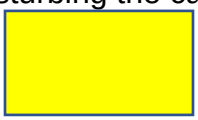


Yellow Transparency Cards

If you, as an investigator, will be caring for your animals, you will want to use a special transparency as an indicator in addition to the DLAR Service Request form that you will have filled out. These yellow transparencies are used to indicate that there is a special situation where an investigator has a specific study or sensitive project going on.

Whole Yellow Transparency

DLAR will not pull out the cage during room checks and will not change the cage. The animals will be observed without disturbing the cage. ***Research staff is responsible for the husbandry of the cage.***



If you use transparency <u>WITHOUT the corner removed</u>, you, as the investigator, are responsible for the husbandry of the cage.

Yellow Transparency with Right Corner Cut Off
DLAR is responsible for the husbandry of the cage, however, the PI does not want the cage pulled for observation.

Micro Isolator Technique

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 the micro-isolator technique.

- **<u>Always</u>** turn the animal transfer system or Biosafety cabinet on 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 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.

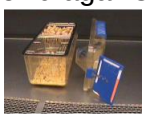
- **Always** wipe down the work surface with appropriate disinfectant.

- 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.

- Place cage inside of hood and spray the outside with disinfectant (Avoid spraying Cage Card) 

- Remove filter top by tilting left or right (a) and place on floor of the hood right side up (b). An acceptable alternative is to rest the lid against the back or side of the cage (c).

(a)  (b)  (c)  

- Wipe the work surface when you have finished your work with appropriate disinfectant followed by clean water. While sinks are not available in all animal rooms, the use of water from a **clean** water bottle is acceptable.

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. 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.

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 other animals in the housing room.

Many DLAR facilities have associated procedure rooms. These rooms must be scheduled by investigators, through the University of Kentucky Event Management System (EMS).

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 provide information on room sanitization and 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 any of the DLAR Veterinarians for further assistance.

Examples of Rodent Caging

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

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 CO2 buildup. These cages can be used in this manner for several days if required.

Additional types of caging for both rats and mice are used in the DLAR facilities. Please contact the animal care supervisor in the facility where your animals are housed for additional information on the housing used with the animals in your study.

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 Resource Material and Forms Section of this Handbook.

Housing needs for species other than rodents should be discussed with our facility manager, animal care supervisors, or our DLAR veterinarians.

Returning Dirty Caging to Cage Wash

When returning dirty caging from your lab or animal housing room to the dirty side of cagewash, cages must be covered to prevent the spread of allergens. Please remember before you leave the lab or housing area to **ALWAYS** check **INSIDE** of the cage you are returning to be sure there are **no animals present BEFORE** you place the cage in the designated area for the facility you are working with. Animals that have been euthanized must go into the designated cooler or freezer in the facility you are working in. **DO NOT** leave them inside the dirty cage when it is returned to cage wash.

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 about 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.

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, their contact information is listed on page 5.

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 in personal vehicles**. If animals must be moved to other facilities for housing or transfer to another

investigator, follow the information in your approved animal use protocol or contact a DLAR Animal Care Supervisor for assistance. Transfers from one location to another or to another investigator will be completed when a DLAR Services Request Form has been submitted to the local Area Supervisor.

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 transporting animals through patient areas or to another building, animals must be transported in an enclosed cart. When transporting animals to lab areas within the same building the animals are housed in, you may use an open cart with cages completely covered by a drape making certain **NO PART** of the **CAGE** is visible. **Do not carry a single cage by hand, it must be placed on or in a cart. There is the possibility that you may drop the cage and injure the animals, or they may escape.** When returning dirty caging to the animal facilities, be certain the cage is empty and does not contain animals alive or deceased. Dirty cages must be covered as well to protect personnel from potential exposure to animal allergens.

Examples of what you CAN use to completely cover cages


Drapes


Towels


Pillowcase


Closed Cart


Cabinet Type Cart

Examples of what NOT to use to cover cages while transporting


DO NOT USE "YELLOW GOWNS"


DO NOT USE LAB COAT



DO NOT USE WATER BOTTLE BASKET COVERS

DLAR has 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 IACUC Policies, Procedures and Guidelines DOC 133 for more information on transporting animals.

Procedure Rooms

DLAR has a limited number of procedures rooms that can be reserved for use by our researchers. Please go to https://meetatbigblue.uky.edu and log in with your linkblue ID and password to access the reservation page. All researchers on approved animal use protocols can access this system. If you need assistance, please contact your area supervisor.

Service Requests

The Division of Laboratory Animal Resources can meet a number of investigator's 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, the administration of medicated water, and a wide range of other simple procedures associated with routine animal care. DLAR Service Request Form can be found on the DLAR Website Forms Page under DLAR Service.

- ***DLAR Service Request must have a Start and End Date to be Accepted***
- Should be submitted **AT LEAST 48 hours** prior to the effective start date and must be delivered to the supervisor of the area in which your animals are housed.
- If the Special Request is to start over the weekend, it should be delivered to the area supervisor no later than the Wednesday prior to the start of the weekend requested
- ***Service Requests submitted on a Friday afternoon may not appear on the weekend duty schedule.***

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 to include PI name and Protocol number. 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 Animal Care Supervisors and Facility Operations Manager. Their contact information appears on page 5 of this Handbook or on the DLAR website About Us page DLAR has limited storage for small amounts of food that needs refrigeration in specially marked refrigerators. All food must be clearly marked

with the investigator's 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 the animals in our care is very important to us. We do extensive health monitoring using sentinel animals or Sentinel EAD (Exhaust Air Dust) media in each rodent room to ensure the health of our rodent colonies. In addition to our in-house testing, we submit samples for independent surveillance of the health of the colonies at UKY.

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 UKY, and participation in collaborative research. Please contact them to arrange for a consultation

We have a staff of 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 are attended to as soon as they are reported. Our veterinarians are available for consultations, to prescribe treatments, and to respond to emergencies.

How to Contact our Veterinary Health Care Technicians:

See Contact information on page 5 of this manual or visit the DLAR About Us page on the DLAR Website.

Experimental Surgery

Our Experimental Surgery Unit offers 3 fully equipped surgery suites maintained at the highest standards for sterile surgeries, and a 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, as well as providing steam, gas and chemical sterilizations for a fee. The diagnostic area/surgery suite is dedicated as an imaging room and contains Cardiac Fluoroscopy, digital imaging and dental x-ray equipment. Should you wish to visit the Experimental Surgery area, please contact either of our *Surgical Technicians*. 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 all procedures **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 https://www.research.uky.edu/division-laboratory-animal-resources/animal-health-veterinary-information 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 contact DLAR Experimental Surgery Team or phone: 859-323-5829, 859-323-6027, 859-323-0289. The Lab Animal Surgery and Research Support Rates can be accessed on the DLAR Website. Technical assistance is available if needed Technician time will be charged as per the Current FY Rates.

IACUC Guidelines for Rodent Surgery

Excerpt from IACUC Guidelines for Meeting Policy 102 Surgery Requirements pertaining to:

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 a 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 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 https://www.research.uky.edu/office-attending-veterinarian/iacuc-policies-procedures-and-guidelines. 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. There are special Surgery cards to be placed by the investigator behind the normal cage card. These special cards include the contact information, analgesic/treatment record, and observation information as to Surgical site and Alert response. 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.

Rodent Anesthesia Machines

DLAR has several anesthesia machines available to investigators on a fee for services basis. The rodent anesthesia machines may be rented by contacting our Research Analysts. The rental fee includes setup and training if needed. Please contact the DLAR Research Analysts for further information regarding the training and to schedule a reservation for the use of these machines. All users of the DLAR rodent anesthesia machines are encouraged to take advantage of the training, so you will be familiar with our equipment, 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.

Cryopreservation/Rederivation

For these services, please contact Kristin Fox or 859-323-5469

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 one of our Research Analyst Glenn Florence or Kristin Fox or one of our DLAR Veterinarians to discuss your needs. We will make every effort to help, ***but please note, in some cases due to scheduling conflicts, it may be difficult to assist on short notice.***

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 every 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.

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), and Dr. Carney Jackson, Pathology Consultant to DLAR.
Research pathology services are available through this fee for services unit. Please coordinate these services through our DLAR Veterinarians and for additional information on available services. Forms for submission can be found on the DLAR website at the following address:
https://www.research.uky.edu/division-laboratory-animal-resources/pathology

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. These services must be requested in advance to avoid scheduling conflicts. They are also available for training in the use of anesthesia machines and basic procedures.

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 online in Cayuse Animal Oversight (Cayuse AO).
All animal procurement, regardless of source or cost, must be processed through DLAR.
All animal orders must be submitted electronically through Cayuse AO.
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.

Ordering Animals

All animal orders must be submitted electronically through Cayuse AO.

Mice and Rats: 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.

Other species: Contact the DLAR office for information

Please contact Cheryl Carmichael in our main office if you have questions.

Non-commercial Vendor Import or Export of Rodents

Please refer to the Import and Export of Animals page on our website. Contact DLAR's Import and Export Coordinator Ronda Combs or 859-323-6018.

Quarantine and Acclimation

All animals received from other institutions or vendors other than Charles River, Jackson Laboratory, Taconic Farms or Inotiv 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 **4-6 weeks 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.

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

If you wish to obtain rodents from another institution or you will be sending animals to another institution, please contact our Animal Import Coordinator, Ronda Combs or 859-323-6018. The Request to Import Animals Form can be found on the Forms page of the DLAR website

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**

Of special note, cage cards MUST NOT be reused. Each card is unique. If you need extra cards for splitting cages or weaning animals, please contact Cheryl Carmichael. There is no charge for this service. The cage cards contain 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 card is damaged, please request a new card from Cheryl Carmichael to ensure accurate accounting of the animals. Please do not place tape on the cage cards or cover the bar codes.

Cage Cards are scanned twice a month. Missing or damaged cards that are not scanned are still charged per diem unless the bar codes are deactivated. Cage cards will be removed by reconciliation after the third time it is missed on a scan. The DLAR staff checks the bar code drop envelopes twice daily during the week and bar code tops are returned to the DLAR main office for deactivation. **The bar code slips are collected on the weekends and turned into the DLAR main office on Monday.**

When turning in the portion of the cage card containing the barcode either activation or deactivation, the date of activation of a new or deactivation of a previous cage card must be annotated. When activating a new cage card make sure to document the number of animals in the cage. Following this simple practice will alleviate per diem charges being unnecessarily charged for cages not in use or bar codes that are deactivated when they appear in the envelopes during regular collection.

Our current Per Diem chart is located on the DLAR webpage under the Tech Services Tab Rates.

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. Those requirements in the IACUC Policies, and Procedures, and Guidelines Doc 106.

- 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

In addition to the IACUC required training, all individuals accessing the DLAR facilities must attend the DLAR Orientation given twice monthly.

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 Principal Investigator or protocol director. Training is available through the Division of Laboratory Animal Resources, Veterinary staff, and the Training Group on a wide variety of common procedures and species-specific information.

Individual training sessions can be scheduled on a variety of basic and species-specific procedures. We have several PowerPoint presentations available for your lab use on the Training Page of the DLAR Website. DLAR also conducts workshops from time to time on basic procedures and anatomy of rats and mice. Contact the DLAR Training Group for more information and other available resources.

DLAR has a variety of books, CD's, DVD's and publications in our library located in H41A of the Chandler Medical Center.

Occupational Health and Safety

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 shorts, skirts, tight-fitting leggings or nylons, pants or slacks that do not cover your ankles into the animal rooms as per University of Kentucky Environmental/Biological Health and Safety and DLAR policy. Follow the EHS guideline on laboratory safety as DLAR animal rooms fall within those guidelines.

Wear dedicated lab coats, disposable gowns, or dedicated scrubs 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 in 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.

Do not wear or carry umbrellas, outer coats or jackets, backpacks or purses into the animal rooms. Please leave personal items in your lab

No consumption of food or beverages, chewing gum or mints, 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.

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. 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 Team 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
    - Information to Report:
        - Cage Card information as EH&S will need this to know if the animal(s) have been treated with something that could be harmful to the person.
        - For NHP Bite Scratches follow the "***Nonhuman Primate Instructions***" inside the NHP bite kits.
- Contact UK Workers Care for further instructions 1-800-440-6285
- Remember that ALL accidents regardless of the severity should be reported to UK Occupational Health and Safety IMMEDIATELY. If the injury involves an animal bite or other injury, you must fill out the University's Accident-Occupational Injury/illness Report (Form 6). Log in with LinkBlue ID and Follow the instruction on webpage.

Sharps Containers

Always dispose of all sharps such as needles, empty syringes, 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. Do NOT throw trash such as paper towels, gauze pads, alcohol preps, etc. into the sharps containers. 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. Boxes for broken glass are available in each facility, contact the area supervisor.

REGULATORY AGENCIES AND OTHER OVERSIGHT

The United States Department of Agriculture (USDA)

Conducts visits to every institution that uses a USDA covered species in any way in any IACUC approved protocol. USDA regulations refer to the Animal Welfare Act governing the transportation, handling, housing and sale of certain species of animals. https://www.research.uky.edu/division-laboratory-animal-resources/regulatory-agencies

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 ensure 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

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 to research with 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. To view The Guide.

The Centers for Disease Control (CDC)

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/bmbl5/BMBL.pdf.

The Association for Assessment and Accreditation of Laboratory Animal Care, International

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 2020

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 the regulatory agencies governing the humane care and use of laboratory animals in all protocols approved by the Institutional Animal Care and Use Committee. The AVMA Guidelines on Euthanasia can be viewed on the IACUC webpage on the UKY OAVs website.

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 review the animal use program twice yearly.

Contact Information for the IACUC

https://www.research.uky.edu/office-attending-veterinarian/about-oav

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 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 10 years are 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 most 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.

National Institutes of Health Links:

- MedLine
- PubMed

USDA National Agricultural Library Links:

- Agricola database
- Animal Welfare Information Center (AWIC)

University of Kentucky Medical Library Site Links:

- Animal Welfare Libraries
- ERIC (Educational Resources Information Center)
- PsycINFO
- Ask a Medical Librarian
- Medical Center Library Classes

Web of Science Links:

- CAB Abstracts
- Biosis
- Web of Science

Other Helpful Sites:

- CAAT Center for Alternatives to Animal Testing (Johns Hopkins Bloomberg School of Public Health)

For assistance contact the following individuals in the University of Kentucky Libraries:

- Jason Keinsley 218-1523 at Medical Center Library (College of Agricultural)
- Mark Ingram 323-6568 at Medical Center Library
- Rick Brewer 323-5296 at Medical Center Library

Additional assistance can be obtained by contacting the Medical Center Library.

In addition, you may contact any of the DLAR Veterinarians or the Office of the Attending Veterinarian (OAV) to assist with protocol design.

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
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 not 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 needs 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 [1.]

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. M. Paul Murphy, Chairperson
UK Institutional Animal Care and Use Committee
(859) 218-3811
Dr. Michael Hart, University of Kentucky Attending Veterinarian
(859) 629-0620
Dr. Lisa Cassis, 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
435 Bowman Hall, 151 Washington Avenue
Lexington, Kentucky 40506-0059

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 University of Kentucky Veterinarians to assist you. Additionally, the veterinarians may also serve as collaborators or co-investigators on your protocols when requested. Please refer to the Cayuse AO Veterinarian Consultation page for a complete list of University of Kentucky Veterinarians and their contact information.

Cayuse AO

Cayuse AO is UK's on-line IACUC protocol management and animal ordering system. Principle Investigators can request a Cayuse AO user account by submitting a PI Cayuse AO Account Request and hitting the submit button on the form. Questions regarding user accounts may be directed to Rob Williams at 859-257-3694. The Office of the Attending Veterinarian (OAV) 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 contact the OAV-IACUC Office with any questions regarding protocols in Cayuse AO. Contact Cheryl Carmichael at 323-6006, with any questions concerning animal orders, cage care request, or animal transfers. The Cayuse AO landing page contains a plethora of information regarding Getting Started, Training, Cayuse FAQs, and Contact Information.

Resource Material and Forms

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.

Charles River	www.criver.com
Inotiv	http://www.inotiv.com/
Taconic Farms	www.taconic.com

Information on mice can be found at the Jackson Laboratory website: 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.

Cage Densities for Mice being housed in DLAR Facilities

To comply with the 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 https://www.research.uky.edu/office-attending-veterinarian/iacuc-policies-procedures-and-guidelines and clicking the appropriate link.

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

	Mouse Caging					Maximum Mouse Density									
	 Cage Type	Width, hr(cm)	Length,hr(cm)	Height,hr(cm)	Floor Area in ^{2} (cm^2)	Body Weight <10g(<24 days of age*)	Body Weight 10-15g (24-31 days of age*)	Body Weight 15-25G(32-70days of age*)	Body Weight 25-35g (>70days of age*)	Body Weight 35-45g (Obese Strains)	Body Weight>45g (Obese Strains)	Female + Litter	Female with Male + Litter	Male with 2 Female with 1 Litter (1st Breeding)	Male with 2 Female with 2 Litter (1st Breeding)
	Required Floor Area [sq. in (sq. cm0]			5.0 12.7		6.0 (38.7)	8.0 (51.6)	12.0 (77.4)	15.0 (96.7)	19.0 (122.6)	23.0 (148.4)	51.0 (330)	66.0 (426.7)	81.0 (523.4)	107.0 (756.7)
						Maximum Number Allowed in Cage							Allowed Yes/No		
	Standard Mouse Cage & Static Microisolator	7.5 (18.9)	11.75 (29.37)	5.0 (12.7)	67 (451)	11	8	5	4	3	2	1	Yes	No	No
	Techniplast 1284/85L Top Flow-Flow Blue Line	8.46 (21.5)	15.67 (39.8)	7.36 (18.7)	82.15 (530)	13	10	6	5	4	3	1	Yes	Yes	No
	**Techniplast 1284/85L Seal-Safe Blue Line	8.46 (21.5)	15.67 (39.8)	7.36 (18.7)	82.15 (530)	13	10	6	5	4	3	1	Yes	Yes	No
	Allentown XJ IVC Cage (Angled Bottom)	7.64 (19.4)	15 (38.1)	5.16 (13)	77.5 (500)	12	9	6	5	4	3	1	Yes	No	No
	Large (King Box) Static Microisolator	10.5 (26.67)	19 (48.26)	6 (15.24)	142 (916)	23	17	11	9	7	6	2	Yes	Yes	Yes
	*Age is based on the C57BL/6NHsd inbreb mouse and are only approximate and varies greatly between species														
	The body weight is the limiting factor and the approximate age information is provided only for guidance														
	** Not in regular use-In storage in case ABLS3 suite reopens														

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

Animals	Weight in grams	Floor Area/Animal,[a] in.^{2} (cm^2)	Height,[b] in. (cm)	Comments
Mice in Groups[c]	<10	6 in^2 (38.7)	5 (12.7)	Larger animals may require more space to meet performance standards
	Up to 15	8 in^2 (51.6)	5 (12.7)	
	Up to 25	12 in^2 (77.4)	5 (12.7)	
	>25	≥ (≥96.7)	5 (12.7)	
Female + litter		51in^2 (33) (Recommended space for the housing group)	5 (12.7)	

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 to remain in compliance with the IACUC and other regulatory agencies.

	Rat Caging					Maximum Rat Density									
	 Cage Type	Width in (cm)	Length in (cm)	Height in (cm)	Floor Area in ^{2} (cm^2)	Body Weight <100g [<4 Weeks of age*]	Body Weight 100-200g [7-10 (M-F) Weeks of age*]	Body Weight 200-300 [10-12 (M-F) Weeks of age*]	Body Weight 300-400g [>12 (M-F) Weeks of age*]	Body Weight 400-500G	Body Weight 500-650g	Body Weight 650-800g	Body Weight >800g	Female + Litter	Female with Male + Litter
	Required Floor Area [sq. in (sq. cm]			7.0 (17.8)		17 (109.6)	23 (148.35)	29 (187.05)	40 (258.0)	60 (387.0)	70 (451.5)	80 (516.1)	90 (580.1)	124.0 (800)	214.0 (1380)
						Maximum Number Allowed in Cage									Allowed Yes/No
	Standard Static Cage/ Microisolator	10.5 (25.9)	19 (47.6)	8.0 (20.9)	143 (922.0)	8	6	4	3	2	2	1	1	1	No
	Techniplast 1291H	10.47 (26.6)	16.73 (42.5)	7.28 (18.5)	124 (800)	7	5	4	3	2	1	1	1	1	No
	Allentown Next Gen 900	11.8 (29.9)	16.2 (41.2)	9.2 (23.4)	142 (916)	8	6	4	3	2	2	1	1	1	No
	Techniplast Double Decker	18.2 (46.2)	15.87 (40.3)	15.89 (40.4)	288.6 (1849)	17	12	10	7	4	4	3	3	2	Yes
	*Age is based on the HsdSD Sprague-Dawley ratand are only approximate and varies greatly between species														
	The body weight is the limiting factor and the approximate age information is provided only for guidance														

	Weight	Floor Area/Animal		Height		Comments
		in2	cm2	in	cm	
Rats in	<100	17	109.6	7	17.8	Larger animals may require
Groups	Up to 200	23	148.35	7	17.8	more space to meet performance
	Up to 300	29	187.05	7	17.8	standards. This is particularly
	Up to 400	40	258.0	7	17.8	true with breeding pairs, trios, or
	Up to 500	60	387.0	7	17.8	females with litters
	>500	>70	>451.5	7	17.8	

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 DLAR:

- Website https://www.research.uky.edu/division-laboratory-animal-resources
- Micro Isolator presentation
- Recommendations for analgesia and anesthesia
- Breeding Colony Management presentation and Workshop, Pup aging chart, Weaning calendar
- Outline for managing breeding colonies
- List of Special cards and their usage
- links to the various forms and examples
- CD's on Bio-methodology in Mice and Rats, Rodent Survival Surgery
- Aseptic Surgery presentation and Workshop
- Handling and Injection Techniques
- Post-Surgical Monitoring and Basic Suturing workshops

DLAR Forms

DLAR Access Forms

- DLAR Access Instructions
- Research Personnel Request for Access to DLAR Facilities
- DLAR Staff-PPD-Security-Vendor Request for Access to DLAR

Cayuse AO Request Forms

- Principal Investigator Cayuse AO Account Request
- Non-PI Cayuse AO Account Request

DLAR Service Forms

- DLAR Service request Form
- DLAR Do Not Feed Form
- DLAR Treatment Request Form
- DLAR Hazardous Agent Use Form
- DLAR Research Supply Acquisition Form
- Pathology/Necropsy request Form
- DLAR Cryopreservation Service Request Form

DLAR Visitor Form

- Occupational Health and Safety Form for Visitors

Please download and print the Occupational Health and Safety form, sign it, and then either fax it to the DLAR main office at 859-323-6002, or bring it with you at the time of your visit.

- Guidelines and Policies for Accessing DLAR Facilities

Animal Import/Export Forms

- Instructions for Importing Rodent Colonies to DLAR
- Request to Import Animals from Other Institutions (pdf)
- Request to Export Animals to Other Institutions (pdf)