

Handbook and Procedures Manual for Principal Investigators

**DIVISION OF LABORATORY ANIMAL MEDICINE
SCHOOL OF VETERINARY MEDICINE
LOUISIANA STATE UNIVERSITY**

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I. Administration and Organization

Husbandry and veterinary care for animals used in teaching and research on the LSU campus and in the School of Veterinary Medicine are provided by the Division of Laboratory Animal Medicine (DLAM). Oversight of LSU's animal program is provided by the Institutional Care and Use Committee (IACUC). Members of the IACUC are appointed by the Institutional Official for animal use. At LSU, this role is served by the Dean of the School of Veterinary Medicine.

Standards of care and use for all animals used in teaching and research on the LSU campus and in the School of Veterinary Medicine conform to all applicable standards and regulations as established by the current version of the Animal Welfare Act and the Guide for the Care and Use of Laboratory Animals. This program and its facilities are currently certified through a semiannual inspection by IACUC. LSU's animal program is accredited by AAALAC Int., and meets all NIH assurance requirements. The Life Sciences Animal Care Facility also has full AAALAC accreditation.

II. DLAM Vivarium Policies

A. General

1. Dress code - all persons working in the vivarium must wear proper protective attire, i.e., lab coats, scrubs suits, etc. Only DLAM supplied lab coats may be worn in animal rooms. For your convenience DLAM lab coats are located on hangers inside each animal room door. Gloves are recommended, but not required, and are available in each room for your use. For safety reasons, it is recommended that no sandals or open-toed shoes be worn in the animal rooms.
2. Eating and drinking are prohibited in the vivarium, except in the lounge area, which is a designated area. The School of Veterinary Medicine is a **NO SMOKING** state facility.
3. Several animal rooms have a combination lockbox attached to the outside of each animal room door which contains an entrance key for the appropriate room. The combination to the lockbox may be obtained from the DLAM supervisor, Ms. Simone Adams.
 - a. The entrance to the Life Science Animal Care Facility is equipped with an electromagnetic lock and electronic palm scanner for security measures. Check with DLAM supervisor for instructions on accessing the facility.

- b. The entrance to the SVM Animal Care Facility is equipped with an individual combination lockbox (see instructions for C above).
 - c. No individual room keys will be assigned to investigators.
4. **Humane care and use of laboratory animals.** The vivarium is an AAALAC accredited facility and is governed by policies set forth by the USDA, NIH, and vivarium Standard Operating Procedures (SOP's). Animals in the vivarium shall not be mistreated or mishandled in any way. Reports of mistreatment or mishandling will be dealt with appropriately.
 5. Vivarium personnel are available to assist animal users, if needed, between the hours of 7:30 a.m. and 4:00 p.m. Special needs should be arranged with the vivarium supervisor. Vivarium office hours are 8:00 a.m. to 5:00 p.m.
 6. Before submitting a grant or protocol, you must contact the vivarium professional staff to determine if we can accommodate your animal related needs or answer any questions you may have regarding anesthesia, euthanasia, special techniques, etc.
 7. Before beginning any research project, contact IACUC Manager, Krista Adams, in the DLAM office, for information concerning the Occupational Health and Safety Program for employees working with animals. Investigators and research technicians are required to participate in this program.

B. Summary of DLAM Services

Technical Service	Laboratory Animal Medicine	Professional Service
Implementation of Research Protocols by Investigators	Animal Procurement & Quarantine	Consultant
Breeding Colonies	Routine Animal Husbandry	Clinical Diagnosis
Animal Procedure Rooms	Personnel Management	Disease Prophylaxis & Treatment
Long-term Conditioning of Animals	Maintenance of Facilities & Equipment	Maintenance of Standards
	Assignment of Animal Holding Facilities	Procurement and Standardization of Animal Caging & Service Equipment
	Protocol Review	Planning of New Facilities & Improvement of Existing Facilities
	Clinical Medicine	Administer Division's Budget

	Facilitate Surgeries	Promote Effective Communication between Division & Faculty
	Experimental Techniques	Assist in Developing & Submitting Research Protocols
		Instruction of Faculty & Staff on Acceptable Standards of Animal Care & Use.

C. ORDERING ANIMALS

All animals to be used for research or teaching must be ordered through DLAM. The major reasons for establishing this policy are:

1. Limited housing space is available for each species.
2. Caging and accessories must be prepared prior to animals arriving at the facility.
3. Sources for animals must be certified to prevent introduction of pathogens.
4. Vendors must comply with federal laws.
5. Accommodation of specialized housing needs.

An Animal Care and Use Protocol must be approved **prior to** ordering animals. A downloadable protocol form may be found on the following website: <https://www.lsu.edu/vetmed/dlam/iacuc/iacuc.php> Approval will be acknowledged by the receipt of a letter from the IACUC which clearly states your approval number.

To ensure prompt delivery and adequate housing, requests for animals should be made two (2) weeks in advance. Requests for procurement of animals from commercial vendors may be submitted any time during regular working hours between 7:30 a.m. and 4:00 p.m. Orders must be placed prior to 12:00 p.m. Thursday to insure possible delivery the following week. Deliveries are typically made on Mondays and Tuesdays. Vendors should avoid shipping later than the middle of the week to prevent animals arriving on the weekend. **NOTE: There are no weekend deliveries.**

Requests for procurement of animals from DLAM breeding colonies should be made at least 24 hours in advance. All requests for animals will be filled in the order they were placed. Orders will be completed as animal numbers become available. All rodents purchased from a DLAM breeding colony will be billed to the investigator at 60% of the current commercial vendor rate.

Only official DLAM animal order forms will be accepted. **Oral orders will not be taken!** All information on the forms must be completed. Confirmation of a valid protocol number, correct type of animal being order and number of animals

available on the protocol must be received prior to orders being placed.

Class B vendors (random source animals) may not be used for purchase of animals without prior approval of the Dean of the School of Veterinary Medicine.

The DLAM is responsible for approving the vendor in procurement of all teaching and research animals. Since animals have such an important part in biological evaluation studies, it is imperative that they be of defined quality in order for the data obtained to be significant. The major criterion for the selection of a vendor, therefore, is the quality and suitability of the animal for the research or teaching program in which the animal will be used. All scientific recommendations by the user will be considered by DLAM in making this selection. **The cost of the animal will be considered, but will not be the most important factor in vendor selection.** Other considerations in making this decision are:

1. Ability of the supplier to provide the animals.
2. Transportation facilities and connections available.
3. Ethical and fiscal integrity of the vendor, based on past experience.
4. Evaluation of vendor's facilities and programs for supplying animals based on experience and site visits by the staff of DLAM.
5. Vendors for some species must be a licensed USDA dealer.
6. Medical surveillance information from the supplier.

Animal procurement should be discussed in advance with personnel of DLAM. Because of experience and knowledge, DLAM can assist the user in selection of the best animal model, acquaint them with the availability and costs for selected species, and help avoid untimely delays because of insufficient information on the request. Following consultation, the faculty member or investigator should select the species, number of animals needed, their weight, sex, age, and time when needed. This information should be placed on a DLAM animal order form (**Appendix 1**) and submitted to the DLAM office for approval. The following procedure should be followed for placing animal orders:

1. Animal requisition forms (**Appendix 1**) may be obtained from the DLAM supervisor's office. Please fill out the form completely to expedite ordering and to avoid any problems associated with special needs of the animals upon their arrival to the vivarium. Forms may also be copied from this site and submitted electronically.
2. Rodent orders are placed as needed. Orders must be placed prior to 12:00 p.m. Thursday to insure delivery the following week. Deliveries are typically made on Mondays and Tuesdays. **NOTE: There are no weekend deliveries.**

3. Upon arrival all animals undergo health checks and are housed as required. Investigators are notified by email of animal arrival and location in the vivarium. Animals are inspected by trained DLAM personnel prior to acceptance and are usually quarantined/acclimated for a 7 day period (animals may not be used by the investigator during this period). Any abnormality detected by the user should be reported promptly. If animals are found to be diseased or otherwise unsatisfactory, DLAM can usually obtain restitution from the vendor. This is particularly true when it can be demonstrated by laboratory tests that the animals were diseased upon arrival. Rats and mice are notorious for latent infections, particularly pathogens affecting the respiratory tract. Some vendors have gone to great expense to eliminate these agents through cesarean rederivation.
4. Animals harboring, or suspected of harboring a contagious disease, will be isolated from the rest of the animal colony. Should this occur, the P.I. to whom the animals belong will be notified immediately. Quarantine will be for a minimum of 10 days. Any treatment deemed necessary will be discussed with the P.I. prior to administration. Isolated animals may be returned to the general population if marked improvement is seen and approval has been given by the DLAM clinical veterinarian. If little or no improvement is noted, the animals may be kept in quarantine for the duration of the study in order to protect the remaining population.
5. Any and all problems arising from transportation will be handled by the vivarium staff.

D. Movement of Animals

Movement of animals to and from housing areas should be accomplished with the safety and well-being of people and animals in mind. When moving an animal, the handler must have complete control, utilizing physical (e.g., transport cage or lead rope) or chemical (e.g., anesthesia) means of restraint. Transporting animals in/out of the vivarium **MUST** be approved in advance by the DLAM clinical veterinarian or within the IACUC-approved animal care and use protocol. The animal should be transported inconspicuously (e.g., covered or caged) for sanitary, anesthetic, and health reasons. Transport carts are provided by DLAM and are located in the corridor outside of room 1531.

1. Animals which are removed from the vivarium for acute studies, those that are terminated, or animals found dead must be logged out on animal movement form located at entrance of each room (**Appendix 2**). Animals returned to the vivarium should **NOT** be logged out on the animal census form located in the box outside each room.
2. The *per diem* sheet is necessary for animal inventory purposes. It also aids the vivarium staff in knowing where the animals are at all times.

3. Animals that leave DLAM facilities may be returned to the facility **only** if housed in an IACUC-approved research/teaching area. No animals may be housed overnight in areas other than DLAM facilities unless approved in advance by IACUC.
4. Transporting animals in/out of the vivarium **MUST** be approved in the associated animal care and use protocol, and only taken to rooms/buildings identified in the protocol. Animals must be transported in a covered cage on a transport cart. Transport carts are provided by DLAM and are located in the corridor outside of room 1531.
5. Investigator must notify DLAM one (1) week in advance of shipping animals to other institutions. Animal shipments are regulated by State and Federal laws.
6. All animals received by DLAM are subject to a quarantine/acclimatization period area for a minimum of seven (7) days, depending on animal health. For the safety and well-being of the existing colonies, we will keep to this schedule unless special circumstances arise.

E. Shipment of Animals

The shipment of animals is regulated by both state and federal laws. Compliance with these regulations generally requires that a licensed, accredited veterinarian examine and certify the health of the animals prior to shipment. DLAM veterinarians are knowledgeable in the current shipping requirements and are qualified to sign federal health certificates. They will assist investigators in such matters, but must be notified one (1) week in advance of the need for a health certificate.

F. Animal Accountability

Investigators are charged for daily animal care including providing feed, bedding, and maintenance of the room. Charges are issued monthly to individual investigators based on IACUC protocol number assigned to the project. Since accurate accountability is essential, the DLAM personnel and each animal user must share in this responsibility. A daily census is taken for each animal room to insure investigators will be charged only for those animals present.

A daily log sheet and a weekly log sheet are kept outside each animal room door. All husbandry procedures performed in the room and any problems that may relate to any animal in the room are to be documented by DLAM caretakers on these sheets. If questions or problems arise, this log may be used by the investigator to communicate with the animal technician responsible for the room.

G. Responsibility of Staff and Users

1. DLAM personnel responsibilities:
 - a. Maintain a daily inventory of animal population.
 - b. Receive and condition newly acquired animals.
 - c. Complete mortality cards for all animal deaths found by DLAM personnel (copies maintained in DLAM supervisor's office).
 - d. Record animals euthanized by DLAM personnel (copies of completed request form are maintained in DLAM supervisor's office).
 - e. Provide animal husbandry and veterinary care for all animals on IACUC-approved projects.
 - f. Establish and maintain breeding colonies as approved by the Director.
 - g. Provide special technical assistance upon request and completion of DLAM procedure request form (**Appendix 6**). Fees for service may apply as determined on a case by case basis by the Director.
2. User's responsibilities:
 - a. Record on the animal movement sheet (**see Appendix 2**) any animal(s) terminated from a project.
 - b. Request through the DLAM office permission to transfer animals to another investigator and complete animal transfer form (**see Appendix 3**).
 - c. Record any animal found dead in user room (**see Appendix 2**).

Completed forms should indicate the effective day the transaction is to be made, date, user's name, number and species of animals, animal number if available, the activity (termination, transfer, death, etc.), and the initials of the recorder. Failure to provide proper information to the DLAM office may account for discrepancies between the actual population, the DLAM inventory, and the investigator's inventory.

It is the user's responsibility to use this accounting system to their economic advantage. Charges will be issued for all animals maintained in the user room regardless of whether or not they are being used on an active project.

H. Animal Disposition

At the conclusion an experiment, one of the described/indicated dispositions must be made for each animal housed in DLAM facilities in the approved protocol:

1. Transfer to another investigator, within the DLAM facilities who will then be responsible for the per diem and use of the animal.
2. Sale of the animal to a USDA registered research facility or to other sources approved by the Director of the DLAM.

3. Transfer of the animals to the DLAM. In this case, the DLAM becomes responsible for the per diem and may make further disposition of the animal(s) through transfer, sale, or euthanasia.
4. Euthanasia.

I. Disposal of Animal Carcasses and Organic Waste

Animal mortalities will be tabulated by the animal technicians and/or investigators. All animal carcasses and organic waste intended for necropsy or disposal should be properly packaged and identified with the name of the investigator, animal identification number, and time of death. **Animal carcasses are placed in plastic bags of suitable size and strength.** Animals infected with pathogenic organisms are placed in labeled biohazard plastic bags. Deceased animals will be saved in a designated refrigerator/freezer for a maximum of 72 hours before disposal. Animal carcasses intended for necropsy should only be refrigerated, **not frozen**.

Animal carcasses (primarily rodents and lagomorphs) that have not been exposed to chemicals or medications and do not require a necropsy may be frozen and utilized for support of the raptor rehabilitation center.

If investigators require holding deceased animals longer than 72 hours, special written arrangements must be made in advance with DLAM.

Special precautions must be taken to be sure that animals used in radioisotope, bio-hazardous or chemical carcinogen studies are properly labeled to allow for proper disposal. Animals containing radioactive isotopes must be handled as specified in the Radiation Safety Manual available from the Radiation Safety Office, LSU Baton Rouge.

J. Communication

In order to minimize the possibility of misunderstanding and confusion, all requests for services, instructions, and purchases should be made in writing on appropriate forms. Request forms may be downloaded from the appendices of this orientation guide, completed with appropriate electronic signatures and emailed to the assistant director of DLAM for approval.

K. Laboratory Support

Investigators who need necropsy or radiology facilities or tissue or clinical pathology support for their studies, should arrange for these services from the appropriate departments or through the DLAM. For laboratory animals with suspected or confirmed disease, these services can be arranged by the DLAM after consultation with the investigator.

L. Technical Assistance

Users sometimes need a limited amount of technical help on an intermittent basis rather than a full time technician. Many times this need can be met most economically and expeditiously by arranging for the part time help of an animal technician from the DLAM. In most cases the DLAM will assess minimal charge to recover labor costs of the individual concerned. All such arrangements must be made through the DLAM offices.

M. Animal Surveillance

During the course of normal husbandry, DLAM caretakers will observe all animals housed in DLAM facilities a minimum of once daily. Animals observed to be sick, injured or in discomfort will be reported in writing to the DLAM supervisor. A treatment request/record will be completed and signed by the DLAM supervisor. A DLAM veterinarian will examine the animal and establish a clinical diagnosis based on physical and laboratory parameters, and recommend a treatment (scheduling of examination will depend on severity of the reported condition).

In addition, regular rounds of animal wards are made by DLAM veterinary specialists in laboratory animal medicine. DLAM established standards dictate that a sick animal will either be provided veterinary care, be humanely euthanized, or utilized in a terminal experiment. Attempts will be made to contact the principal investigator or assignee prior to the initiation of treatment to discuss the diagnosis, the prognosis, possible treatments, and alternative actions. If the principal investigator or representative cannot be reached within a reasonable period of time, appropriate measures will be initiated by the DLAM veterinary staff (with consideration of provisions of the IACUC protocol) until such time as contact is made. All treatment of animals assigned to DLAM facilities will be recorded on an individual DLAM treatment log and kept on file in the DLAM supervisor's office.

III. Animal Housing and Maintenance of Animals

A. Objectives

The objective of DLAM is not simply that of meeting the minimum standards of animal care required by federal law, but also to maintain standards of animal care described in the "*Guide for the Care and Use of Laboratory Animals*", National Research Council (8th Ed.).

B. Housing requirements

All research and teaching animals will be housed in facilities administered by DLAM, and will be cared for by personnel of this division. An exception to this policy will only

be made by the IACUC when the investigator can provide sufficient reasons to justify caring for their animals in other facilities. Because all research animal holding facilities are the responsibility of the DLAM, the Director will make the final determination on where animals are to be housed.

All animal cages and equipment are part of a central institutional pool which is administered, maintained, and serviced by the DLAM. The Director must approve all purchase of caging for research and teaching animals. Uniformity, versatility, efficiency, and the interchangeability with present or proposed facilities, cage washers, etc., will be considered when procuring equipment. The “Guide” and public laws specify design of caging and space requirements for various animal species.

Specialized caging, which must be purchased with research grant funds, will be assigned to the research investigator for the duration of the project. Should investigators terminate their research requiring the use of these cages or if the investigator should leave the institution, the caging then becomes the property of the DLAM, and the responsibility for reassignment rests in the DLAM.

C. Separation of Species

As a rule, animals are housed in separate rooms according to species, source, and investigator. Sometimes the limits of available space make it necessary for several investigators to have animals in the same room at a given time. Room assignments, including numbers and kinds of racks, cages, and animal species, will be determined by the DLAM. This permits much greater efficiency of labor, space, and caging equipment. **No space shall be permanently assigned to an investigator.** All reasonable efforts will be made to meet the needs of the investigator without jeopardizing the health and well-being of other animals, and remains in compliance with USDA regulations and NIH guidelines. **In general, animals will be separated by species rather than by investigator or department.** Housing by species facilitates efficient servicing and care and it prevents the interspecies transmission of certain diseases. The decision regarding the location of each group of animals shall be based on the environmental needs of each animal species and any special requirements essential to the experimental plan. Animals must not be moved from one room, cage, or stall to other housing (**Appendix 2**), transferred to another investigator/euthanized/ sold (**Appendix 3**) or adopted (**Appendix 4, 5**) without the prior written approval of the DLAM..

D. Animal Diets

Standard laboratory feed and bedding materials are used to keep environmental variables at a minimum. Special diet formulations can be furnished by the investigator.

E. Environmental Controls

Most of the animal rooms have a thermostatic control making it possible to maintain

individual rooms at any temperature between 64°F and 85°F. Animal rooms are also equipped with light control unit so the lights can be set to give the photo-period desired. Adjustment of temperatures and lights must not be made by the investigator or their technicians, but requests should be made to the appropriate DLAM office.

Smoking, eating, and drinking are prohibited in all animal rooms and support areas. The use of volatile materials is restricted to specific areas in the facilities. Use of volatile materials should be cleared with the Director of DLAM prior to their usage. The use of **CHLOROFORM** is not allowed in the animal facilities because mice are extremely susceptible to the toxic effects of its vapors. Similarly, **ETHER** may only be used following IACUC approval and then must be used under an explosion-proof hood and stored properly due to its explosive properties.

F. Vermin Control

Most animal facilities have been designed to provide a minimum of breeding sites for cockroaches and other vermin. Cabinets, bench work, etc., should be kept to an absolute minimum. DLAM does not allow insecticide use within animal rooms. However, DLAM contracts with a commercial pesticide company to provide control of vermin in all animal housing areas. Pesticides may be used in areas peripheral to animal housing. A list of pesticides used is on file in the DLAM office.

G. Identification of Animals

Federal law requires that all animals or groups of animals be properly identified at all times. Identification cards are to be placed on every housing unit (e.g. caging). A supply is kept in the DLAM facility offices for investigator use. These cards should contain the user's name, protocol number, species, department, sex of the animal, source, date of birth, and date received.

Dogs, cats, rabbits, and large domestic animals must be identified by microchip, collar, tattoo, ear tag, and/or neck tag. USDA tags must be returned to the DLAM office and kept for federal inspections. Rabbits are identified by numbers marked in the right ear, and cows, calves, sheep, and goats are tagged in either ear. Horses may be identified with a freeze brand or neck tag, as well as identified with a card on their stall cage.

H. Space requirements

The housing of animals must assure adequate space according to species. All space assigned to the DLAM is administered by the Director. An attempt will be made to conform to modern-day standards of laboratory care as outlined by the "Guide", current federal laws, and NIH guidelines.

All housing areas must be maintained in a clean, orderly manner and furnished as simply as possible in order to facilitate cleanliness and vermin control. Investigators may not

store supplies, equipment, or other material in animal rooms without the prior approval of DLAM. Laboratory equipment may only be kept in animal rooms when scientific justification is shown and requires approval of the Director. Animal rooms are not to be used for major surgery, necropsy, or other involved procedures. However, minor procedures such as injections or collection of samples may be conducted within the animal room or in nearby work areas. Upon request and availability, DLAM personnel may be provided to assist the investigator.

Per diem costs for experimental protocols requiring exclusive use of a room or area will be based on total revenue generated by number of animals housed. In some cases where only small numbers of animals are required, a room charge will be assessed in lieu of an individual animal per diem charge. When investigators borrow caging and/or equipment from the DLAM, it must be returned in its original condition.

I. Housing of Pets and Release of Animals

Because of legal, public health, and humane implications, under no circumstances will research or teaching animals be released from the confinement of these facilities without written consent from the Director of DLAM.

The following policies regarding pets and non-university owned animals will apply to all animal holding facilities. Animals housed in the facilities of the DLAM must:

1. Be purchased and owned by the University.
2. Be donated for research or teaching purposes, but only after unconditional legal release.
3. Have a special condition or disease pertinent to a research or teaching program.

Except for the above conditions, no privately owned animals are to be housed or treated in the facilities of the DLAM.

IV. ANESTHETICS, ANALGESICS, AND EUTHANASIA GUIDELINES

Information on the administration and common dosages of analgesics, tranquilizers, anesthetics, and euthanizing agents may be found on the IACUC resources link for the DLAM. It is strongly recommended that the advice of veterinary staff or other experts be sought when such drugs are to be administered to uncommon species. In addition, reference may be made to a number of textbook and review articles that deal with both general and specific aspects of this topic.

Unnecessary exposure of personnel to gases from volatile anesthetics should be avoided. Several reports have suggested that a health risk is associated with prolonged and repeated exposure to low concentrations of halothane (hepatocellular toxicity), and to the chronic ingestion of chloroform (renal and hepatic tumors in rodents). Pregnant personnel should

consult a physician before working with a volatile agent.

Expired gases should, where possible, be vented to the exterior or absorbed in activated charcoal (F/air canister).

A. Management of Anesthesia

1. General Comments

Sedatives, analgesics, and general anesthetic agents must be utilized for the control of pain and distress unless contrary to the achievement of the objectives of the study. In the latter cases, approval of the IACUC is required.

Anesthetic agents frequently affect the cardiovascular, respiratory, and thermoregulatory mechanisms, in addition to the central nervous system. Every effort should be made to maintain the circulation, respiratory blood gases, and the body temperature of the anesthetized subject within normal physiological limits. The use of endotracheal intubation ensures that the airway remains patent and free from obstruction.

Hypothermia may occur during exposure to anesthetic gases and in abdominal surgery, particularly in small animals. This may result in death or a greatly prolonged recovery from the anesthetic. Hypothermia may be counteracted to some extent by placing the animal on a warm water circulating blanket or other devices that assist in conserving body heat.

2. Animal Handling

Animals should be handled gently and calmly. Struggling and excessive fright should be minimized. Prolonged excitement may disturb the circulatory and metabolic state of the patient, and induce shock. Attempts to anesthetize a struggling animal may result in physical trauma, in addition to enhancing the likelihood of an abnormal response.

3. Fasting

A period of fast sufficient to empty the stomach should be implemented prior to anesthesia to help prevent regurgitation and aspiration of gastric contents. Twelve hours is sufficient for most mammals. Very small animals should be submitted to a much shorter fast, usually from two to four hours due to their higher metabolic rate. Rodents do not generally require fasting because they are unable to vomit and so incur no risk of aspiration pneumonia. Mammalian species are allowed a 24 hour fasting period (48 hours for ruminants) while some reptilian species (alligators and snakes), fasting is allowed for up to 1 week. Extended periods of fasting require justification and written approval of IACUC.

B. Tranquilizers

By definition, tranquilizers produce psychological calming of anxiety without physiological depression or clouding of consciousness. However, when tranquilizers are used to produce manageability, high doses are usually necessary which may result in ataxia, depressed response to stimulation, and respiratory depression. Cardiovascular depression may be severe, and if followed by a general anesthetic, the combination may lead to severe hypotension. Tranquilizers do not exert hypnotic or analgesic effects. Increasing the dose does not produce greater sedation, even though the psychological depressant effects are magnified. Tranquilizers are useful as they can be used on a wide range of species, often in combination with other drugs.

The psychological state of the animal prior to the administration of tranquilizers may markedly affect the degree of sedation achieved. Animals that are vicious, intractable, and in a state of excitation may not become manageable, except with very high (incapacitation) doses.

C. Neuromuscular blocking agents

Succinylcholine, curare, gallamine, and others, are neuromuscular blocking agents, which act peripherally at the neuromuscular junctions. These agents are used as adjuncts to light general anesthetics where profound muscle relaxation is desired. Because these agents produce motor paralysis only, and do not produce either sedation or analgesia, their use without appropriate anesthetics is prohibited; similarly their use for euthanasia is unacceptable as it results in extreme distress due to asphyxia.

The use of curariform agents and nicotine sulfate in capture guns for immobilizing wild or unmanageable animals is no longer acceptable, as more effective and humane drugs are available for this purpose.

D. Neuroleptanalgesic

Neuroleptanalgesia is a state of sedation and analgesia produced by the combined use of a tranquilizer (neuroleptic) and a narcotic. Although the patient remains arousable and responds to certain stimuli, various manipulations, including minor surgical interventions, can ordinarily be performed. A variety of narcotics and tranquilizers can be combined to produce neuroleptanalgesia.

V. CONTROLLED SUBSTANCES

Requests for controlled substances should be directed to the VTH&C Pharmacy. The DLAM is not able to dispense controlled substances to investigators. A controlled drug log sheet **must be kept for each drug and filled out as the drug is used. The drug must be kept in a locked cabinet between uses.** These records may be checked at least annually by a federal authority to

ensure that proper guidelines are followed. When use of the drug is completed, the empty container and log sheet must be turned in to the VTH&C Pharmacy.

VI. EUTHANASIA

Euthanasia, the act of inducing painless death, has been discussed extensively by many groups. Unfortunately, no one has developed a method that can be used by all investigators for all species under all conditions. The American Veterinary Medical Association publishes the AVMA Panel on Euthanasia. Copies of these recommendations are maintained in the various DLAM offices for your use and may be accessed at from the DLAM website. The methods recommended in this document include inhalant anesthetics, non-inhalant pharmacological agents or physical means. Occasionally investigators will not be able to use an overdose of an anesthetic because of the chemical interference with the research project. Under these circumstances, the investigator should consult with the DLAM staff to arrange an appropriate means of euthanasia. This appropriate method of euthanasia should be identified in the IACUC approved protocol. To verify that euthanasia has been effective, the thoracic cavity should be opened after the administration of the euthanasia method.

VII. INSTITUTIONAL REQUIREMENTS FOR DRUG USE

Federal law requires that all individuals using the above agents be properly trained. The DLAM has in-depth information on the anesthetics, analgesics, and euthanasia agents available for use. If you have not been properly trained in the use of the chemical agent or technique required in your protocol, you should contact the DLAM office and they will help you. You will be asked to certify your training on the animal care and use protocol. **Please do not attempt to use these agents unless you are sure you know how to safely administer them.**

VIII. SURGERY AND POSTOPERATIVE CARE

A. Requirements

Appropriate facilities and equipment should be available for surgical procedures. A facility intended for aseptic surgery should be used only for that purpose, and should be maintained and operated to ensure its cleanliness. Aseptic techniques should be used on most animals undergoing survival surgery. Clean, but not necessarily aseptic, techniques may be used for rodents. Rabbits (lagomorphs) require aseptic surgical techniques, as they are not classified as rodents.

Facilities for aseptic surgery are located in the 1301 modular suite. Surgery should be performed only by persons qualified by training and experience. Provisions should be made with DLAM for those who require training in aseptic surgery techniques. Postsurgical care should include observation of the animal until it has recovered from anesthesia, administration of supportive fluids and drugs, care of surgical incisions, and observation to ensure the animal's physical comfort and optimal recovery. Appropriate medical records must be maintained. Trained personnel must be available to deal with

emergencies. Appropriate facilities and equipment should be available for the post-surgical care of animals.

Multiple survival surgical procedures on a single animal are generally prohibited. Under special circumstances, however, more than one major surgical procedure on a single animal may be permitted with the specific approval of the IACUC. These procedures must be components of a research or instructional project. They must be performed with adequate anesthesia. After-care must be designed to alleviate post-surgical pain, and adequate post-surgical care must be provided. Cost alone is not an adequate reason for performing multiple-survival procedures on an animal, but such procedures may be justified in the interests of conserving members of a rare species. (Excerpted, in part, from the *Guide for the Care and Use of Laboratory Animals*.)

Experimental surgical procedures in which recovery of an animal from anesthesia is planned should be designed by the investigator with full consideration for the principles of aseptic surgery. Prophylactic antibiotics are recommended for use in recovery from surgical procedures where contamination of the surgical wound is possible. Antibiotic administration should begin 24 hours before surgery and continue for 3-5 days when no infection is suspected. Animals with known or suspected infections may require treatment for longer periods, under the direction of a DLAM veterinarian. Advice on general aspects of experimental surgery in animals and the use of prophylactic antibiotics can be provided by DLAM veterinarians. Surgical procedures in which the animal does not recover from anesthesia need not be performed aseptically.

B. Responsibilities

Post-surgical animal care is the responsibility of the principal investigator. The investigator and his/her assignees should be skilled in supportive techniques required to provide that care. During the post-operative period, appropriate consideration should be given to fluid and electrolyte needs, pain, thermoregulation, wound failure, nutritional requirements, and infection. DLAM veterinarians can assist in delineating the post-surgical procedures indicated for a surgical protocol. Technical assistance for the post-surgical care of animals is also available from the DLAM veterinary staff.

IX. BIOHAZARDS/RADIOISOTOPES/CARCINOGENS

Investigators who plan to use biohazardous agents in animals should contact the Inter-institutional Biological and Recombinant DNA Safety Committee (IBRDSC) and the DLAM prior to the initiation of the experiment to discuss and establish any safety and containment procedures that may be required. The IACUC requires the approval of the IBRDSC prior to use for Bio-safety level 2 or 3 agents, including the posting of precautions on the animal room door for Bio-safety level 2 and 3 agents (**Appendix 7**).

Animals that have been inoculated with infectious agents and/or animals which are suspected of having infectious diseases and which die during the quarantine period, must be so labeled and

disposed of appropriately to prevent the dissemination of these agents in a manner that would be hazardous to other animals and/or personnel.

A. Campus Radiation Safety Committee

The use of radioactive material is controlled by the Campus Radiation Safety Committee at LSU. Individuals who wish to use radiation sources or radioactive materials in research, development, teaching, or demonstration projects must obtain prior approval of the Campus Radiation Safety Officer. A User-Project Application Form (NS10009R) can be obtained from the Radiation Safety Office.

B. General Rules for Animal Handling Involving Radioactive Materials

Because of the variety of experimental animals and locations where they are employed for radioactive studies, only guidelines for handling such animals are covered in this manual. It is the responsibility of each user to supply detailed procedures with the User-Project Application including:

1. All project personnel, including animal handlers, farm workers, students, and technical personnel, must be fully informed of the hazards posed by the specific project. Other areas of concern include emergency procedures, personnel restrictions on areas, waste handling, carcass disposal, and procedures for cleaning facilities when the experiment is terminated.
2. All areas where experimental animals are housed must be clearly posted with proper signs commensurate with potential hazards.
3. No animal is to be kept, even temporarily, in an area not designated and posted for radioactive materials use.
4. Each primary housing of animals dosed with radioisotopes must be clearly marked as to the nature, quantity, and date of administration of the material.
5. Cages, pens, and stalls must be designed to facilitate thorough collection of excreta to reduce contamination levels. Additional measures may be required for control of special hazards, such as feather dust from poultry or saliva from cattle.
6. Dirt-floor holding areas are **not acceptable** for animals dosed with radioactive materials.
7. Unless specifically authorized for a project, animals dosed with radioactive materials may not be housed on pasture. Similarly, small animals may not be returned to stock colonies.
8. Animals sacrificed under a protocol must be handled in an area previously

designated for this purpose and properly outfitted with necessary decontamination gear and waste-handling facilities. Unless specifically exempted, blood cannot be drained into the sanitary sewer for disposal.

9. All personnel must wear approved work clothes and protective equipment when handling radioactive animals and excreta, or working in the area where dosed animals are being held.
10. Portable survey meters sensitive to emitted radiation must be available, calibrated and known to be in working order, and all personnel must be capable of using and interpreting readings from such instruments.
11. All wounds on animals incurred in posted areas must be monitored for radiation contamination, and reported immediately to the Campus Radiation Safety Office if contamination is detected.
12. Specific instructions for the collection, storing, and disposal of excreta and carcasses must be approved for each user project.
13. Animals dosed with radioactive materials may not be sold, nor may they be used for human food.
14. Milk from lactating animals must be treated as excreta, and may not be sold or consumed.
15. Areas where animals are dosed with radioactive material must be checked frequently for contamination by instrument surveys and wipe tests according to approved procedures.

C. Carcinogen and Hazardous Chemical Use

Prior to starting or seeking approval of a project involving known or suspected carcinogens or hazardous chemicals, the project must be discussed with the DLAM. In addition, approval by the chemical safety manager of the LSU Office of Occupational and Environmental safety must be obtained prior to final IACUC approval.

X. VETERINARY CONSULTATION

Upon request, the professional staff of the DLAM gives broad consultation assistance to investigators concerned with virtually any subject related to research animals. Some of the services are as follows:

A. Diagnostic Services

The DLAM veterinary personnel will coordinate submission of samples to the

appropriate diagnostic laboratory.

B. Library Resources

Many answers to questions posed by investigators can be given directly or located promptly in literature by staff members in the DLAM. Much of the literature pertinent to laboratory animals is available in the DLAM office and the Veterinary Medicine Library.

C. Course Offerings

Faculty and staff members of the DLAM offer AALAS training programs for laboratory animal technicians on a regular basis. **Any technicians** working with animals are welcome to attend these classes.

D. Grant Preparation and Review

The professional staff of the DLAM want to be of assistance to investigators in planning and designing animal experiments. They are uniquely qualified to advise on selection of the animal species most appropriate for specific types of studies, sources of unusual animal strains and species, reliability of various animal vendors, selection of anesthetics and other drugs most appropriate for different studies, performance of many technical and surgical procedures on research animals, and in determining economic factors required to provide appropriate animal housing and animal care.

E. The “*Guide*”

The current edition of the “*Guide for the Care and Use of Laboratory Animals*” can be found on the DLAM website.

XI. CONCLUSIONS

Regardless of facilities, programs, or research protocols, the relative success of the animal care facility and the research program is dependent upon people: the researchers, the technologists, and the laboratory animal personnel. Communication and cooperation should always be maintained regarding project goals, special requirements, species suitability, matters pertaining to animal health and use of facilities. Beginning with the protocol of an experiment and continuing to the completion of the project, careful planning and clear communication are essential to create and maintain an orderly and efficient interface between the animal facilities and the research laboratory. The primary aim of personnel in the DLAM is the continued upgrading of the research and teaching programs in the various facilities under its control. The DLAM office encourages comments, questions, and recommendations regarding improvement of the services they provide.

VIVARIUM ANIMAL ORDER FORM
Division of Laboratory Animal Medicine

DATE: _____

- 1. How Many and What Species? _____
- 2. Strain or Breed? _____
- 3. Source of Animals? _____
- 4. Sex? **(Circle one)** Male Female Random
- 5. Age and/or Weight? _____
- 6. Date Animal(s) Will Be Needed? _____
- 7. Department to Which Animal(s) Will Be Charged? _____
- 8. Phone Number for Notification of Arrival of Animals? _____
- 9. Housing Location Building/Room #? _____
- 10. Number of Animals per Cage? _____
- 11. IACUC Protocol Number? _____
- 12. Departmental Account? _____
- 13. Investigator or Project representative name (print) _____
(Signature) _____

To be completed by DLAM representative

Date Ordered: _____	Number of animals ordered: _____
Vendor: _____	Number remaining on protocol: _____
Phone Number: _____	Confirmation #: _____
Animal Cost: _____	Shipping/handling: _____
Shipping Date: _____	Date Received: _____

.....

To be completed by investigators for all movement of animals out of and return to room

[illegible]

APPENDIX 3

**REQUEST FOR TRANSFER, TERMINATION OR SALE OF ANIMALS
LSU SCHOOL OF VETERINARY MEDICINE**

Investigator (print): _____ Signature: _____

Initiating Protocol Number: _____ Department: _____

Date: _____

Animal/Cage ID #	Species	# Animals	Room #	Termination date	Transfer date	Comments

For Transfers Only

Receiving Protocol #: _____ Effective Date: _____

Animals remaining on protocol: _____ Number of animals transferred: _____

Receiving Investigator (print): _____ Signature: _____

DLAM Approval (print): _____ Signature: _____

LOUISIANA STATE UNIVERSITY

School of Veterinary Medicine

GUIDELINES FOR THE RELEASE OF TEACHING OR RESEARCH ANIMALS TO THE PUBLIC

- I. PURPOSE:** The purpose of the Division of Laboratory Animal Medicine (DLAM) is to provide for the care and well-being of research animals. Under the appropriate circumstances, it is permissible for the Division to place teaching and research animals into private homes as pets.

II. CRITERIA APPLICABLE TO ANIMALS AND ANIMAL BY-PRODUCTS

A. Dogs and Cats

1. Animals obtained from public animal control centers are not recommended for adoption since the history of the animal is unknown. Exceptions can be made by the Director of DLAM with the consent of the Director of the Animal Control Center of origin.
2. Only animals that have undergone and recovered from minor procedures, (e.g. catheters and intubation) and are not suffering from any induced disease will be eligible for adoption by the public. All dogs and cats must be neutered and vaccinated prior to release. Such expenses must be reimbursed by the adopting party, unless waived by the DLAM Director.

B. Farm Animals

Farm animals will only be eligible for adoption if they have not been used for research studies, or they have completely healed from any minor procedures. Farm animals must not be released for consumption, and the adopting party must certify that the animal will not be used for human consumption. Under no circumstances will animals be released for adoption by farms if the animals have been injected with drugs which produce a residue.

C. Rabbits and Rodents

Adoptable rabbits may be candidates for adoption only if they have not been subjected to procedures or manipulations beyond having blood drawn. Only rodents which have been subjected to noninvasive manipulation may be adopted.

D. Exotic and Wild Animals

Exotic or wild animals will be released to the public for adoption only when the adopting party has met all requirements for permits and housing. However, they may be released to zoos or appropriate sanctuaries if they have not been used for research or have completely healed from minor procedures.

E. Animal By-Products and Discarded Feed

Discarded feed and animal by-products, such as eggs, cannot be released to the public.

III. PROCEDURE FOR ADOPTION OF RESEARCH ANIMALS

- A. The DLAM Director or Associate Director will interview a potential owner to ensure that the person is aware of the responsibility they are assuming, and to determine whether it is in the best interest of the animal to be released to that particular party and home.
- B. The animal will be assessed for health and temperament by DLAM. The Director of DLAM will make the final decision regarding the adoption.
- C. When an animal is determined to be eligible for adoption, the new owner must reimburse DLAM for expenses associated with acquiring, housing, and conditioning the animal, including appropriate vaccinations and neutering in the case of dogs and cats, unless waived by the DLAM Director.
- D. Once permission has been granted in writing by the DLAM Director, the new owner must sign a form releasing the institution of all liability and responsibility for the animal.

Louisiana State University School of Veterinary Medicine

DLAM Adoption & Release Form

Date: _____

I, _____
First Name Middle Initial Last Name

hereby accept the following described animal _____ (species)

Sex Breed Color/Marking Age

from the Division of Laboratory Animal Medicine (DLAM), and I understand that DLAM has transferred ownership of the animal to me.

I understand that by executing this Release I accept any and all responsibility for legal claims arising from ownership of the animal, and I hereby release Louisiana State University Agricultural & Mechanical College, the Division of Laboratory Animal Medicine, and their officers, agents, and employees from any and all liability and responsibility for injury to persons or damages to property which may arise from ownership of the adopted animal.

I understand that the above described animal has been examined and tested or appropriately immunized from common communicable diseases and acknowledge receipt of a dated certificate of health and immunizations for the animal executed by a doctor of veterinary medicine.

I acknowledge that I have been informed that this animal has been subjected to the following procedures at DLAM.

There are no known extraordinary medical requirements arising from DLAM manipulation.

I certify that the above described animal will not be used for human consumption, and that this animal shall receive humane care and treatment at all times.

This animal is being transferred to me for \$ _____

This cost includes the following:

Cost for Animal Care Center to purchase, house, and/or condition: _____

Cost of Vaccines: _____

Other costs: _____

Name of New Owner

Address

Signature of New Owner

Phone

Name of Institutional
Representative

Signature of Institutional Representative

Procedure Request Form
LSU-SVM
Division of Laboratory Animal Medicine

Date: _____

Protocol #: _____

Species/ID #: _____

Location/room#: _____

Investigator name: _____

Investigator signature _____

Procedure(s) requested: _____

Requested date of procedure: _____

DLAM approval signature: _____

Completion date: _____

Procedure completed by: _____

DLAM comments:

BIOSAFETY PRECAUTIONS IN ANIMAL ROOMS

Agent(s):	Animal Safety Level:	Biohazard Sticker
Animal Care Protocol No.:	Building/Room:	
Biosafety use Authorization No.		
Project Title:		
Principal Investigator:	Department:	
1. This agent is a: ☐ Bacteria ☐ Fungus ☐ Parasite ☐ Virus ☐ Prion		
2. This agent is infectious for: ☐ Humans only ☐ Animals only ☐ Humans & Animals Animal Species:		
3. The agent can be spread in: ☐ Blood ☐ Feces/Urine ☐ Saliva/nasal droplets ☐ Does not leave animal ☐ Placental fluid		
4. You can become infected by this agent in the following ways(s): ☐ Ingestion (contaminated hands, clothes, soiled bedding) ☐ Inhalation ☐ Mucus membranes (via <u>splashes or hands</u> to eyes/nose/mouth) ☐ Contact - breaks in skin ☐ Tick or insect bite		
5. If you are exposed to this agent, you may develop the following clinical signs: (NOTE: clinical signs may differ according to route and dose of exposure, and overall health of the individual.)		
6. The following apply to the management/husbandry of these animals: ☐ Researcher or his/her staff is responsible for the feeding and care of these animals. ☐ All cages must be autoclaved before cleaning. Animal carcasses must be labeled and disposed of as follows: ☐ No special handling needed ☐ Incineration ☐ Bag and autoclave ☐ Biohazardous waste container Soiled bedding or other waste must be disposed of as follows: ☐ No special handling needed ☐ Incineration ☐ Bag and autoclave ☐ Biohazardous waste container The following personal protective equipment must be used in the room: ☐ Lab coat/Coveralls ☐ Shoe covers/booties ☐ Disposable gloves ☐ Reusable gloves ☐ Disinfectant footbath ☐ NIOSH Certified Dust Mask ☐ Fitted Respirator with HEPA filters		
7. Other information or procedures:		

Signatures:

Date:

Principal

IACUC Chair:

BioSafety Officer:
