Lamar University
Policies and Procedures

Institutional Animal Care and Use Policy
(IACUC)

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Section I: Introduction

Purpose

Humane care, use, and treatment of animals used for instructional research-related purposes are institutional responsibilities. The Lamar University Institutional Animal Care and Use Committee (IACUC) oversees the welfare of any animals used in experimental research, teaching methods, and their care and facilities, as directed by the U.S. Department of Agriculture and the National Institutes of Health. The membership of the committee shall consist of three faculty representatives, a Veterinarian, plus one representative from the community. The associate provost for research and sponsored programs shall also serve as a member and chair the committee.

The IACUC will provide the following:

1) Oversight and evaluation of the University's animal program, procedures, and facilities to ensure they are consistent with the recommendations of cited references shown at the end of this document.
2) Timely certifications and reports on the humane care and use of animals as required by governmental agencies.

Applicability

This Policy is applicable to all Lamar University faculty, staff, and student activities involving animals, whether the activities are performed at LU, at collaborating institution(s), or in the field. Investigators conducting activities involving animals shall comply with this Policy which sets forth standards for the humane care and use of animals.

This Policy follows applicable state and local laws or regulations which impose more stringent standards for the care and use of laboratory animals, and includes the Animal Welfare Act, and other Federal statutes and regulations relating to animals.

Responsibilities and Procedures

1) The University IACUC shall maintain records of committee activities in the Office of Research and Sponsored Projects. These records shall be available for inspection by authorized representatives of governmental agencies.
2) Deans, Chairpersons, or faculty members having jurisdiction over animal care and use facilities are responsible for the implementation of professionally acceptable standards for the care and use of all animals within their jurisdiction and assuring that those standards are met.
3) All investigators, including students, must follow the procedures and guidelines set forth by the IACUC and additionally accept responsibility to assure actions dealing with animals will be in accordance with humane standards and the laws and regulations cited below in the section, Definitions and References. Investigators are responsible for authorized care and use of animals by students under their supervision.
4) Standards for the construction and use of housing, service, and surgical facilities for animals shall meet those described in the Guide or otherwise required by the Animal Welfare Act (P.L. 89-544).
5) Transportation of animals must be in accord with state and applicable standards and promptly delivered, uncrated, and placed in the Animal Care facility.
6) Acquisition of animals shall be in accordance with state and federal laws and regulations.
7) Disposal of dead animals shall be in accordance with governmental regulations.
8) All activities involving animals for which the University bears any responsibility must be considered by the University IACUC in accordance with protocol review procedures.

Section 2: Institutional Policies

Monitoring the Care and Use of Animals

1) The University IACUC will provide:
   a. Oversight and review of all animal care and use facilities and procedures; and
   b. Certifications and reports of the humane care and use of animals as required by governmental agencies.
2) The University IACUC will consist of no fewer than five persons appointed by the Office of Research and Sponsored Programs.
3) The meetings of the IACUC shall be held at least twice per year. These meetings will usually be held once during the Fall Semester and once during the Spring Semester. The minutes of the meetings will serve as documentation of compliance.
4) Campus personnel (faculty, staff, or students) wishing to conduct animal research or procedures shall complete the appropriate documents and submit them to the Office of Research and sponsored programs, which shall forward the materials to the IACUC and keep detailed records of approved protocols. Guidelines and forms are available in the Office of Research and Sponsored Programs.
5) Project proposals shall be submitted for approval to the IACUC and shall include complete descriptions for use of animal subjects. Intramural activities submitted for approval shall include a project description, scientific procedures, and budget (if applicable).
6) Project proposals shall provide the following information:
   a. The nature and objectives of the investigation to be performed on the animal subjects,
   b. Species and number of animals to be used,
   c. The rationale for use of the animals,
   d. Proposed methods to avoid unnecessary discomfort and/or injury to the animals,
   e. Location of facilities for care and use of animal subjects, and
   f. Requirements for care and use of the animal.
7) The University IACUC will evaluate the application for the following:
   a. Adherence to provisions and standards of applicable laws and regulations and campus policies,
   b. Provisions for humane care, handling, and use of animal subjects,
   c. Appropriate use of anesthetic, analgesic, tranquilizing and euthanatizing agents,
   d. Proper arrangement for animal care and use facilities, and
   e. Agreement with the following principles:
      i. Procedures should be designed to yield useful results and should be based on knowledge of the disease, problem, or biology of the animal under study.
      ii. Procedures should avoid all unnecessary suffering and injury to animals. It is therefore essential that personnel caring for and using animals be very familiar with species-specific and individual behavioral, physiologic, and biochemical indicators of pain.
      iii. Persons in charge of the procedures will be prepared to terminate the procedures whenever their continuation may result in unnecessary injury or suffering to the animals.
      iv. If a procedure is likely to cause greater discomfort than anesthetization, the animal must first be rendered incapable of perceiving pain and be maintained in that condition until the procedure is ended.
      v. Post experimental care of animals must be such as to minimize discomfort in accordance with acceptable practices in veterinary medicine.
      vi. Animals that are sacrificed must be treated humanely and in such a way as to ensure rapid and painless death. No animal shall be discarded until after it is dead. Attempts to donate surplus animals to other institutions or individuals for humane purposes should be made as an

alternative to destruction and must be approved by the IACUC and those who receive animals must first sign a statement assuming responsibility for the animals received.

Role of the Veterinarian

1) A doctor of veterinarian medicine, or the compliance officer if deemed appropriate, will visit and inspect the animals and facilities twice per year, or once every six months where animals are held for 24 hours or more.
2) Adequate veterinary care consists of observing all animals daily, if required, to access their health and welfare; using appropriate methods to prevent, control, diagnose, and treat diseases and injuries; providing guidance to users regarding handling, and immobilization, anesthesia, analgesia, and euthanasia; and monitoring surgery programs and post-surgical care.
3) Veterinary care is the responsibility of a veterinarian who is certified or has training or experience in laboratory animal science and medicine. Observation of animals can be accomplished by someone other than a veterinarian; however, a mechanism of direct and frequent communication should be adopted so that timely and accurate information on problems in animal health, behavior, and well-being is conveyed to the attending veterinarian.
4) The veterinarian can also contribute to the establishment of appropriate policies and procedures for ancillary aspects of veterinary care, such as advising on experimental models; reviewing protocols and proposals with respect to veterinary care, animal husbandry, and animal welfare; monitoring occupational health, hazard containment, and zoonosis control programs; and supervising animal nutrition, husbandry and sanitation.
5) Personnel Qualifications
   a. A licensed, experienced veterinarian will serve as the animal resource professional.
   b. Qualified personnel will oversee the day-to-day care of the animals.
   c. The research staff is qualified, experienced faculty members. When students are involved as researchers, they are supervised by these faculty members.

Occupational Health Program

1) An occupational health program is mandatory for personnel who work in laboratory animal facilities or have substantial animal contact. This program requires a physical examination and a medical and work history prior to beginning any work. Periodic physical examinations are advised following occupational hazards such as animal bites or exposure to hazardous biologic, chemical, and physical agents.
2) The University IACUC will oversee the implementation of the Occupational Health & Safety Program in relation to the Animal Welfare Program.
3) An appropriate immunization schedule for all animal and investigative staff is followed, including immunization against tetanus and for people who handle animals at substantial risk of infection with such agents as rabies virus and hepatitis B virus.
4) Training on Zoonosis surveillance is part of an occupational health program and includes keeping records of individual work assignments, bite wounds, and unusual illnesses (CDC, 1984; Fox et al., 1984). Personnel are instructed to notify their supervisors of illnesses and of suspected health hazards. Furthermore, consideration is given to obtaining and storing individual pre- and post-employment serum samples for future diagnostic purposes. Non-human primate diseases that are transmissible to humans can be a serious hazard. Personnel (including animal technicians, clinicians, investigators, students, research technicians and, maintenance workers, and security personnel) who are in contact with nonhuman primates are encouraged to undergo regularly scheduled tests for tuberculosis.

5) Personal Protective Equipment Personal protective clothing, equipment and other safety measures prescribed by the EHS and Risk Management policy must be utilized as often as necessary and should not be worn beyond the boundary of the hazardous-agent work area or the animal facility.
6) A high standard of personal cleanliness is essential. Personnel are not permitted to eat, drink, use tobacco products, or apply cosmetics in animal rooms. Refer to EHS and Risk Management regarding laundering services, decontamination methods.

Experimentation Involving Hazardous Agents

1) Policies and Procedures. Protective devices and other safety measures consistent with current practices are used to guard against exposure to potentially hazardous biological, chemical and physical agents (CFR, 1984a, b).
2) Monitoring. The University Building and Laboratory Safety Coordinator is knowledgeable about hazardous agents and is appointed to evaluate safety issues. The procedures and facilities used in such studies are reviewed by both this officer and the Animal Welfare Committee. Formal safety programs are established to assess the hazards, determine the safeguards needed for their control, and ensure that the staff is competent and the facilities are adequate for the safe conduct of the research. Technical support is provided to monitor compliance with federal, state and local regulations and institutional biosafety policies.

Animal Restraint

Brief physical restraint of animals for examination, collection of samples, and a variety of other clinical and experimental manipulations can be accomplished manually or by mechanical means. Such devices must be suitable in size and design for the animal being held and must be operated properly to minimize discomfort and to avoid injury to the animal. Prolonged restraint of any animal, including the chairing of non-human primates, is avoided unless essential to research objectives. Less restrictive systems, such as the tether system should be used when compatible with research objectives Additional guidelines are included in the Guide for the Care and Use of Laboratory Animals, 1996.

Multiple Major Surgical Procedures

Multiple major survival surgical procedures on a single animal are discouraged. However, under special circumstances they might be permitted with the approval of the IACUC. One situation in which multiple survival surgical procedures might be justified is when they are related components of a research project. Cost savings alone is not an adequate reason for performing multiple survival surgical procedures.

LABORATORY ANIMAL HUSBANDRY

1) Food. Animals should be fed palatable, non-contaminated, and nutritionally adequate food daily or according to their particular requirements unless the protocol in which they are being used requires otherwise (Guide for the Care and Use of Laboratory Animals, 1996). The PI will define in his/her proposal to the IACUC a full description of food-related protocols.
2) Water. Animals should have access to potable, uncontaminated drinking water according to their particular requirements. The PI will define in his/her proposal to the IACUC a full description of water-related protocols.
3) Housing. Animal housing will be appropriate to the animal and comply with relevant regulatory guidelines. The Investigator will identify applicable guidelines and describe how animal facility housing complies. The caging or housing system is designed carefully to facilitate animal well-being, meet research requirements, and minimize experimental variables. The housing system provides adequate space that:

- permits freedom of movement and normal postural adjustment,
- has a resting place appropriate to the species,
- provides a comfortable environment,
- provides an escape-proof enclosure that confines animals safely,
- provides easy access to food and water,
- provides adequate ventilation,
- meets the biological needs of the animals, e.g., maintenance of body temperature, urination, defecation, and if appropriate, reproduction,
- keeps the animals dry and clean, consistent with species requirements; • avoids unnecessary physical restraint, and
- protects the animals from known hazards.

Caging systems should be constructed of sturdy, durable materials and designed to minimize cross-infection between adjoining units. Cages have smooth, impervious surfaces with a minimum number of ledges, angles and corners where dirt or water can accumulate. The design allows inspection of cage occupants without disturbing them. Feeding and watering devices are easily accessible for filling, changing, cleaning and servicing. Cages, runs, and pens are kept in good repair to prevent injury to animals, promote physical comfort, and facilitate sanitation and servicing. Particular attention is given to eliminating sharp edges and broken wires, keeping cage floors in good condition, and refurbishing or replacing rusted or other deteriorating equipment.

The social environment considers whether the animals are naturally territorial or communal and whether they will be housed singly or in groups. When appropriate, group housing is considered for communal animals. In grouping animals, population density and ability to disperse, initial familiarity among animals, and age, sex and social rank are considered. Recommendations about space, temperature and humidity, ventilation, and illumination, and noise may be found in Guide for the Care and Use of Laboratory Animals are followed.

4) Bedding. The most suitable bedding will be determined by the veterinarian or facility manager, in consultation with the PI. The PI will define in his/her proposal to the IACUC a full description of bedding protocols.
5) Sanitation. Sanitation is the maintenance of conditions conducive to health and involves bedding change, cleaning, and disinfection. The frequency and intensity of cleaning and disinfection should depend on what is needed to provide a healthy environment for an animal. The PI will define in his/her proposal to the IACUC a full description of bedding protocols.
6) Behavioral Needs. According to the Animal Welfare Act captive animals have the freedom to express normal species typical behavior. For example, pigs are highly motivated to engage in rooting behavior and should therefore be provided with appropriate rooting substrate. The types of environmental enrichment used with the captive lab animals will depend upon the individual species under study. The PI will define his/her enrichment program in their proposal to the IACUC.
7) Animal Identification and Records. Animal records allowing identification of animals, sources of acquisition, and methods of disposal will be maintained by the PI and made available to the IACUC upon request.
8) Provisions for Emergency, Weekend and Holiday Care. The PI should identify responsible personnel and feeding, cleaning, and care protocols for animals for any period of time during which the PI is unable to provide expected levels of care. The PI will define in his/her proposal to the IACUC provisions to be made for animal care during emergencies, weekends, and holidays

Section 3: Animal Care and Facility Policies

1) **Animal Procurement & Transportation**
All animals must be acquired lawfully and purchased from reliable vendors. Vendors should be evaluated and approved based upon prescribed vendor selection criteria. Generally, vendors of purpose-bred animals regularly provide information that describes the genetic and pathogen status of their animals. This information is useful for deciding on acceptance or rejection of animals, and similar data should be obtained on animals received by inter-institutional or intra-institutional transfer. All transportation of animals, including intra-institutional transportation, should be planned to minimize transit time and the risk of zoonoses, protect against environmental extremes, avoid overcrowding, provide food and water when indicated, and protect against physical trauma. Efforts must be made to minimize as much as possible transportation-related stress to the animal(s). Each shipment of animals is inspected for compliance with procurement specifications, and the animals are quarantined and stabilized according to procedures appropriate for the species and circumstances.

2) **Preventative Medicine**
The veterinarian formulates standard operating procedures to evaluate the health status of newly received, quarantined animals in accordance with acceptable veterinary medical practice and federal, state and local regulations. Quality control by the vendor and knowledge of the history of the animals are acceptable parts of an institution's quarantine protocol. This information may limit the quarantine period for rodents to the time necessary for inspection on arrival. However, all newly received animals should be allowed a stabilization period prior to their use. This permits animals to adapt to their surroundings, resulting in a more stable physiological and behavioral state. If the history of newly received animals is incomplete, the quarantine procedure is more comprehensive and of sufficient duration to allow expression off diseases including zoonoses, physiological and nutritional stabilization, and grooming including bathing, dipping and clipping. Physical separation of animals by species is generally recommended to prevent interspecies disease transmission, reduce anxiety due to interspecies conflict, and meet experimental requirements. Intraspecies separation is advisable when animals obtained from multiple sources differ in microbiological status.

3) **Surveillance, Diagnosis, Treatment and Control of Animal Diseases**
Incoming animals are screened. All laboratory animals are observed daily for signs of illness, injury or abnormal behavior by a person trained to recognize such signs. Unexpected deaths and deviations from normal are reported promptly to the person responsible for animal disease control. Sick or injured animals receive prompt veterinary medical care or are euthanized appropriately. Animals that are suspected of having contagious disease are isolated from healthy animals in the colony. When an entire group or room of animals is known or believed to be exposed to an infectious agent, the group is kept intact during the process of diagnosis, treatment and control. Methods of prophylaxis, diagnosis, therapy and disease control follow currently accepted practices. Diagnostic laboratory services supplement physical examination and facilitate diagnosis of diseases. These services include gross microscopic pathology, clinical pathology, hematology, microbiology, clinical chemistry, and other appropriate laboratory procedures. Inapparent viral infections of rodents, which can occur with mouse hepatitis virus, minute virus of mice and lactic dehydrogenase virus, can bias research results and should also be monitored.

4) **Anesthesia and Analgesia**

The proper use of anesthetics, analgesics, and tranquilizers in laboratory animals is necessary for humane and scientific reasons. The choice and use of the most appropriate drugs are matters for the attending veterinarian's professional judgment. The veterinarian provides research personnel with guidelines and advice concerning choice and use of these drugs. If a painful procedure must be conducted without the use of an anesthetic, analgesic or tranquilizer, the procedure must be approved by the University IACUC and supervised directly by the responsible investigator since such use could alter research outcomes. Muscle relaxants or paralytic drugs (e.g., succinylcholine or other curariform drugs) are not anesthetics. They are not used alone for surgical restraint, although they can be used in conjunction with drugs known to produce adequate analgesia.

5) **Survival Surgery and Post-Surgical Care**

The following procedures apply to both non-rodent mammalian and rodent species:

a. Aseptic surgery is conducted only in facilities intended for that purpose. These facilities are maintained and operated to ensure cleanliness and directed and staffed by trained personnel. Surgery is performed or directly supervised by trained, experienced personnel. Training in aseptic surgery is provided for those who require it.
b. Aseptic technique is used on most animals including lagomorphs that undergo major survival surgery. This technique includes wearing of sterile surgical gloves, gowns, caps and facemasks; use of sterile instruments; and aseptic preparation of the surgical field. Major survival surgery is defined as any surgical intervention that penetrates a body cavity or has the potential for producing a permanent handicap in an animal that is expected to recover. Survival surgery on rodents does not require a special facility but should be performed using sterile instruments, surgical gloves, and aseptic procedures to prevent clinical infections.
c. Appropriate facilities and equipment are available for post-surgical care. Post-surgical care includes observing the animal to ensure uneventful recovery from anesthesia and surgery; administering supportive fluids, analgesics, and other drugs as required; providing adequate care for surgical incisions; and maintaining appropriate medical records. Equipment and supply items that can be helpful for intensive care include heating pads, vaporizers, vacuum equipment, respirator, cardiac monitor, and oxygen. Proper monitoring by trained personnel is provided during recovery.
d. Minor surgical procedures, such as wound suturing and peripheral vessel cannulation, is performed under less stringent conditions when they are performed in accordance with standard veterinary practices.

6) **Euthanasia**

Euthanasia, the procedure of killing animals rapidly and painlessly, is carried out by trained personnel using acceptable techniques in accordance with institutional policies and applicable laws. The method used should not interfere with postmortem evaluation. Techniques for euthanasia follow current guidelines established by the American Veterinary Medical Association Panel on Euthanasia (AVMA, 1978). Other methods must be reviewed and approved by the institutional veterinarian. Acceptable methods of euthanasia are those that initially depress the central nervous system to ensure insensitivity to pain. For this reason, anesthetic agents are generally acceptable, and animals of most species can be euthanized quickly and humanely by intravenous or intraperitoneal injection of an overdose of barbiturates. Other methods can be used for euthanasia of anesthetized animals because the major criterion of humane treatment has been fulfilled. Every attempt is made to perform euthanasia on animals in a manner that minimizes reactions among other living animals. Proper euthanasia technique includes a follow-up examination to confirm the

absence of a heartbeat, which is a reliable indicator of death. Monitoring respiration is not sufficient. In some animals, particularly under deep carbon dioxide anesthesia, heartbeat can be maintained after visible respiration has ceased, and the animal might eventually recover.

7) **Physical Plant**

Animal facilities will be designed and constructed in accord with all applicable state and local building codes. Such facilities will be well-planned, well-designed, and well-constructed based upon the scope of institution's research activities. Good animal management and human comfort and health protection require separation of the animal facilities from personnel areas, such as offices, and conference rooms. Careful planning would make it possible to place animal housing areas next to or near research laboratories but separated from them by barriers, such as entry locks, corridors, or floors. Animals should be housed in facilities dedicated to or assigned for that purpose and not be housed in laboratories merely for convenience.

Definitions

Animal - Any live, vertebrate animal used or intended for use in research, research training, teaching, experimentation, or biological testing or for related purposes.

Animal Facility - All buildings, rooms, areas, enclosures, or vehicles, including satellite facilities, used for animal confinement, transport, maintenance, breeding, or experiments inclusive of surgical manipulation. A satellite facility is any containment outside of a core facility or centrally designated or managed area in which animals are housed for more than 24 hours.

Animal Welfare Act - Public Law 89-544, 1966, as amended, (P.L. 91-579, P.L. 94-279 and P.L. 99-198) 7 U.S.C. 2131 et. seq. Implementing regulations are published in the Code of Federal Regulations (CFR), Title 9, Chapter 1, Subchapter A, Parts 1, 2, and 3, and are administered by the U.S. Department of Agriculture.

Animal Welfare Assurance or Assurance - The documentation from an institution assuring institutional compliance with this Policy.

Guide - Guide for the Care and Use of Laboratory Animals, National Academy Press, 1996, Washington, D.C., or succeeding revised editions.

Institution - Any public or private organization, business, or agency (including components of Federal, state, and local governments).

Institutional Official - An individual who signs, and has the authority to sign the institution's Assurance, making a commitment on behalf of the institution that the requirements of this Policy will be met.

Public Health Service - The Public Health Service or PHS currently includes the Agency for Healthcare Research and Quality, Centers for Disease Control and Prevention, the Food and Drug Administration, the Health Resources and Services Administration, the Indian Health Service, the National Institutes of Health, and the Substance Abuse and Mental Health Services Administration.

Quorum - A majority of the members of the Institutional Animal Care and Use Committee (IACUC).