UNIVERSITY OF TENNESSEE AT CHATTANOOGA

Institutional Animal Care and Use Committee

Bylaws

UNIVERSITY OF TENNESSEE AT CHATTANOOGA

INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE

Bylaws

Revised 11.19.20

Special thanks to the University of Texas at Austin for their contributions to Section IV. F.

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I. PREAMBLE

The Institutional Animal Care and Use Committee (IACUC) of the University of Tennessee at Chattanooga is responsible for overseeing the use of animals and animal facilities, and for the review of basic science and biomedical research and teaching activities involving animals conducted at, or in association with The University of Tennessee at Chattanooga. Members of the IACUC are appointed by the Director of Research Integrity on behalf of the Chancellor of The University of Tennessee at Chattanooga. The IACUC ensures that animal care and use is in compliance with all federal, state, and local regulations. The basis of compliance is determined by the Federal Animal Welfare Act and Animal Welfare Regulations (AWAR), the Institute for Laboratory Animal Research (ILAR) Guide for the Care and Use of Laboratory Animals, the Guide for the Care and Use of Agricultural Animals in Research and Teaching, the Public Health Service (PHS) Policy on the Care and Use of Laboratory Animals, the Food and Drug Administration (FDA) Good Laboratory Practices, and other applicable regulations. The IACUC is the principal advisory source on humane care and use of animals within the University and, as such, the appropriate body for reviewing and investigating concerns or complaints involving the appropriate care and use of animals. The Committee has the authority to negotiate modifications, suspend or terminate animal use that is not in compliance with these regulations.

The Committee shall review the University animal program semiannually, inspect all University animal facilities, and review and approve the care and use of all animals as described in animal use protocols. The Committee shall recommend to the designated institutional official changes or improvements to the University animal program or facilities necessary to maintain a high quality animal use program that is in compliance with all appropriate regulations.

As stated in the PHS Assurance Document, the IACUC shall:

- Review the institution's program for humane care and use of animals at least once every six (6) months.
- Inspect all the institution's animal facilities, including satellite facilities at least once every six (6) months.
- Review concerns involving the care and use of animals at the institution.
- Make written recommendations to the appropriate Institutional Official regarding any aspect of the institution's animal program, facilities, or personnel training in their respective areas.
- Review and approve, require modifications, or withhold approval of protocols for the use of animals.
- Review and approve, require modifications, or withhold approval of proposed significant changes regarding the use of animals in ongoing activities.
- Notify investigators and the institution in writing of its decision to approve or withhold approval of those sections of protocols related to the care and use of animals or of modifications required to secure IACUC approval.
- Be authorized to suspend the use of animals.

II. IACUC MEMBERSHIP

A. Composition

The IACUC must be qualified through the experience, expertise, and diversity of its members to maintain oversight of the use of animals, animal facilities, and to provide review of basic science and biomedical research and teaching animal use conducted within the University.

All members shall be appointed by the Director of Research Integrity and approved by the Chief Research Officer. The Committee will be composed of a Chairperson and at least one individual from the following: a Doctor of Veterinary Medicine, a faculty member actively involved in animal research, one individual whose primary vocation is nonscientific in nature, and one public member nonaffiliated with the University who represents the general community. Of these, one individual will be elected as Vice-Chairperson. An individual who meets the requirements of more than one of the categories may fulfill more than one requirement. Excluding the laboratory animal veterinarian(s), no more than three members shall be from the same department.

As deemed necessary, the Committee may also call on consultants, with a special expertise in areas of interest to the Committee.

B. Officers and Responsibilities

- The Chairperson of the Committee is appointed by the Director of Research Integrity in consultation with the Chief Research Officer. The Chair must be an individual with previous research involving animals. The Chair shall preside over IACUC meetings, approve minutes, and upon agreement with the IACUC Committee members, approve animal research protocols. Approval letters on behalf of the IACUC Committee Chair shall be submitted through the Office of Research Integrity.
- The Vice-Chairperson is an IACUC member elected by the IACUC committee. His or her role is to represent the IACUC when the IACUC Chair is unavailable or cannot function as Chair. As such, the Vice-Chairperson can convene and administer the IACUC meeting, attend administrative meetings, and direct IACUC inspections when the IACUC Chair is unavailable. Also, the Vice-Chairperson can act as Chair when there is a conflict of interest declared by the Chair. Examples of conflicts include review of protocols submitted by the Chair.
- An attending veterinarian shall serve as a voting member of the IACUC for an indefinite term. It is the responsibility of the veterinarian to provide veterinary review of protocols and to oversee the adequacy of all aspects of animal care and use for all animals.
- The attending veterinarian may recommend another veterinarian to the IACUC. The appointed veterinarian will be called the “alternate veterinarian” and will serve as a proxy voting member of the committee when the attending veterinarian is not in attendance or is otherwise unavailable. The alternate veterinarian will have delegated responsibilities for all activities involving animals, including protocol review, animal use program responsibilities, and care of animals when the

attending veterinarian is unavailable due to either planned or unplanned circumstances.

- Various University officials and specialists may be asked to serve as nonvoting ex-officio members of the IACUC.

C. Terms and Appointment

All voting members of the Committee (all members of the Committee are voting members with the exception of the Ex-Officio who is the Institutional Official and the alternate veterinarian when the attending veterinarian is in attendance) as well as the Committee Chair are appointed for an indefinite period of time. If a Committee member wishes to leave the Committee temporarily or permanently, a new member will be appointed by the Director of Research Integrity.

D. Responsibilities of Members

The IACUC recognizes that University research scientists must conduct their research in a timely and responsible fashion. Therefore, to facilitate research while assuring animal welfare, the Committee must conduct its business as efficiently as possible. This can only be accomplished when all Committee members participate fully in Committee activities.

Committee members should make every effort to attend and actively participate in all regularly scheduled meetings, promptly conduct complete reviews of assigned protocols, and participate in facility and program reviews. Committee members must also recognize the sensitive nature of Committee activities and maintain confidentiality.

All IACUC members are expected to:

- Complete the online Collaborative Institutional Training Initiative (CITI) modules on research involving animals. Required modules include:
  - *1) Working with the IACUC*
  - *2) Working with the IACUC - Refresher Course*
  - *3) Post-Procedure Care of Mice and Rats in Research: Minimizing Pain and Distress*
  - *4) Essentials for IACUC Members*
- Attend regularly scheduled meetings of the IACUC. Three or more absences from scheduled meetings per year (except under documented extenuating circumstances) are unsatisfactory.
- Review protocols and all other documents included in the meeting packet prior to the monthly scheduled Committee meeting.
- If a Designated Member Review (DMR) will be conducted, the Committee member assigned as the Presenter will review assigned protocols completely, including contacting the principal investigator when necessary regarding incomplete or ambiguous responses and other concerns prior to the committee meeting.
- Members may elect to participate in program review and animal facility inspections or may be assigned. Program review and facility inspections will occur semiannually.
- Maintain confidentiality about Committee activities.

The efficient operation of the IACUC depends on the full participation of its members. The name of any member who exhibits repeated unsatisfactory performance shall be submitted to the IACUC Chair. The Chair shall provide necessary documentation to the Director of Research Integrity, or his/her designated representative, who shall make the final decision regarding dismissal from the Committee.

III. RULES OF ORDER

All meetings shall be governed by The Modern Edition of Robert's Rules of Order, except as otherwise indicated in this document.

A. Regularly Scheduled Meetings

The IACUC shall schedule regular monthly meetings. The meeting may be cancelled if the IACUC has no current business and may be rescheduled in extenuating circumstances. Emergency meetings may be called by the Chair if required. It is the University's policy that at least one non-scientific committee member be present in order to conduct business.

B. Voting

A motion may only be passed at a convened meeting of a quorum of the IACUC if it receives the affirmative vote of a majority of the quorum present. A quorum means a simple majority of the members of the Committee. A tally of the numbers of members who vote for, against, or abstain from voting shall be recorded in the minutes. Any minority views shall also be recorded in the minutes. All Committee members with the exception of the Authorized Official who serves in an Ex-Officio manner and the alternate veterinarian when the attending veterinarian is in attendance are voting members of the Committee.

C. Conflict of Interest

An IACUC member should not vote on protocols in which he/she is listed as an investigator. The member may provide information to the Committee, if the Committee so desires. However, the Chair shall excuse the member during these deliberations if no further information is required, or if another Committee member requests such action and before a vote is taken.

D. Sub-committees

The IACUC Chair may appoint sub-committees, as deemed appropriate, to facilitate the business of the Committee. All members of sub-committees shall consist of members in good standing. Sub-committees shall report directly to the IACUC with recommendations or reports. No actions may be taken by the subcommittee without prior approval of a majority of the quorum at a convened IACUC meeting.

IV. PROTOCOL REVIEW PROCEDURES

The Federal Animal Welfare Act and Animal Welfare Regulations (AWAR), the Institute of Laboratory Animal Resources (ILAR) Guide for the Care and Use of Laboratory Animals, the Guide for the Care and Use of Agricultural Animals in Research and Teaching, and the PHS Policy on the Care and Use of Laboratory Animals shall be used as basis for review.

A. Principal Investigator (PI)

The principal investigator conducting research or teaching involving live vertebrate animals shall submit a typed and signed protocol for the use of live vertebrate animals. Protocols requiring full review received less than five (5) working days before the scheduled IACUC meeting shall be reviewed the following month.

Animals may not be procured until the protocol has been approved by the IACUC. Research involving animals may not begin until the PI is notified in writing that the protocol has been approved. Only those persons listed on the protocol are authorized access to the animal facilities. *Additions or substitutions to this list require a protocol amendment, and subsequent approval.*

B. IACUC Committee Chair

The completed protocol is submitted to the IACUC email account and is initially reviewed by the Office of Research Integrity to ensure that all the components of the application have been completed. Once the application has been completed, The Office of Research Integrity submits the new application to the IACUC Committee Chair and asks if an Designated Member Review (DMR) or Full Committee Review (FCR) will be required. If the protocol is eligible for DMR, the IACUC Chair identifies the Committee member that will be conducting the review. The completed protocol is submitted electronically to all Committee members for review at least five days in advance of the next scheduled meeting in preparation of discussion at the Committee meeting. If upon review the protocol is incomplete or unclear, the IACUC Committee Chair notifies the principal investigator of the clarifications/modifications that are required.

C. Veterinarian

The attending veterinarian, or the alternate veterinarian is his/her absence, will perform the veterinary review and present any concerns regarding the research at the monthly scheduled Committee meeting.

D. Protocol Review

All research involving animals should be brought to the attention of the IACUC.

D.1. Exemptions

There are areas of research that are exempt from IACUC protocol submission and review. Investigators do not make the determination that animal use is exempt from an IACUC protocol submission. Using animals in teaching situations does not automatically exempt the activity from IACUC review and approval. Some areas that may be exempt include but are not limited to: work with invertebrates, observational field research involving no manipulation, research on vertebrate eggs, commercially obtained tissues, or tissues from

colleagues with approved animal protocols in place at their facility, and others. The IACUC will discuss a project and a vote (simple majority of the quorum) to approve an exemption. If an exemption is granted, the investigator will receive an exemption letter from the IACUC for that specific activity or area. The exemption letter is only valid for that specific situation. If the investigator changes or modifies the activity, then it is subject to reexamination by the IACUC, and the exempt status may change and necessitate a protocol and review.

D.2. Designated Member Review of a Protocol

Designated Member Review (DMR) is only allowed for research that falls under Category A, B, or C as defined in Appendix A. The IACUC Committee Chair determines if a protocol is eligible for DMR. If the protocol qualifies for DMR, each IACUC committee member is provided with a copy of the cover page and the non-technical summary. Copies of the complete protocol shall be available to any member who requests it, and any committee member may request a full committee review within 5 days. If a full committee review is not requested, at least one committee member is designated by the IACUC Committee Chair to review the research project. The designated individual is qualified to review the research project and has authority to approve, require modifications or request a full committee review. The designated individual does not have the authority to disapprove the research project. Disapproval can only be done by a majority vote of a quorum at a convened meeting of the IACUC.

If approved, an approval letter will be emailed to the principal investigator. Protocols are approved for a maximum of three years, although the PI will need to undergo annual review yearly. After three years, the PI will rewrite and resubmit the protocol for review.

D.3. Full Committee Review

If full committee review (FCR) is required, full copies of the protocol are submitted to all Committee members for review at least 5 days prior to the regularly scheduled monthly meeting. A quorum of the Committee must be present at the meeting. The Committee will discuss the proposed research project(s) and determine if approval can be given or if modifications are needed before approval can be granted. If the research project is ready for approval, an approval vote by the majority of the quorum present is required.

When substantive information is lacking from a protocol, the committee may have questions requiring a response from the PI. In such situations, a quorum of members present at a convened meeting may decide by unanimous vote to use DMR subsequent to FCR when modification is needed to secure approval. However, any member of the IACUC may, at any time, request to see the revised protocol and/or request FCR of the protocol.

The IACUC Committee Chair will communicate the required modifications directly to the researcher. Upon receipt by the Office of Research Integrity, the revised protocol will be resubmitted to the IACUC Committee Chair or designated member for review and approval. Protocols are approved for a maximum of three years, although the PI will need to undergo annual review yearly. After three years, the PI will rewrite and resubmit the protocol for review.

D.4. Review of Protocol Modifications by DMR subsequent to FCR

If, during a FCR of a protocol at a convened meeting, substantive information is lacking that requires a response by a PI, the committee may decide to move forward with a Review of Protocol Modifications by DMR subsequent to FCR.

If all members of the IACUC are present at the meeting, the committee will vote (majority decision) to require modifications to secure approval and have the revised research protocol reviewed and approved by DMR.

If all members of the IACUC are not present at the meeting, a quorum of members present at a convened meeting must decide by unanimous vote to use DMR subsequent to FCR when modification is needed to secure approval.

Any member of the IACUC may, at any time, request to see the revised protocol and/or request FCR of the protocol. The IACUC Chair appoints one or more appropriately qualified IACUC members to serve as the designated reviewer(s). This individual(s) has authority to approve, require modifications or request a full committee review. The designated reviewer does not have the authority to disapprove the research project. Disapproval can only be done by a majority vote of a quorum at a convened meeting of the IACUC. The approval date is the date that the designated reviewer approves the study.

The full IACUC committee has formally approved this policy and documentation of the vote has been recorded in the official committee minutes. See the UTC IACUC Standard Operating Procedure for DMR Subsequent to FCR (IACUC SOP #7).

D.5. Procedures to Request an Expedited Review of Protocols

Under unusual circumstances, a PI may request an Expedited Review. An Expedited Review may be requested when any of the above review activities have to take place sooner than would occur under the normal review processes. This process must be justified beyond a convenience for the PI.

The Expedited Review process follows these steps:

- **Written Request** – A completed protocol application to the IACUC must be submitted. In addition, the PI must formally request, in writing, an expedited review along with a clearly articulated justification for its need.
- **Determination** – Upon receipt of an Expedited Review request, the IACUC Chair, the Veterinarian and another member of the IACUC will determine if the request has merit, and notify IACUC and the PI of the determination. If the request for Expedited Review is not granted, the review activity will take place via the standard procedures.
- **Emergency Meeting** – If the request has merit and is granted, the IACUC Chair will convene an emergency meeting of the IACUC. The application and other relevant materials will be given to all IACUC members prior to the meeting. The proposal will then be reviewed in the Full Committee, and undergo normal voting procedures.

E. Procedures for the Annual Review of Protocols

Approved protocols must be reviewed at least annually. Therefore, at least four (4) weeks prior to the anniversary date of an approved protocol, the Office of Research Integrity shall

send to the principal investigator an Annual Review of Protocol for Use of Live Vertebrates Form indicating that the annual review form must be completed and submitted to the Office of Research Integrity before the first day of the anniversary month.

Annual reviews consisting of administrative changes may be approved by the IACUC Committee Chairperson or his/her designate. Significant changes require a revision in writing will be reviewed at the regularly scheduled convened monthly meeting.

Annual reviews approved by the IACUC Committee Chairperson on behalf of the Committee will be listed on the agenda and minutes of the next monthly meeting.

Protocols are approved for a maximum of three years. After three years, the IACUC requires and conducts a complete (*de novo*) review of all activities associated with this protocol, completed by either FCR or DMR procedures.

F. Procedures for the Review of Modifications of Approved Protocols

F.1. Significant Changes

Significant changes to an IACUC-approved protocol must be reviewed and approved through FCR or DMR before they occur. UTC interprets significant changes to mean those that have the potential to impact substantially and directly on the health and well-being of the experimental animals. Examples of significant changes include, but are not limited to changes:

- from non-survival to survival surgery
- resulting in greater pain, distress or degree of invasiveness;
- in species;
- in study objectives;
- in Principal Investigator;
- that impact personnel safety; and
- in housing and/or use of animals in a location that is not part of the animal program overseen by the IACUC
- in increases in animal numbers greater than 10% of the originally approved number.

Proposed significant changes require FCR or DMR and approval prior to initiation. See the UTC IACUC Standard Operating Procedure for Significant and Administrative Changes (IACUC SOP #1).

F.2. Administrative Changes

UTC interprets administrative changes to mean those that do not have the potential to impact substantially and directly on the health and well-being of the experimental animals. Examples of non-significant changes include, but are not limited to changes:

- that correct typographical errors and/or grammar
- in the funding source;
- in update contact information;
- in personnel (other than the PI); and
- in the use of a new vivarium housing location.

Proposed administrative changes may be approved administratively or administratively with

veterinary consult prior to initiation. See the UTC IACUC Standard Operating Procedure for Significant and Administrative Changes (IACUC SOP #1).

G. Post-Approval Monitoring

Post-approval monitoring (PAM) is part of the expectations and reporting of the IACUC. The goal of the UTC PAM program is to ensure that research and teaching activities are being conducted as written in IACUC approved animal protocols.

Approved animal protocols will undergo at least one PAM review during the protocol's stated start/finish timeline. Exact timing will vary based on the nature of the protocol. Investigators will be notified of a PAM review prior to the date of review.

A PAM review will consist of a member of the IACUC or a representative of the Office of Research Integrity observing activities as describe in the IACUC approved protocols. The observational period allows the investigator/laboratory staff an opportunity to ask for help and/or address any areas of non-compliance with the approved protocol. This may include adjusting the methods to align with the protocol or ceasing activities and submitting a protocol modification request.

Any activity that appears to be non-compliant with the approved protocol will be noted and communicated to the principal investigator and/or laboratory staff. Any concerns described in the report will need to be addressed within 30 days of notification.

A PAM summary report will be drafted by the Office of Research Integrity following the observational period and copies will be given to the investigator, stored in the protocol file, and presented to the IACUC at the following monthly meeting.

V. PROGRAM AND FACILITIES REVIEW

A. Program Review and Site Inspection

The IACUC shall review the Animal Care and Use Program and all University animal facilities, as defined in the PHS Policy and the Animal Welfare Act, at least once every six months. A sub-committee of the IACUC may conduct the inspection, but any member wishing to participate may not be excluded and the program review and inspection report must be reviewed and approved by a majority of a quorum of the Committee and include any minority views.

The sub-committee conducting the review and inspection must include at least two members. The sub-committee shall use the ILAR Guide for the Care and Use of Laboratory Animals as a standard for evaluating all laboratory animal facilities. Other guidelines and recommendations will be used as appropriate. The Guide for the Care and Use of Agricultural Animals in Research and Teaching shall be used as a standard for the non-PHS supported research and teaching activities involving production agricultural animals.

B. Program Review and Site Inspection Report

After review and inspection, a written report (including any minority views) shall be submitted to the Institutional Official. The report shall contain a description of the extent of each facility's adherence to the Federal Animal Welfare Regulations and shall distinguish significant deficiencies from minor deficiencies. A significant deficiency is one that, in the judgment of the IACUC and the appropriate Institutional Official and in accordance the Animal Welfare Regulations, may be a threat to the health or safety of the animals. The IACUC shall include a plan of action with specific dates for correcting any deficiencies. Any failure to adhere to this plan that results in a significant deficiency remaining uncorrected shall be reported within 15 business days through the appropriate Institutional Official to United States Department of Agriculture, Animal and Plant Health Inspection Service (APHIS), Office for Protection from Research Risks (OPRR) and any federal agency funding that activity.

VI. ANNUAL REPORTS

A. USDA, Regulatory Enforcement of Animal Care

Annual reports shall be prepared by the IACUC according to the provisions of 9 CFR 2 (Subpart A, 2.36). The reports are submitted to APHIS on or before December 1.

B. PHS

Annual reports shall be prepared by the IACUC according to the requirements of the PHS Animal Welfare Policy (IV., F.) at least once every 12 months. Reports will be submitted to OLAW on or before December 1.

VII. TRAINING

A. Committee Members

Committee members shall review these bylaws, the Animal Welfare Regulations, the PHS Policy, and other documents, as well as copies of individual policies developed by the IACUC regarding specific animal use issues. Committee members will complete the Collaborative Institutional Training Institute (CITI) courses including:

- *1) Working with the IACUC*
- *3) Post-Procedure Care of Mice and Rats in Research: Minimizing Pain and Distress*
- *4) Essentials for IACUC Members*

In order to stay current with the ever-changing regulatory environment, Committee members will be required to complete the *CITI Working with the IACUC – Refresher* course at a minimum of once every three (3) years.

B. Scientists, Research Assistants, and Animal Technicians

All scientists, research technicians, animal technicians, and other personnel involved in animal care, treatment and use must be qualified to perform their duties. All scientists, research technicians, animal technicians, and other personnel will be required to take the *CITI Working with the IACUC* Basic Course and any other modules that can be identified at the time of protocol submission that align with their specific research project.

In order to stay current with the ever-changing regulatory environment, all scientists, research technicians, animal technicians, and other personnel involved in animal care and use will be required to complete the *CITI Working with the IACUC-Refresher* course at a minimum of once every three (3) years.

VIII. NONCOMPLIANCE

A. Procedures for Reporting Non-Compliance

Everyone involved in animal care and use at the University shall be made aware of the procedures for reporting non-compliance. These procedures will be posted in all laboratory facilities and on the IACUC website.

B. Procedure for Reporting Noncompliance with Laboratory Animal Care and Use Guidelines

Concerns or complaints regarding animal usage within The University of Tennessee should be brought directly to the attention of the people involved whenever possible. If the concern or complaint cannot be handled directly, it may be handled in one of two ways:

- If an emergency exists, the Veterinarian should be contacted immediately.
- If the situation is not an emergency, the concern or complaint should be submitted to the Office of Research Integrity or the IACUC Chair. The Chair will assign an ad hoc committee to investigate the concern or complaint and prepare a report for the IACUC. The IACUC will review the concern or complaint during the next regularly scheduled meeting. The IACUC will determine what action will be taken and the Chair will notify the principal investigator of such action.

A written reply to those primarily involved and to the appropriate Institutional Official will follow each written concern or complaint submitted to the IACUC. No facility employee, student, IACUC member or laboratory personnel will be discriminated against, or be subjected to any reprisal for reporting suspected noncompliance. The IACUC may suspend an activity that it previously approved if it determines that the activity is not being conducted in accordance with applicable provisions of the Animal Welfare Act.

C. Suspension of Activity

If the IACUC suspends an activity due to continuing significant deficiencies in animal care and use, the Institutional Official in consultation with the IACUC shall review the reasons for suspension, take appropriate corrective action, and report the action with a full explanation to USDA, Regulatory Enforcement of Animal Care, OPRR, and any agency funding that activity. Any proposal for animal use approved by the IACUC may be subject to further approval by the Institutional Official. However, the Institutional Official may not approve activities involving the care and use of animals that have not been approved by the IACUC.

D. Investigator Appeal

The principal investigator of any activity that has been disapproved or suspended by the IACUC may appeal that action to the IACUC and request another review based on the correction of misinformation or additional information not available at the time of the initial review.

IX. AMENDMENTS

Any member may request a review of any part of these bylaws. The review shall be conducted by an ad hoc sub-committee appointed by the Chair. The IACUC may amend these bylaws by a two thirds vote at any meeting at which a quorum is present, providing that all IACUC members receive notification of the pending vote 10 working days prior to the meeting.

X. APPENDIX

Appendix A:

USDA CLASSIFICATION OF PROTOCOLS BASED ON ANTICIPATED LEVEL OF PAIN AND DISTRESS

The following categories are based upon the relative level of pain, discomfort or distress that is associated with procedures commonly used in experimental animals. Categories C, D and E require full committee review and approval. An expedited review may be requested. A justification for Category D and E studies must be submitted by the investigator for inclusion with the USDA report (Animal Welfare Act).

CATEGORY A
Procedures do not induce pain, discomfort or distress greater than that produced by routine injections or venipuncture; and do not use anesthetics, analgesics and/or tranquilizers for pain relief.

EXAMPLE/COMMENTS: This category includes simple procedures (injections, cystocentesis of the urinary bladder; blood sampling; ultrasound diagnostics; anesthetics, analgesics, and tranquilizers may be used for immobilization; percutaneous catheterization); physical examinations, live animal evaluations; behavioral testing without significant restraint or noxious stimuli; holding of animals for experimental purposes; nutritional studies; breeding studies; routine farm animal management practices.

CATEGORY B
Non-survival anesthetic surgical procedures; tissue collection following euthanasia.

EXAMPLE/COMMENTS: Euthanasia by exsanguination under anesthesia; any nonsurvivable surgical procedure performed under general anesthesia. Tissue collection preceded by approved methods of euthanasia that induce rapid unconsciousness such as anesthetic overdose and decapitation, humane slaughter using USDA approved procedures.

CATEGORY C
Procedures that may involve some minor distress or discomfort (short-lasting pain) not relieved by analgesics and procedures that induce moderate pain, distress or discomfort which will be alleviated with drugs.

EXAMPLE/COMMENTS: Exposure of blood vessels and surgical implantation of chronic catheters; behavioral experiments on awake animals that involve restraint (less than 4 hours) with or without food/water for short periods; noxious stimuli from which escape is possible; social isolation or crowding; surgical procedures under anesthesia that may result in some post-operative discomfort, but no gross anatomical or functional deficits (skin biopsies, suturing of skin, gonadectomy beyond the age recommended for routine farm management, fistulation, uterine flush, ovariectomy, dehorning of older animals); diagnostic procedures that require anesthesia (bone marrow sampling, CSF taps, arthrocentesis, endoscopy, laparoscopy, electrodiagnostics); induction of infection or

infestation which is expected to produce mild or no clinical disease; application of toxic agents that do not produce major functional deficits and will result in mild or no clinical disease or discomfort; the administration of Complete Freund's Adjuvant.

CATEGORY D

Surgical procedures which may induce more than minor post-operative pain or distress, and other procedures that may induce more than minor distress or discomfort which, for scientific reasons, cannot/will not be alleviated by the use of drugs.

EXAMPLE/COMMENTS: Major surgical procedures under anesthesia that result in significant post-operative discomfort or functional deficit invasion of chest or abdomen, orthopedic surgery, removal of organs, surgery involving organs of special sense, implantation, transplantation, surgery that will result in a prolonged recovery. Prolonged periods (more than 4 hours) of physical restraint; noxious stimuli in which escape is not possible; induction of infection or infestation which is expected to cause serious clinical disease; application of toxic agents that may cause major functional deficits and serious clinical disease. Chronic maintenance of a disease/functional deficit where the endpoint is death of the animal (e.g., toxicity testing -lethal dose determination; radiation sickness; tumor inducement; virulence challenge); severe chemical or physical injury experiments where post-procedural analgesics/anesthetics are not provided; experiments involving abnormal environmental conditions, e.g., hypoxic chambers or extreme temperatures or humidity levels; prolonged restrictions of food or water intake.

CATEGORY E

Procedures that involve inflicting severe pain on unanesthetized, conscious animals.

EXAMPLE/COMMENTS: Use of muscle relaxants or paralytic drugs (succinylcholine or other curariform drugs used for surgical restraint without use of anesthetics in sufficient dosage to produce loss of consciousness); administration of colchicine to block central transmission of encephalins; inflicting burns or severe trauma on unanesthetized animals; permitting recovery of consciousness after severe trauma has been caused under anesthesia; other procedures involving severe pain or severe deprivation.