

**ANIMAL CARE AND USE TRAINING HANDBOOK**  
**IDAHO STATE UNIVERSITY**

**Prepared by the Animal Welfare Committee, 2002**  
Revised 2005

## Preface

The use of animals in teaching and research activities has been an integral part of Idaho State University's mission. The advancement of biological and medical knowledge is inextricably linked to animal research; very simply, most of what we know in many areas of biology and medicine derives in one way or another from research involving animals. Thus, the involvement of animals in research and teaching cannot be avoided if the University is to continue to fulfill its mission.

The use of animals in research and teaching imposes moral, scientific, and legal obligations for humane care and treatment. This handbook has been prepared to provide the ISU community – faculty, staff and students – with information pertaining to these obligations. The handbook provides essential information for investigators including: applicable regulations and policies, training requirements, protocol preparation and laboratory animal care. The information contained in the handbook has been amalgamated from many sources. The handbook will be provided to faculty on request or is posted on the Animal Facility website ([www.isu.edu/anmlcare/](http://www.isu.edu/anmlcare/)).

All faculty-using animals for research or teaching purposes are expected to review this handbook and to acknowledge their acceptance of the responsibilities outlined therein.

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# ESSENTIAL INFORMATION ABOUT THE USE OF ANIMALS AT IDAHO STATE UNIVERSITY

## A. FACULTY AND INVESTIGATOR RESPONSIBILITIES:

Individual faculty members who use animals in their teaching or research (including those whose research consists of field work involving animals) are, by law, accountable for conforming to the basic regulations and policies governing animal use on the Idaho State University campus. These regulations and policies cover: (a) the acquisition, care and use of animals, (b) efforts to minimize animal pain and distress, (c) the training of personnel using animals, and (d) consideration of alternatives to animal use.

As a matter of education policy, even faculty who do not use animals should be aware of these regulations and policies since their students may use animals at a later time. Likewise, instruction of students in proper animal care and use is an essential component of education in the biological sciences as well as in other areas of instruction.

## B. REGULATIONS AND POLICIES:

**1. Animal Welfare Act.** The Animal Welfare Act of 1966 and subsequent amendments (most recently in 1990) regulate the transportation, purchase, care and treatment of animals used in research, for exhibitions, and sold as pets. The Act specifically includes dogs, cats, nonhuman primates, guinea pigs, hamsters, rabbits, and wild animal species intended for use in research. To date, the Act does not cover farm animals, birds, or laboratory rats and mice.

Subsequent amendments address such issues as exercise for dogs, care of nonhuman primates to ensure their psychological well-being, the composition and duties of the Institutional Animal Care and Use Committee (referred to as the Animal Welfare Committee (AWC) at Idaho State University), responsibilities of the consulting veterinarian, and training of all personnel using laboratory animals in experimentation. The Act also requires the AWC to review all protocols using animals to make certain that they meet criteria listed in The Act, and its amendments and policies, and to conduct semiannual inspection of all animal study areas and animal facilities. A lawsuit has been filed and settled by the United States Department of Agriculture (USDA) to include rats and mice in the regulatory process. At the present time, efforts to implement the inclusion of rats and mice are on hold.

The Animal and Plant Health Inspection Service (<http://www.aphis.usda.gov/ac/>) (APHIS), a division of the United States Department of Agriculture (USDA), oversees compliance with the Act. APHIS has compiled a set of policies that facilitate the administration of the Animal Welfare Act. Research facilities are subject to unannounced inspections by the USDA Veterinary Medical Officer, and are required to file an annual report listing the species and number of animals used in research, and certifying that all appropriate Policies are upheld. These policies include appropriate veterinary care, insuring that procedures involving animals will avoid or minimize discomfort, distress and/or pain, due consideration for alternatives to procedures that may

cause more than momentary or slight pain or distress, guidelines for major surgical procedures, annual reporting process, and necropsy requirements.

Failure to comply with the Animal Welfare Act, USDA and APHIS policy may result in civil or criminal prosecution and suspension of animal research activities.

**2. Public Health Service Policy:** The Public Health Service (PHS) Policy on Humane Care and Use of Laboratory Animals requires each institution that receives PHS funds to file an approved Animal Welfare Assurance Statement with the Office of Laboratory Animal Welfare (<http://grants.nih.gov/grants/olaw/olaw.htm>) (OLAW), a division of National Institutes of Health (NIH). The ISU Assurance became effective in August 1988 – number A3634-01, and has been updated appropriately. This document commits the institution to compliance with the Animal Welfare Act, National Research Council Guide for the Care and Use of Laboratory Animals (The Guide), PHS Policy on Humane Care and Use of Laboratory Animals, reprinted in 1996, and other applicable laws and regulations. The Assurance document must describe in detail the institution’s program for the care and use of animals (including rats and mice) and its program for assuring compliance with PHS policy.

The PHS policy requires institutional animal care and use committees to approve the care and use of animals as proposed in PHS grant applications before funds will be awarded. Animal care and use committees also are required to conduct semiannual assessments of the institution’s program, using The Guide as a basis for evaluation. Significant deficiencies in the institution’s program must be identified, and the institution must adhere to an approved plan and schedule for correction of the deficiencies.

An institution’s failure to comply with these policies may lead to various actions, including the termination of PHS support for all projects involving animals.

**3. U.S. Government principles for the Utilization and care of Vertebrate Animals Used in Testing, Research and Training:** the Interagency Research Animal Committee prepared the principles below. Both PHS and ISU policy require that all research and teaching use of animals conform to these Principles, as follows:

The development of knowledge necessary for the improvement of the health and well being of humans as well as other animals requires *in vivo* experimentation with a wide variety of animal species. Whenever U.S. Government agencies develop requirements for testing, research, or training procedures involving the use of vertebrate animals, the following principles shall be considered; and whenever these agencies actually perform or sponsor such procedures, the responsible Institutional Official shall ensure that these principles are adhered to:

- I. The transportation, care and use of animals should be in accordance with the Animal Welfare Act (7U.S.C.2131 et seq.) and other applicable Federal laws, guidelines and policies.
- II. Procedures involving animals should be designed and performed with due consideration of their relevance to human or animal health, the advancement of knowledge, or the good of society.
- III. The animals selected for a procedure should be of an appropriate species and quality and the minimum number required to obtain valid results. Methods such as mathematical models, computer simulation, and *in vitro* biological systems should be considered.

- IV. Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Unless the contrary is established, investigators should consider that procedures that cause pain or distress in human beings might cause pain or distress in other animals.
- V. Procedures with animals that may cause more than momentary or slight pain or distress should be performed with appropriate sedation, analgesia, or anesthesia. Surgical or other painful procedures should not be performed on unanesthetized animals paralyzed by chemical agents.
- VI. Animals that would otherwise suffer severe or chronic pain or distress that cannot be relieved should be painlessly killed at the end of the procedure or, if appropriate, during the procedure.
- VII. The living conditions of animals should be appropriate for the species and contribute to their health and comfort. Normally, the housing, feeding, and care of all animals used for biomedical purposes must be directed by a veterinarian or other scientist trained and experienced in the proper care, handling, and use of the species being maintained or studied. In any case, veterinary care shall be provided as indicated.
- VIII. Investigators and other personnel shall be appropriately qualified and experienced for conducting procedures on living animals. Adequate arrangements shall be made for their in-service training, including the proper and humane care and use of laboratory animals.
- IX. Where exceptions are required in relation to the provision of these Principles, the decisions should not rest with the investigators directly concerned but should be made, with due regard to Principle II, by an appropriate review group such as an institutional animal care and use committee. Such exceptions should not be made solely for the purpose of teaching or demonstration.

**4. Other regulations and Regulatory Agencies:** The use of specific animals (e.g., non human primates, endangered or protected species) and certain procedures (e.g., drug testing, field procedures) may be subject to additional regulation at the federal, state, or institutional level.

**5. Accreditation.** ISU's animal care and use program has achieved and maintained full accreditation by the American Association for Assessment and Accreditation of Laboratory Animal Care. The accredited facilities are located in Building 65, Gale Life Sciences Complex and satellite facility, Building 8, Leonard Hall (Pharmacy). All other existing satellite facilities are held to the same standards as the accredited facilities and at the present time are actively working to achieve full accreditation.

**6. University Policy on the Use of Animals in Research and Teaching:** ISU is required to comply with the Animal Welfare Assurance (#A3623-01) submitted to PHS, which sets forth the responsibilities and procedures to be followed at ISU with regard to the care and use of animals in research and teaching activities. The ISU Animal Welfare Committee continually reviews the animal facilities and is also responsible for reviewing research and teaching protocols that use animals. Individuals using animals for research or teaching purposes at ISU must abide by the Code of Ethics for the Use of Vertebrates and also the General policy of the Animal Care Facility. Additional information is provided in the Appendix section of this handbook.

## **C. ADMINISTRATIVE OVERSIGHT OF ANIMAL CARE AND USE AT IDAHO STATE UNIVERSITY**

**1. Line of Authority:** At ISU the lines of authority and responsibility for administering the program and ensuring compliance with the assurance document are as follows:

- (a) President of Idaho State University
- (b) Institutional Official
- (c) Chair of the Animal Welfare Committee (the Institutional Animal Care and Use Committee)
- (d) Consulting Veterinarian
- (e) Animal Facility Manager
- (f) Animal Welfare Committee
- (g) Animal Laboratory Technicians
- (h) Part Time Workers

**2. Office of the Manager (Animal Care Facility):** The Animal Facility Manager is responsible for administering activities related to the care and use of animals at ISU. Some of the Manager's functions include procurement of animals for research and teaching purposes, supervision of Animal Laboratory Technicians and other part time personnel, control of animal holding facilities and assist in obtaining the proper veterinary care for the animals as required.

**3. Animal Welfare Committee (Institutional Animal Care and Use Committee):** Both the Animal Welfare Act and the PHS Policy require an institutional committee to oversee the animal care and use program. This committee must be composed of at least five members and include an individual unaffiliated with the institution, a veterinarian with program responsibilities, a practicing scientist experienced in research involving animals, and a member whose concerns are in a non-scientific area.

The Animal Welfare Committee is the institutional animal care and use committee at ISU. It currently has 10 members, including the consulting veterinarian, five faculty members with experience in using animals for research or teaching, one Occupational Health and Safety expert, one public member, one non-scientist, and 1 non-voting ad hoc member being the Animal Facilities Manager.

The Animal Welfare Committee's functions are clearly defined by the USDA, PHS, and University policy. They include:

- a. Semiannual review of the institution's program for the humane care and use of animals.
- b. Semiannual inspection of all institutional animal facilities.
- c. Review of all proposed uses of vertebrates for research and teaching.
- d. Review and development of institutional policy on care and use of laboratory animals.
- e. Review specific concerns of complaints about animal care or use.
- f. Provide recommendations to the responsible administrator regarding all aspects of the campus animal care and use program.

g. Authority to suspend any activity involving the use of animals which is not being conducted in accordance with The Guide standards, or with applicable laws, regulations and institutional policies.

In all of these functions, The Guide provides the primary standard for evaluating the campus animal care and use program.

## **D. THE IDAHO STATE UNIVERSITY TRAINING PROGRAM**

In order to meet legal requirements while also serving broad educational objectives, the University has instituted a three-tiered training program on animal use in teaching and research.

**1. The Core Program:** All faculty using animals in teaching or research will be provided this handbook, which outlines general information on applicable regulations and policies, preparation of animal use protocols, the use of animal models, and perspectives on ethical and humane considerations. *All faculty members are expected to review this material and to sign a statement acknowledging responsibility for knowing applicable rules and institutional policies and for ensuring that all staff and students under their supervision also know and comply with these rules and policies.* The signed statement will be kept on file with the Animal Welfare Committee.

In addition all users (faculty, students, staff) who participate in activities involving animals will be expected to complete LATA, the online training program, sign the Occupational Health and Safety Form and Code of Ethics, and attend a training session on animal use in research and teaching. Persons attending this presentation will sign a statement certifying their participation. Participation in the Core Program, as defined above, will be a prerequisite for the review of animal use protocols by the Animal Welfare committee.

**2. Animal or use specific Approval:** In the case of procedures which may or do carry the potential of risk to the animal, the investigator may, at the discretion of the AWC, be required to obtain additional instruction or certification. This type of instruction or certification may be achieved on a group or individual basis depending on the specific situation. This type of instruction may be achieved by direct instruction or by the use of audio-visual materials covering the specific procedure. This type of instruction may be provided by the consulting veterinarian, the Animal Facility Manager or other facility personnel or by faculty with expertise in a certain procedure. In some cases, the consulting veterinarian will provide specialized training sessions.

**3. Other Training:** Principle investigators are required to provide the proper training to other personnel (students, graduate students, research or teaching assistants) under their supervision concerning the care and handling of experimental animals, as well as training specific to the project procedures and species used in a project, and to provide a personnel statement.

## **E. ANIMAL USE PROTOCOLS**

**1. Who Must submit a Protocol:** Any research or instructional use of live vertebrates by ISU faculty, students or staff (excluding strictly observational studies on unconfined animals in the field) requires the submission of an animal use protocol to the Animal Welfare Committee. The protocol must be fully approved before an animal user may acquire, house or use animals. Copies of the protocol form are available on the Animal Facility website at (<http://www.isu.edu/anmlcare/>). A help section is available on the website which may be of assistance when completing a protocol. A sample form is included in the Appendix section of this handbook. Separate protocol forms are available for research, teaching or field studies.

### **2. Information Required for the Protocol:**

The protocol form requires:

- A non-technical description of the research project,
- The purpose of the project and justification concerning how the use of animals will meet the goals of the project.
- Justification concerning the species used
- A rationale for the number of animals used
- Assurance that the project is not unnecessary duplication of experiments
- Information concerning ways to reduce, refine, and replace animal procedures
- Information concerning care and housing
- A description of all procedures to be performed on animals (in detail)
- Information on surgical procedures and painful procedures and what procedures are used to minimize pain and distress
- Information on euthanasia
- A personnel statement demonstrating qualifications of individuals working on the animals
- Information concerning occupational health issues and risks associated with the proposed work
- A literature search to show alternatives to the use of animals has been considered

Investigators with questions regarding protocol preparation are encouraged to contact the Animal Facility Manager or the Animal Welfare Committee. Thorough preparation of protocols facilitates the review process and reduces the chance of delay in initiating projects and in review of applications by extramural funding agencies. The consulting veterinarian is available as a designated reviewer of protocols prior to submission to the entire committee. This may also facilitate the review process.

**3. Timetable for protocol Submission:** The Animal Welfare Committee meets once per month during fall and spring semesters. Meetings during the summer months are on an as needed basis. Animal users must prepare and submit their protocols one week in advance of the meeting and well in advance of research proposal due dates. Protocols are submitted electronically to the entire AWC via [anmlcare@isu.edu](mailto:anmlcare@isu.edu). NIH and NSF both

require verification that an applicant requesting funds for animal research has an approved animal use protocol for the proposed project. In some cases the funding agency may request additional information from the investigator pertaining to use of animals in the specific research project if complete information is not provided in the initial application. If this information or verification of Animal Welfare Committee approval is not received by funding agencies within the allotted 60 days, the application will be considered incomplete and may be deferred to the next review cycle. Other research and teaching protocols must be submitted in a timely fashion in order that the AWC may review the protocol in advance of the starting date for the particular project. In some cases protocols may require revisions before final review by the committee.

**4. The Protocol Review Process:** Each member of the AWC will review the protocol to ensure that all information and proposed animal use meet standards set forth in The Guide and comply with requirements of the Animal Welfare Act and USDA Policy, PHS Policy, and university guidelines and policies. The protocol is then voted upon by the AWC. The committee can (a) fully approve the protocol, (b) give provisional approval subject to minor changes or additions to the protocol (c) defer a vote until more information is provided, or (d) disapprove the protocol.

The completed protocol form will be held on file as a current protocol until a project is terminated, a course is discontinued, or until the use is reviewed and a new protocol is obtained. The effective time period is for one year. Protocols must be renewed and updated yearly with a current literature search, current personnel statements and any changes in procedures.

Each investigator/instructor who uses animals is required to have on file with the Animal Facilities Manager, a signed Code of Ethics form. A signed copy of this document will be submitted with the initial protocol form; only one form per investigator/instructor is needed regardless of the number of protocol forms submitted.

## **F. ANIMAL ACQUISITION, HOUSING AND CARE**

**1. Arrangements for acquisition and Housing:** All arrangements for acquiring and housing (e.g., bedding, caging, feed) animals from any source must be made through the Animal Facility Manager; arrangements for housing must be made before an order will be placed. Animals will not be purchased or otherwise acquired until a fully approved protocol is on file. If wild animals are to be used, arrangements for any necessary quarantine must be made through the Animal Facility Manager before animals are acquired. The investigator is responsible for determining if permits (such as US Fish and Wildlife or Idaho Fish and game) are required and any necessary permits must be obtained before animals are acquired. Per Diem charges are assessed depending on species and number of animals housed.

Users requiring special care, equipment, or supplies for their animals or exemptions from standard animal care procedures must inform the Animal Facility Manager so that appropriate arrangements can be made. Users must notify the Animal Facility Manager if their animals will be exposed to materials or procedures, which may be hazardous to personnel.

**2. Animal Identification and Record Keeping:** The Animal Welfare Act, The Guide, and USDA Policy require appropriate identification of animals and maintenance of animal records. Accepted methods of animal identification include room, rack, pen and cage cards with written or bar coded information; collars and bands; colored stains; ear

notches and tags; tattoos; subcutaneous transponders; and freeze brands. Identification cards should include the source of the animal, the strain or stock, name and location of responsible investigator, pertinent date, and approved protocol number. Individual animal records of procedures, drugs or medications, dosages and times given, illnesses and injuries, any abnormal observational findings, date of death, euthanasia, or disposition should be noted on individual animal records.

The Animal Facility Manager maintains individual clinical records for all species and maintains a colony record for rats and mice. These records serve as a means of communication between research and animal care personnel. All animal manipulations and drug use as well as objective observations on health status should be recorded by researchers and/or by animal care personnel

## **G. OCCUPATION HEALTH AND SAFETY**

**1. Purpose:** The Guide states that an occupational health and safety program must be part of the overall animal care and use program. The purpose of this Health and Safety Instruction (HSI) or guideline is to reduce the health risk of using animals in research and teaching to an acceptable level. The entire Occupational Health and Safety program is available in the Animal Facility Manager's office and can be found on the Animal Care Facility site.

**2. Background:** Many different kinds of physical, environmental, or biological hazards are associated with the use of animals in teaching or research. Requirements for an occupational health program for personnel working with laboratory animals are found in *Biosafety in Microbiological and Biomedical Laboratories* published by the Centers for Disease Control and Prevention and the National Institutes for Health; Code for Federal Regulations, Title 10, Part 20 and Title 29, Part 1910; the *Public Health Service Policy on Humane Care and Use of Laboratory Animals* that codifies the *Guide for the Care and Use of Laboratory Animals* published by the National Research Council; and, *Occupational Health and Safety in the Care and Use of Research Animals* published by the National Academy of Sciences. A description of the occupational health program must be included in the Assurance of Compliance that is required by the National Institutes of Health. The Association for the Assessment and Accreditation of Laboratory Animal Care, International (AAALAC) conducts triennial inspections to assure compliance with all applicable occupational health and safety standards.

Under standards outlined in the *Guide*, the program components must include:

- Hazard Identification and Risk Assessment
- Personnel Training
- Personal Hygiene
- Facilities, Procedures, and Monitoring
- Personal Protection
- Medical Evaluation and Preventive Medicine

**3. Who's Covered?** Personnel included are those involved in the direct care of animals and their living quarters and those individuals who have direct contact with animals (live or dead), their viable tissues, body fluids or wastes. The assessment of risk will be determined by frequency of contact, intensity of exposure, hazards associated with the animals being handled, hazardous properties of agents used in research, the susceptibility

of individual employees, the hazard-control measures available, and the occupational history of individual employees.

This HSI includes all: University Animal Care (UAC) staff

- Investigators and their technical staff
- Instructors and students involved with animal related work.

And some personnel in:

- Facilities management
- Security
- Custodial services

As well as certain students, consultants, volunteers and visitors.

Program Exemption: For situations where non-ISU students or ISU undergraduate or graduate students will be involved in ISU supported programs, a request for variance from selected HSI/medical criteria may be initiated. Requests will be reviewed by the Occupational Health Service (OHS) at Campus Health.

**4. How it works:** Participants are organized by two types of categories that reflect the specific surveillance needs of the individuals based on real or potential occupational exposure to specific species of animals. The first category type defines the level of contact as determined by the individual's status at the university. The second category type defines the type of contact as determined by the types of animals the individual contacts in their research activities. These categories help determine the type and level of medical evaluation, treatment, and surveillance needed to help avoid exposures and possible resultant illness. The Animal Welfare Committee will provide an Occupational Health and Safety Form for each participant to sign.

**5. Investigator responsibilities:** The principle investigator or class instructor is responsible for informing all staff and students about the occupational health program. All individuals covered under the program are to complete the Occupational Health and Safety Form. The animal facility staff and the Animal Welfare Committee are only responsible for the administration of the program, not to provide medical advice or care to individuals.

## **H. ANIMAL HUSBANDRY AND VETERINARY CARE**

**1. Animal Husbandry:** The Animal Facility Manager is responsible for managing and administering a program of laboratory animal care which is in compliance with the Animal Welfare Act, the NRC Guide for the Care and Use of Laboratory Animals, and the Principles for the Utilization and Care of Vertebrate Animals used in testing, research and training. The Animal facility provides daily care for all animals used in research and teaching on the ISU campus and is responsible for selection of appropriate cages for laboratory animals and for ensuring that housing conforms to The Guide standards and Animal Welfare Act requirements while meeting user needs. In addition, The Guide has defined requirements for the proper maintenance of laboratory animals. Environmental factors, such as temperature, humidity, ventilation, illumination, feed, bedding and sanitation, waste disposal, and vermin control are all important and necessary concerns with regard to providing the optimal housing conditions for the animals. Conventional

environmental conditions vary for each species. The AWC may approve environmental conditions that differ from the conventional situations only if strong scientific justification is established in the animal use protocol.

**2. Veterinary care:** The consulting veterinarian is available to assess animal health; to aid in prevention, control, diagnosis and treatment of animal disease and injury; to consult with researchers on handling, restraint anesthesia, analgesia and euthanasia; to train personnel in appropriate surgical techniques and procedures; and to monitor surgical procedures and post-surgical care.

**(a) Quarantine and stabilization.** With some species of laboratory animals, quarantine is necessary to minimize the introduction of disease into established colonies. The extent of the quarantine period is determined by the species and by knowledge of the animal's source and previous history. Arriving animals, regardless of source, should be allowed a stabilization period before use. Such a period allows the animal to recover from shipping stress, adapt to its new surroundings and become physiologically stable.

**(b) Anesthesia and analgesia.** The consulting veterinarian as a member of the animal Welfare Committee reviews procedures to ensure that proposed anesthetics and analgesics are appropriate for the species and research objectives. The consulting veterinarian is available to provide assistance with, or training in the proper administration and use of anesthetics.

**(c) Surgery and post surgical care.** Survival surgery: Survival surgery is defined as any surgery from which the animal recovers consciousness. Major surgery is defined as any surgical intervention that penetrates a body cavity or has the potential for producing a permanent handicap or alters a major organ system in an animal that is expected to recover. Minor surgery is any operative procedure in which only skin or mucous membrane is incised (e.g. vascular cut down for catheter placement or implanting pumps or other implant in the subcutaneous tissue). Also included are procedures involving biopsies or placement of probes or catheters requiring entry into a body cavity through a needle or trocar in combination with a minor surgical procedure.

Major surgical procedures on mammals other than rodents must be conducted in surgical facilities intended for that purpose, using aseptic techniques. These techniques include wearing sterile surgical gloves, gowns, caps and facemasks; using sterile supplies and instruments; and maintaining an aseptically prepared surgical field.

Minor surgical procedures on mammals other than rodents may be preformed in a suitably located and equipped area. Appropriate aseptic techniques for these procedures includes a clean uncluttered work area, preparation of the surgical site including clipping of the hair, disinfections of the skin, and draping of the surgical site with sterile drapes; the use of sterile supplies and instruments; and the use of sterile gloves and a surgical mask by the individual performing the surgery.

Animals should be fasted for 12 hours prior to anesthesia and surgery to prevent vomiting, aspiration, and problems associated with a distended intestinal tract. Post-surgical care should include observation of the animal to ensure uneventful recovery from anesthesia and surgery. The animal must be monitored and may be returned to its cage only when protective reflexes have returned and the animal regains sternal recumbence, is swallowing, and capable of holding its head up. The animal should be kept warm and dry; fluids, analgesics and antibiotics administered as required. Surgical wounds should be kept clean, and bandages or wound dressings changed as frequently as necessary to keep them clean and dry.

Subsequent care may include supportive fluids, analgesics, and other drugs as required; monitoring of the animal to include daily body temperatures; clinical observations for signs of pain, abnormal behavior, appetite and excretory functions, providing adequate care of surgical incisions and maintaining appropriate medical records.

**Non-survival surgery:** Non-survival surgery is defined as any surgery in which the animal will not regain consciousness. Such procedures may be performed in a suitably located and equipped area

**(d) Euthanasia:** The Guide defines euthanasia as the act of killing animals by methods that induce rapid unconsciousness and death without pain or distress. The American Veterinary Medical Association Panel on Euthanasia has established euthanasia guidelines. Consultation of the current AVMA Panel on Euthanasia (2000) is required prior to protocol submission and approval. Unless a deviation is justified for scientific or medical reasons, methods should be consistent with the most current AVMA Panel on Euthanasia. Personnel properly trained in the procedures and for the species in question should carry out euthanasia. Personnel who can recognize cessation of vital signs in the species being euthanized should confirm death. Measures should also be taken to ensure that euthanasia is performed in a way that minimizes reactions among other animals that may be present.

## **I. SELECTION OF ANIMALS AND ANIMAL MODELS FOR USE IN RESEARCH AND TEACHING**

**1. General Considerations:** The use of animals in research and instruction generally occurs in one of two contexts: (a) the animals serve as model systems for the investigation of processes; which cannot be studied directly, or (b) the animals are studied to investigate a problem specific to the particular species. Most biomedical research fall in the former category and examples of the latter include field studies of behavioral and ecological adaptations of animal species, studies of taxonomic relationships among species, or captive studies of physiological or behavioral processes which form an important part of the adaptations of one or more species.

**2. Selecting a Model for Research:** Selection of an appropriate model must be based on extensive familiarity with the problem or system to be studied, so that the researcher can determine the range of biological responses necessary to the experimental design. Once this familiarity is developed, either by extensive review of the literature or from pilot studies, the researcher can proceed to select an appropriate model, whether a whole animal, an animal-derived or a non-animal model.

An animal model is a living organism in which normal biological processes can be studied, or in which a spontaneous or induced pathological process can be studied. To be effective, the process being modeled should closely resemble the analogous process in humans or some other species in one or more ways. Some important criteria of animal models are: relevance to the problem being studied; the accuracy with which the model reflects all or some important aspects of the problem; the model's predictability; and the model's availability to researchers. In addition, general species characteristics such as life history parameters, behavior and diet can be as important as physiological parameters in species choice.

**3. Alternatives to the Use of Animals in research:** Critics of animal research have suggested that most, if not all, uses of animals in research and education could be eliminated by the use of alternatives such as tissue culture or computer models. In 1986, the US Congress' Office of Technology Assessment produced an extensive study of the use of animal models and options for alternatives to animal use in research, education and testing. The general conclusion of the report was that the very nature of research in many areas makes it highly unlikely that reasonable alternatives to animal use will be developed. In some areas, however, alternatives exist or appear feasible to develop, and in some cases such alternatives may be more economical than the use of whole animals. Alternatives can be divided into four broad categories:

(a) Modification of existing use of animals. It is sometimes possible to substitute one species of animal for another. For example, invertebrates may be substituted for vertebrates, or laboratory species (egg. rats and mice) may be substituted for companion animals such as dogs or cats.

(b) Use of animal-derived material in place of whole animals. Although critics of animal research see alternatives as a way to eliminate animal use in research, many suggested replacements consist of animal-derived material. Examples of use of animal-derived material include cell, tissue and organ culture. Working with culture specimens avoids potentially painful manipulations of live animals, although these materials must originate in a living animal.

(c) Replacement of living systems with non-living one. In some instances it is possible to use physical or chemical models to study living systems. The study of many biochemical mechanisms, for example, makes use of materials isolated from organs or tissues. Some physical and mechanical models have been developed mainly for educational uses.

(d) Use of mathematical or computer models. Whenever a function or a relationship within a living system can be described mathematically, the possibility exists for developing a mathematical model. Scientists have long employed such models in biological and medical research because they provide the opportunity to vary the parameters involved and to predict what effects different parameters will have on the system. Based on information derived from animal studies, computer models have been developed to analyze relationships within and between living systems. Biomedical applications of computer models include aspects of kidney, cardiac and lung functions, sensory physiology, neurophysiology and developmental biology.

The industry has been urged to provide additional time and funds specifically to develop alternatives to animal use in research, testing and education. Recent legislation has included requirements that alternatives be considered.

## **J. ETHICAL AND HUMANE CONSIDERATIONS IN THE USE OF ANIMALS FOR RESEARCH AND TEACHING**

Scientists, theologians, philosophers and the lay public have debated questions concerning the ethics of animal use in research and teaching since the use of animals for such purposes began. Even when consideration is restricted to recent discussions of the issue, there are almost as many ethical positions as there are writers on the subject. The prevailing view is that animals can and should be used in research that benefits humans and the ecosystem, and that there is no acceptable alternative to such use. Implicit in this view is the exception that research animals will be treated humanely. Following the prevailing view, laws and regulations at many levels require the humane treatment of

animals used in research and teaching. Essential elements of humane treatment include: that animals be housed in clean, comfortable quarters, that they are fed an adequate diet, and that they are maintained in good health. Most conscientious researchers and the agencies that regulate animal care accept that an animal's well being is dependent on its mental state as well as its physical state. It is also recognized, however that it is much more difficult to establish objective guidelines for the assessment of the psychological well being of an animal than it is to monitor physical well being.

## **APPENDIX**

- A. Animal Care Regulatory Agencies**
- B. Preparation of the Animal Use Protocol**
- C. Code of Ethics for the Use of Animals in Research**
- D. ISU Animal Facility General Policy**

# ANIMAL CARE REGULATORY AGENCIES

## A. Federal Agencies, Laws regulations and Policies

### 1. US Department of Agriculture (USDA)

The Animal Welfare Act is administered by the Animal Care division of Plant Inspection Service (APHIS), which is under the auspices of the USDA (<http://www.aphis.usda.gov/ac/>). The Animal Welfare act establishes animal care standards for many laboratory animal species. Compliance requirements include submission of any annual census of total numbers of regulated species used in research and teaching as well as assurance of compliance with APHIS policies (website).

### 2. US Department of Health and Human Services

#### (a) National Institutes of Health

NIH is a major funding source for biomedical research (<http://www.nih.gov/>). To receive NIH awards for projects involving animals, an institution must have an approved animal welfare assurance statement of file with NIH. This statement commits the institution to following the Animal Welfare Act, the NRC Guide for the Care and Use of Laboratory Animals (The Guide), the US Governments Principles for Use of Animals, The US Public Health Service's Policy on Humane Care and Use of Laboratory Animals and other laws and regulations. The Assurance statement describes the mechanism used by the institution to determine compliance with laws and standards, and it identifies the membership and responsibilities of the institution's animal care committee.

#### (b) US Public Health Service Policy

Public health Service Policy requires all institutions, which receive PHS funds for research, research training or biological testing involving animals to establish and maintain a program that ensures appropriate care and use of research animals. Public Health Service Policy is administered by the Office of Laboratory Animal Welfare (<http://www.grants.nih.gov/grants/olaw/olaw.htm>) a division of NIH Office of Extramural Research. Institutions with PHS funding for animal research must have an approved assurance statement of file with OLAW. PHS policy requires institutions to use The Guide (see below) as the basis for developing and implementing animal care and use programs. To qualify for PHS funding of animal research, institutions must either be accredited by AAALAC or must comply with the PHS requirements for self-evaluation. In the latter case all of the institution's animal facilities and programs must be evaluated semi-annually by the institutional animal care and use committee. These evaluations are reported to OLAW and any deviations from The Guide recommendations must be noted and a plan and schedule for correcting the deficiencies must be provided and adhered to. ISU has PHS approval for its animal care and use program under this self-evaluation option. If an institution fails to comply with PHS, policy funds for animal research may be withdrawn.

(c) Guide for the Care and Use of Laboratory Animals (The Guide)

The Guide is prepared by the Institute of Laboratory Animal Resources (ILAR), National Research Council and the Commission on Life Sciences. The Guide is supported by NIH, the Department of Agriculture, and the Department of Veterans Affairs and was published by the National Academy Press (<http://books.nap.edu/books/0309053773/html/index.html>) The Guide was first published in 1963 and has since been revised several times. The most recent edition of the Guide was published in 1996. The Guide's purpose is to assist institutions in caring for and using laboratory animals in ways judged to be professional and humanely appropriate. The recommendations are based on published data, scientific principles, expert opinion, and experience with methods and practices that have proven to be consistent with high quality humane animal care and use. The standards set forth in the Guide form the basis of accreditation of animal care and use programs by AAALAC and for determining whether programs meet PHS policy requirements.

(b) Centers for Disease Control (CDC)

The CDC in Atlanta regulates the importation of all nonhuman primates into the US. Only organizations or individuals registered with the CDC may import nonhuman primates or receive them within a 31-day period of their arrival in the US. Importers are registered for a two-year period and importers must comply with CDC record keeping and reported requirements

(c) Food and Drug Administration (FDA)

The FDA is involved in the regulation of animal care because it sets standards for the testing of foods, drugs, and other chemicals, which will be used by or come into contact with humans. Federal regulations require animal testing for toxicity of carcinogenicity before these substances are approved for human use. The FDA established the Good Laboratory Practices (GLP) regulations under which this testing is done and it specifies that adequate diagnosis, treatment and control of disease be provided for animals used for testing.

(d) Department of the Interior

The Fish and Wildlife Service is the federal agency charged with enforcing the Endangered Species Act and the Convention on International trade in Endangered Species (CITES). These regulations designate endangered or threatened species and, with limited exceptions, prohibit their use. Institutions, which seek to use species covered by the Act for Scientific Research, must obtain a permit from the Federal Wildlife Permit Office. If an institution needs to import an endangered or threatened species, appropriate export and import documents must be obtained in advance as required by CITES.

## **B. Independent National Regulatory Bodies and Professional Groups**

**1. Association for the Assessment and Accreditation of Laboratory Animal Care International (AAALAC)**(<http://www.aaalac.org/index.html>): AAALAC is a nonprofit organization that was established by scientific and educational organizations to ensure high standards of laboratory animal care and use through a system of voluntary accreditation. Humane treatment of laboratory animals, protection of personnel from hazards associated with the use of animals and control of variables, which may adversely affect research, are among the principle objectives of the accreditation program.

When an institution applies for accreditation, laboratory animal science professionals who evaluate the animal care and use program using the standards of The Guide visit it. The Council on Accreditation grants accreditation after a favorable review of the site visit report. The NIH accepts AAALAC accreditation as assurance that an institution is complying with PHS policy.

### **2. American Association of Laboratory Animal Science (AALAS)**

(<http://www.aalas.org>) This organization was founded in 1950 by a group of veterinarians who wanted to exchange information on laboratory animal care. Initially the panel was mainly concerned with colony management, design of facilities and equipment and the description of common diseases. As animal care professionals became increasingly sophisticated, reports of original research on animal care were also presented at panel meetings. Development of standards was an important early activity of the panel and the first edition of the Guide was written under its auspices. In 1967 the Animal Care Panel changed its name to AALAS and as such it has been active in developing training and certification programs for all animal care personnel. AALAS publishes a scientific journal, *Contemporary Topics in Laboratory Animal Science*.

### **3. American College of Laboratory Animal Medicine (ACLAM)**

(<http://www.aclam.org/>): Laboratory Animal Medicine was first recognized as a specialty field of veterinary medicine in 1957 by the AVMA. ACLAM came into being shortly thereafter, in 1961. Its role is to encourage education and research in laboratory animal medicine. It also established standards of training and experience for veterinarians and recognized qualified specialists in laboratory animal medicine.

### **4. Institute of Laboratory Animal Research (ILAR)**

([http://dels.nas.edu/ilar\\_n/ilarhome/](http://dels.nas.edu/ilar_n/ilarhome/)): Over the years ILAR has made important contributions to the development of training guidelines for laboratory animal medicine and in surveying animal facilities in the US. ILAR committees prepare various publications as previously discussed. ILAR also:

- Prepares authoritative reports on subjects of importance to the animal care and use community
- Serves as a clearinghouse for information about animal resources
- Develops and makes available scientific and technical information on laboratory animals and other biological research resources to
  - \_\_\_ The scientific community
  - \_\_\_ Institutional Animal Care and Use Committees (IACUCs)
  - \_\_\_ The federal government
  - \_\_\_ Science educators and students
  - \_\_\_ The public

# GUIDELINE FOR PREPARATION OF PROTOCOLS FOR REVIEW

## Idaho State University

### Animal Welfare Committee

State and federal regulations as well as AAALAC, the accreditation body, require that the Animal Welfare Committee review all research and teaching projects using animals. This review process begins with the Animal Use Protocol. Protocol forms are available electronically on the Animal Care Facility website – (<http://www.isu.edu/anmlcare/>). If approved, the completed form will be held on file as a current protocol until a project is terminated, a course is discontinued, or until the use is revised and a new protocol is obtained. The effective time period is one year. Protocols must be renewed and updated yearly.

Instructions concerning submission of a protocol are available on the above website. The protocol form must be completed and signed by the principle investigator or instructor of a course. Forms submitted with inadequate information will be returned for additional data. Protocols must be submitted 7 days prior to Committee meetings. A signed copy of the protocol must be on file with the Animal Facility Manager.

To assist investigators when completing a protocol, a sample protocol form is available in the help section on the website. The campus veterinarian also is available as a designated reviewer to assist in any aspect of protocol preparation. Although this does not assure protocol approval, it may facilitate the approval.

#### Submission of New Protocol

1. Download the appropriate protocol form (See below).
2. Complete the protocol form. (See help pages), use the current date (e.g. 08-10-05) as the initial protocol number.
3. Save protocol using the following format:

Animal Research: ARP\_PIName\_(Current Date)  
Field Research: FRP\_PIName\_(Current Date)  
Teaching: TP\_PIName\_(Current Date)

4. Send protocol as an email attachment to [anmlcare@isu.edu](mailto:anmlcare@isu.edu)
5. Download Occupational Health and Safety Information Form, and Code of Ethics form (see below), read, sign, and return a copy to the Animal Facility.
6. A protocol number will be assigned once the Institutional Animal Care and Use Committee has approved the proposal. The protocol becomes active after a signed hard copy with appropriate Occupational Health Forms, Personnel statements, and Code of Ethics has been submitted to the Animal Facility.

#### Submission of Renewal or Continuation:

1. Protocols submitted for renewal or continuation must be transferred to a new protocol form (revised 4/15/05) (See below).
2. Use current protocol number. A new number will be assigned once the renewal or continuation has been approved.

3. Provide new literature search (include data base, date of search, dates searched, key words, and brief written dialog of results). Include written assurance that this work is not unnecessary duplication of previous work AND no alternatives to animal use are available or acceptable to accomplish the goals of the project.
4. Provide any information concerning changes to the protocol including drugs, dosages, procedural changes, animal numbers, personnel, etc. Provide justification for these changes.
5. Provide updated information on Occupational Health and Safety concerning any accidents or reportable incidents.
6. Save protocol using the following format:

Animal Research:   ARP\_PIName\_ProtocolNumber  
Field Research:     FRP\_PIName\_ProtocolNumber  
Teaching:            TP\_PIName\_ProtocolNumber

7. Send protocol as an email attachment to [anmlcare@isu.edu](mailto:anmlcare@isu.edu)
8. Once the proposal has been approved by the Institutional Animal Care and Use Committee a protocol number will be assigned. The protocol becomes active after a signed hard copy with appropriate Occupational Health Forms has been submitted to the Animal Facility.

**Forms: Revised 4/15/05**

**Animal Research Protocol**

[MS Word](#) | [Word Perfect](#) | [Help](#)

**Field Research Protocol**

[MS Word](#) | [Word Perfect](#) | [Help](#)

**Teaching Protocol**

[MS Word](#) | [Word Perfect](#) | [Help](#)

**Occupational Health and Safety**

[Occupational Health Information Form](#)

**Personnel Statement**

[Personnel Statement](#)

**Code of ethics**

[Code of Ethics form](#)

**Word Perfect users: Try using Internet Explorer if you are unable to access the Wordperfect protocols.**

# IDAHO STATE UNIVERSITY CODE OF ETHICS FOR THE USE OF VERTEBRATES IN RESEARCH

## PREAMBLE

The purpose of this document is to establish ethical principles concerning the use of vertebrates for research, teaching or testing at Idaho State University.

These principles are to serve as guidelines to all persons using animals for these purposes.

Since all vertebrates have sensory responses, it is essential the animal experimentation for research purposes be conducted in a humane manner, that is, with compassion and concern for the well-being of animals as sentient beings.

In studies involving animals there must be a reasonable expectation that such studies will contribute to the advancement of knowledge which may eventually help to protect and improve the health and welfare of either mankind or animals.

This statement accepts and incorporates into the code the NATIONAL RESEARCH COUNCIL GUIDE FOR THE CARE AND USE OF LABORATORY ANIMALS.

1. Investigators have an obligation to insure that experimental animals are not subjected to unnecessary pain, distress or trauma.
2. If pain, distress, or trauma are necessary concomitants of the experimental study, then these should be minimized both in intensity and duration.
3. An animal that is observed to be in a state of severe pain, distress or trauma, which cannot be alleviated should be immediately destroyed, using humane acceptable method for euthanasia which must include, as an initial action, rapid production of unconsciousness.
4. Studies such as toxicological and biological testing, cancer research and infectious disease investigation may require continuation until the death of the animal. This requirement, in the face of distinct and irreversible signs that toxicity, infectious processes or tumor growth have been reached and are causing severe pain, distress or trauma, would clearly violate the principles outlined above. In such cases, alternative end points should be sought which would not only satisfy the objectives of the study, but also give humane consideration to the animals.
5. Investigators should be especially cautious with tests that may cause pain, distress or trauma. Acceptance should not be based on cost and/or ease of application.
6. Experiments involving starvation and fluid deprivation should be as short-term as possible and have strong scientific justification.
7. Prolonged physical restraint procedures that result in distress or ill effects should only be used after alternative procedures, possible telemetry, have been considered and found inadequate.
8. Investigators must be especially prudent in their use of the following procedures.
  - a) Experiments involving withholding pre or post-operative pain relieving medication.
  - b) Paralyzing and immobilizing experiments where there is no reduction in the sensation or pain.
  - c) Electric shock as negative reinforcement.
  - d) Extreme environmental conditions such as low or high temperatures, high humidity, modified atmospheres, etc.
9. Certain experimental procedures are known to inflict excessive pain and are thus unacceptable. These include:
  - a) Utilization of muscle relaxants or paralytics (curare and curare-like) alone, without anesthetics, during surgical procedures.
  - b) Traumatizing procedures involving crushing, striking, or beating unanesthetized animals or animals allowed to recover from anesthesia.

I will accept and abide by the ethical principles of this document.

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Printed Name

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Date

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Signature

**Idaho State University**  
**ANIMAL WELFARE DEPARTMENT**

**GENERAL POLICY**

The Animal Care Facility will provide services including labor relating to and maintenance of all animals used for teaching and research at I.S.U.

These services will be in compliance with the following federal and state regulations: The Federal Welfare Act of 1966 and the subsequent amendments thereof, NRC Guide for the Care and Use of Laboratory and any subsequent revisions.

**The Animal Facility Manager (AFM) shall:**

1. Establish and ensure that all users of the Animal Care Facility for animal care in teaching and experimentation set by federal and state agencies follow the guiding principles.
2. Maintain liaison with other care groups outside University to the extent that needs arise.
3. Aid in providing veterinary and diagnostic services on request of Investigator.
4. Improve and standardize animal care.
5. Supervise animal care in all areas under his jurisdiction.
6. Initiate and coordinate the training of animal care personnel.
7. Ensure that facilities and personnel are adequate to provide proper and humane care of all animals under direct supervision of the Animal Facility during and after experimental procedures or teaching exercises.
8. Maintain current information on costs and supplies of laboratory animals and equipment.
9. Ensure that all experimental animals are procured in a proper and legal manner.
10. Maintain current information on costs and supplies of laboratory animals and equipment.
11. Insure that all animals will be fed food daily that meets or exceeds standards for good nutrition for laboratory animals. If any special diets are required, request must be handled through the AFM.
12. Insure that all animals will be given fresh water daily.
13. Insure that all feeding and watering devices will be cleaned as needed (minimum once weekly).
14. Insure that cages will be cleaned as often as needed, but no longer than two weeks between changes, cleaning intervals must be based on individual species needs.
15. Insure that all animals leaving the facilities for use in other areas will be properly housed in cleaned cages.

**User Regulations:**

1. Tours and visits will be discouraged. When visits are required, requests will be referred to the AFM or Chairman of the Animal Welfare Committee. Visits will be conducted during normal working hours only. No cameras are allowed unless cleared through the AFM.
2. In addition to the University regulations, which prohibit pets on campus, no unauthorized animals will be allowed in the facility area.
3. All animals will be housed and cared for properly at all times. Special diets or watering will be administered by the User (unless specific instructions are made in writing to the AFM).

4. Animal Orders: Animals may not be shipped to this campus without first consulting the AFM.
  - a) Special requirements for housing, feeding, watering, etc., should be detailed (preferably in writing) at the time you place your order.
  - b) The interval between ordering and receiving species of animals varies considerably. Before proceeding with an experiment, please consult with the AFM to determine the lead-time required for you particular order. This will alert the Animal Care Facility to your space and caging needs.
  - c) You will be notified by phone when animals have arrived. Unless otherwise requested, they will automatically be housed for you in available space within the facility. You should then check your animals for compliance with your order. Notify the AFM immediately of any problems.
  - d) Oral orders for requests from Users will be the direct responsibility of the User and not Animal Care Facility personnel and should be given only to supervisory personnel. Oral orders should be kept to a minimum.
5. All cages should be properly identified by number of animals, species, sex, and User's name. It is the responsibility of the User to label his own animals or to verify the Animal Care Facility label.
6. Inspection reports will be completed daily by Animal Care Facility personnel and abnormalities will be reported to the AFM. However, despite this service, it remains the duty of User to monitor and check his animals.
7. All animal carcasses should be placed in double plastic bags, identified by name of User, and placed in freezer.
8. In the event that an animal becomes seriously ill or injured, the AFM will take immediate steps to stabilize the animal's condition. Every effort will be made to contact the Primary Investigator to discuss further therapy. If the Primary Investigator cannot be reached, the AFM will continue treatment under his own judgment.
9. Injuries to animals will be reported to the AFM immediately. Do not attempt to handle an injured animal. All Users unfamiliar with the proper handling techniques are required to get assistance from qualified Animal Care Facility personnel.
10. Each User is responsible for the humane care and supervision of experiments involving his animals and for all procedures conducted by members of his research team including post-operative care related to the experiment. All such studies must be conducted within the guidelines set forth by federal and state regulation.
11. Animal experiments resulting in pain, distress or trauma to the animal must be conducted according to the ISU Code of Ethics for the Users of Vertebrates in Research.
12. Users of infectious material in experiments involving research animals must notify the AFM prior to their use.
13. Only personnel designated by the AFM will operate equipment such as sterilizers, washers, etc.
14. Users anticipating use of laboratory research animals should contact the AFM to ascertain housing needs.
15. Complaints should be channeled through the Chairman of the Animal Welfare Committee.