ANIMAL CARE & USE MANUAL

Missouri State University (MSU) and its Institutional Animal Care & Use Committee (IACUC) is committed to an animal care and use program of the highest quality. Missouri State recognizes its responsibilities involving the care and use of animals including, but not limited to: the humane care and use of animals used in educational and research programs at MSU, the need to educate faculty, staff, and students of the importance of humane care and use of these animals, and compliance with all applicable federal laws and implementing regulations.

TABLE OF CONTENTS

MSU ANIMAL CARE & USE MANUAL

Title:

Animal Care & Use Policy
Revision to Op4.01-1

Policy Statement:

Dedication to the humane care of animals used in research and teaching is part of Missouri State University's commitment to ethical conduct of research. Missouri State University will conduct matters related to animal care and use in compliance with federal and state laws and implementing regulations including, but not limited to, the Animal Welfare Act (AWA), the Public Health Service Policy on Humane Care and Use of Laboratory Animals (PHS Policy), and principles set forth in the *Guide for the Care & Use of Laboratory Animals* (*Guide*). Missouri State University will also assure that the University's faculty, staff, and students understand the importance of humane care and use of animals and the University will implement practices to prevent injury and illness related to the care and use of animals.

The President will appoint an Institutional Animal Care and Use Committee (IACUC) that has the authority to develop and implement standard operating procedures (SOP) to assure humane care and use of animals compliant with this policy and applicable laws. The President will also appoint an Institutional Official (IO) to have University system-wide responsibility for oversight of the implementation of this policy. The functions of the IACUC mandated by the AWA, PHS Policy, and the Guide include, but are not limited to:

- Semiannual review of the institutional program for animal care and use;
- Semiannual inspection of animal facilities and animal-study areas;
- Submission of reports of the semiannual evaluations to the IO;
- Review and approve, require modifications in (to secure approval) or withhold approval of those components of activities related to the care and use of animals;
- Make recommendations to the President, IO, or other designee regarding any aspect of the animal care program, facilities, or personnel training;
- Suspension of any animal care and use activity that does not comply with standards and approved protocols; and
- Review of concerns involving the care and use of animals at Missouri State.

All research and educational activities in the University system involving the care and use of animals are to be approved by the IACUC before implementation.

The University will maintain an Occupational Health and Safety Program (OHSP) that will provide persons covered by this Policy a safe work place. Persons covered by this Policy will undergo an assessment of the potential risks and hazards associated with their involvement with animal care and use, an assessment of the medical risks, and will receive advice and training in procedures and protective measures to reduce these risks. Injury and illness related to animal care and use will be covered in accordance with Worker's Compensation and personal health insurance as covered in other University policies.

The University shall provide training for all personnel involved in care and use of animals. Persons are not permitted to be involved in projects involving the care and use of animals until they have been certified as completing appropriate training.

The Missouri State University Office of Research Administration will maintain all records necessary and file reports as required to be in compliance with applicable federal law and implementing regulations.

Missouri State University's IACUC will develop and maintain SOPs described elsewhere to enable implementation of the University policy described above.

Reason or Purpose for Policy:

Missouri State University recognizes its responsibilities in conducting educational and research programs involving the care and use of animals. These responsibilities include humane care and use of animals used in educational and research programs at Missouri State, the need to educate faculty, staff and students of the importance of humane care and use of these animals, and compliance with applicable federal laws and implementing regulations.

Entities Affected by this Policy:

This policy is applicable to all faculty, staff, students, visiting researchers and educators, and volunteers that will be involved with animal care and use, as well as faculty, staff, and students conducting educational and research projects involving animal care and use at off-campus locations.

Line of Authority:

Responsible Administrator and Office:

President, Office of the President

Contact Person in that Office:

Director of Research Compliance

MISSOURI STATE UNIVERSITY ANIMAL CARE & USE STANDARD OPERATING PROCEDURES (SOPs)

I. Policy & Procedures

The Animal Care & Use Policy is approved by the University's Administrative Council. The purpose of the Animal Care & Use Policy and these Procedures is to cause the University's use of animals in its educational and research facilities to be fully compliant with applicable law and regulations, in both letter and spirit. The SOPs described herein are approved by the Institutional Animal Care and Use Committee (IACUC) and by the Institutional Official (IO) to enable implementation of the Animal Care & Use Policy.

II. Regulatory Guidance

Missouri State University (MSU) follows the guidelines and regulations including, but not limited to: the Animal Welfare Act (AWA), the Public Health Service Policy on Humane Care and Use of Laboratory Animals (PHS Policy), and principles set forth in the *Guide for the Care & Use of Laboratory Animals* (*Guide*).

III. Institutional Official (IO)

The IO is designated by the President as the senior official having the authority to administer the program of animal care and use, and to make commitments on behalf of the institution to ensure compliance with all applicable regulations. The IO relies on the IACUC to oversee the program, to develop plans to correct program deficiencies, to address concerns that may arise regarding the institution's use of animals, and to make recommendations with regard to the program. Through semiannual reports to the IO and open channels of communication, the IACUC informs the IO of the status of the program and alerts the IO to potential non-compliance. Documents submitted to federal agencies, such as an Animal Welfare Assurance, annual report, or reports of non-compliance are submitted by the IACUC, through the IO, and are signed by the IO as the individual responsible for animal welfare at the institution.

Missouri State University's designated IO is Dr. Tamera Jahnke, Interim Provost.

IV. Institutional Animal Care and Use Committee (IACUC)

A. Membership

Missouri State University's IACUC is a committee comprised of a diverse group of veterinarians, scientists from multiple disciplines who use animals in research, non-scientists, and at least one representative of the surrounding community. The IO appoints IACUC members. In accordance with federal regulation, the membership of the MSU IACUC includes: 1) at least five members; 2) at least one veterinarian with training or experience in laboratory animal science and medicine, who has direct or delegated authority and responsibility for activities involving animals at the institution; 3) at least one practicing scientist experienced in research with animals; 4) at least one member whose primary concerns are in a non-scientific area (e.g., ethicist, lawyer, member of the clergy); and 5) at least one member who is not affiliated with the institution other than as a member of the IACUC.

B. IACUC Responsibilities

- Review at least once every six months the Institution's program for humane are and use of animals, using the *Guide* as a basis for evaluation.

- Inspect at least once every 6 months all of the Institution's animal facilities, including satellite facilities and animal surgical sites, using the *Guide* as a basis for evaluation.
- Prepare reports of the IACUC evaluations according to PHS Policy IV.B.3. and submit the reports to the IO.
- Review concerns involving the care and use of animals at the Institution.
- Make written recommendations to the IO regarding any aspect of the Institution's animal program, facilities, or personnel training.
- Review and approve, require modifications in (to secure approval), or withhold approval of PHS-supposed activities related to the care and use of animals according to PHS Policy IV. C.1-3.
- Review and approve, require modifications in (to secure approval), or withhold approval of proposed significant changes regarding the use of animals in ongoing activities according to PHS Policy IV.C.
- Notify investigators and the Institution in writing of its decision to approve or withhold approval of those activities related to the care and use of animals, or of modifications required to secure IACUC approval according to PHS Policy IV.C.4.
- Conduct continuing review of each previously approved, ongoing activity covered by PHS Policy at appropriate intervals as determined by the IACUC, including a complete review at least once every 3 years according to PHS Policy IV.V.1-5.
- Be authorized to suspend an activity involving animals according to PHS Policy IV.C.6.
- Serve as a liaison between the MSU animal research community and the public for all matters involving animal research and welfare.

V. Office of Research Administration (ORA)

The ORA assists the IO in administering the SOP and assists the IACUC in fulfilling its responsibilities. The ORA also coordinates the OHSP and maintains records for the IACUC.

The ORA may not set up a research account for externally funded projects unless IACUC approval of any project involving animals has been obtained. If an IACUC approval notice is not submitted at the same time as a research proposal, research may be delayed until IACUC approval is obtained. Please note many funding agencies have specific time requirements about receiving evidence of IACUC approval. The interval between award notification and funding release may be short which could interfere with the committee's ability to complete protocol review within the given time constraints. The IACUC typically meets once each month. The IACUC must still completely review each protocol and may require modifications for approval. If the modifications require time to be accomplished, they could impact the timing of an award.

All recommendations regarding aspects of MSU's animal program will be drafted by the ORA, with the assistance of the IACUC Chair. Once drafted, the document(s) will be distributed to the IACUC members for review and approval. After the majority of members have approved the document(s), it will be delivered to the IO. Once approved, the necessary changes and updates will be included in the Animal Care and Use Manual/Veterinary Care Program.

The ORA will provide animal care services. Animal care services provided by the ORA are intended to provide the following benefits:

- Provide consistent animal care for all campus units
- Provide affordable ways for PIs to use joint resources they may not be able to afford individually
- Monitor animal care expenditures more accurately

- Eliminate bias between researchers, space usage, and animal compliance

In collaboration with the applicable colleges, the ORA will provide the following services to the MSU animal research community:

- Daily animal husbandry for Centrally Managed facilities
- Veterinary care for MSU animals
- Technical services for researchers, such as breeding colony management
- Training in animal research procedures and techniques
- Operation and management of University vivariums
- Assurance of compliance with regulations, laws, and policies regarding animal care and use and health and safety issues relating to animal use

VI. Principal Investigator (PI) Responsibilities

The PI shares, with the IACUC, the responsibility for the ethical decisions made regarding the care and use of animals. However, he/she is ultimately held accountable for the welfare of all animals under his/her care. By taking on this responsibility, the PI assures the fulfillment of the institutional commitment to the values stated in the state, federal, and University regulations and policies.

A. Familiarity with relevant regulations

Principal Investigators are expected to ensure research is being conducted in accord with current rules and regulations established by federal agencies and by MSU.

B. Animal welfare

1. Principal Investigators are expected to ensure all housing and husbandry for animals adequately meets the welfare needs of the species; resources such as, but not limited to, the USDA AWA and *Guide* should be followed.
    a. In some cases, the University Animal Facilities Manager (UAFM) may be assigned this responsibility. However, PIs should still be knowledgeable on the current welfare issues and routinely check to assure animal needs are being met.

2. Principal Investigators must notify the ORA prior to animal acquisition and include details such as: source of animals, what animal species will be arriving, how many of each animal species will arrive, and where animals will be housed.

C. Documentation/Filing of appropriate paperwork

1. Principal Investigators are expected to ensure paperwork for approved animal activities are up-to-date (e.g., sending in amendments (when applicable), filling out annual reviews, and conducting animal activities during approved timeframes).

2. Principal Investigators are expected to ensure required animal health records, record logs, etc. are filled out at the time of use and are placed in easily accessible areas for inspections.

3. The PI must notify the ORA of any adverse events (i.e., any unexpected event usually not according to protocol) (e.g., death, sickness, injury, or unfavorable response to experimental procedures) within 24 hours of occurrence. Information must include: where animals are housed, what animals are affected, and disposition of animals.

4. The PI must notify the ORA of any non-university associated veterinary use within 24 hours. Information must include: what veterinarian was used, contact information, and what treatments were conducted.

5. The PI must provide a copy of current wildlife collecting permits and annual reports of animals collected.

D. Training of personnel

Principal Investigators are expected to provide his/her staff and students with laboratory-specific training on particular hazards associated with their activities, as well as procedures and equipment to be used to reduce risks (e.g. personal protective equipment). In some cases, the ORA personnel may assist and provide PI's, staff, and students with hands-on training.

VII. Animal Use Procedures

A. Live Animal Activities Conducted at MSU

Research and teaching activities that involve the utilization of live, vertebrate animals require IACUC approval. Principal Investigators must submit activities to the IACUC for review and approval prior to starting any such activities. Procedures for submitting are detailed in *Section VIII. Application Procedures, Reviews, & Results.*

B. *Live Animal Activities Conducted at other Institutions*

Research and teaching activities that involve the utilization of live, vertebrate animals must be approved by an IACUC, regardless of where the activities occur. In the event a PI or student chooses to conduct activities at another institution, the following procedures must be followed.

1. Institutions with an Animal Care and Use Committee

   Individuals who choose to conduct any activities involving animals at institutions with an Animal Care and Use Committee must notify MSU's ORA prior to the start of the project as well as furnish documentation of relevant approvals. The ORA will review the documentation and record acknowledgement of the other institution's responsibility for the project. Individuals are held responsible for completing the appropriate training, health screens, etc. detailed by the institution where work will be conducted. The ORA will report to the IACUC, projects that are being conducted at outside institutions.

2. Institutions without an Animal Care and Use Committee

   Individuals who choose to conduct any activities involving animals at institutions without an Animal Care and Use Committee must submit activities according to MSU's procedures detailed in *Section VIII. IACUC Application Procedures, Reviews, & Results.*

C. *Request for Waiver of IACUC Approval*

In some situations, activities may not need to follow the complete procedures for application and IACUC review and approval, detailed in *Section VIII. IACUC Application Procedures, Reviews, & Results*. However, it is the IACUC's responsibility to determine the need for review and approval, not the researcher(s) or individual(s) conducting the activity.

Examples of activities that MAY not need a full application and IACUC review and approval include:

- Observational Animal Use: Research that involves the observation of animals only; no manipulation of the animal or animal habitat or animal behavior
- Animal Specimen Use: Research that utilizes animal specimens (e.g., blood, feces, urine, tissues, secretions, cells, etc.)

Researchers or individuals that believe their activities may not need IACUC approval should complete a *Request for Waiver of IACUC Approval* form (found on the ORA website). Forms

should be sent to the ORA at least one month prior to start of a project in order to ensure timely review and proper notification if it is determined that further review or processes are required. No research or activities may be conducted until an official determination has been made. Individuals will receive an official, written response regarding the outcome of the determination. Individuals involved in activities that may not need IACUC approval may still be required to complete proper training and potential enrollment in the OHSP.

The IACUC has designated the ORA to receive and review *Request for Waiver of IACUC Approval* forms.The waiver can be decided by an IACUC administrator and the AV, progressing to full committee review if questions arise.

VIII. IACUC Application Procedures, Reviews, & Results

A. *Receipt & Pre-Review*

Protocols (including attachments and supplemental forms) must be submitted to ORA via email at IACUC@missouristate.edu or to a member of ORA. The most current version of the supplemental forms should be used and can be found on the ORA website.

Submissions must be sent two weeks prior to the IACUC meeting for proper pre-review. Meeting dates and deadlines can be found on the ORA website. Only submissions received two weeks prior to the IACUC meeting will be guaranteed review at the IACUC meeting. To assure timely approval, it is also recommended that researchers obtain any necessary veterinarian consultation or statistician review prior to the two-week deadline.

Once submissions are received, the ORA will notify the IACUC Chair and Veterinarian for pre-review. In consultation, the Chair, Veterinarian, and ORA personnel will determine if the submission requires significant revision or can be considered further. Once approved for further consideration, the ORA will distribute the submission to all members of the IACUC.

B. Types of Review

1. Full Committee Review (FCR)

Full Committee Review occurs during a convened meeting of a quorum of the IACUC members, and with a formal vote. Full IACUC review results in approval, a requirement for modifications (to secure approval), or withholding of approval. A majority vote of the members present at a convened meeting is required to approve, require modifications in (to secure approval), or withhold approval. When using the FCR method, polling each member individually in lieu of a convened quorum is not allowed.

2. Designated Member Review (DMR)

Designated Member Review is utilized only after all members have been provided the opportunity to call for a FCR by notifying the Chair or ORA. Members are given at least three business days to call for a FCR. If any member requests a FCR, then the FCR method will be used. If not, the IACUC Chair may appoint one or more appropriately qualified IACUC members to serve as the designated reviewer. Designated Member Review may result in approval, a requirement for modifications (to secure approval), or referral to the full committee for review. Designated Member Review may not result in withholding of approval. If more than one designated reviewer is appointed to a protocol, the reviewers must be unanimous in any decision. They must all review identical versions of the protocol and if modifications are requested by any one of the reviewers, then the other reviewers must be aware of and agree with modifications.

The MSU IACUC may conduct reviews by DMR subsequent to FCR. All IACUC members have agreed in advance in writing that the 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.

3. Expedited Protocol Review

All protocols are reviewed through the processes listed in *Section VIII. IACUC Application Procedures, Reviews, & Results*. Where special, time sensitive circumstances arise, I.e., seasonal availability of animals, grant funding deadlines, etc., the two-week pre-review submission deadline may be waived. However, protocols must still be reviewed by FCR or DMR.

4. Veterinary Verification and Consultation (VVC)

In accordance with approved IACUC policy (Missouri State University Animal Care and Use Manual) certain categories of significant changes described, below, may be handled administratively according to IACUC-reviewed and approved policies in consultation with the University Attending Veterinarian (AV). The Attending Veterinarian is not conducting Designated Member Review but is serving as a subject matter expert to verify that compliance with the IACUC-reviewed and -approved policy is appropriate for the animals in this circumstance. VVC consultation is recorded as a protocol amendment and reported to IACUC at each official meeting. The Attending Veterinarian may refer any request to the IACUC for review for any reason and must refer any request that does not meet the parameters of the IACUC-reviewed and -approved policies. These include changes in:

- anesthesia, analgesia, sedation, or experimental substances;
- euthanasia to any method approved in the AVMA Guidelines for the Euthanasia of Animals;
- duration, frequency, type, or number of procedures performed on an animal.
- an increase in previously approved animal numbers

C. Results of Review

The specific method of review for a given protocol is documented along with the outcome of the review in the IACUC meeting minutes and a copy of each meeting minutes are provided to the IO.

1. Approval

The IACUC is authorized to approve protocols using FCR or DMR. Once a protocol has been approved, the ORA will send out an approved protocol to the submitting PI.

2. Modifications Required

The IACUC may require modifications (to secure approval) during the initial review process. The IACUC Chair or ORA will communicate to the submitting PI through e-mail if modifications to secure approval are necessary. All revisions should be resubmitted through e-mail to IACUC@missouristate.edu . Once the final protocol has been approved by FCR or DMR, the ORA will send out an approved protocol to the submitting PI.

3. Tabled

If significant questions regarding animal use or protocol procedures arise during project review and cannot be resolved by the IACUC reviewers or during discussion at a meeting, the IACUC may choose to table the protocol until the next convened meeting, pending additional information from the principal investigator, or from an outside consultant or reviewer. Tabled protocols and their responses and/or modifications must be re-reviewed at a fully convened meeting.

4. No IACUC Approval Required
   Certain animal related activities may not require IACUC approval and oversight, such as when animal tissues or fluids used in a study are obtained from historical samples instead of from a live animal. However, it is IACUC's responsibility to determine the need for IACUC oversight, not the researcher. Therefore, all activities involving animals, animal specimens, etc., must be reviewed and approved by the IACUC prior to starting any such activities. In addition, while IACUC approval may not be required, certain training requirements and enrollment in the OHSP may still be required.

5. Withholding of Approval
   If the IACUC decides to withhold approval of an activity, the PI will receive written notification of the reasons for its decision and gives the PI an opportunity to respond in writing or the PI is asked to attend a convened meeting of the IACUC.

D. *Conflict of Interest (COI)*
   No IACUC member shall participate in the IACUC review or approval of an application or proposal in which the member of has a real or apparent conflict of interest except to provide information requested by the IACUC. The IACUC member with the real or apparent COI must recuse themselves from voting and may not contribute to the quorum requirements for the specific application.

IX. Amendments

Changes in ongoing, previously approved research or teaching activities involving animals may not be initiated without obtaining IACUC approval. The PI is responsible for submitting a request for prior approval of a modification prior to implementation. Amendments should be submitted using the procedures listed in *Section VIII. IACUC Application Procedures, Reviews, & Results*. The review procedures used for significant changes are the same as those stated in *Section VIII. IACUC Application Procedures, Reviews, & Results*. Examples of changes considered to be significant include changes:

- in the objectives of a study;
- from non-survival to survival surgery;
- resulting in greater pain, distress, or degree of invasiveness;
- in the species or in approximate number of animals used;
- in principal investigator;
- in anesthetic agent(s) or the use of withholding of analgesics;
- in the method of euthanasia;
- in the duration, frequency, or number of procedures performed on an animal;
- in housing and/or use of animal in a location that is not part of the animal program overseen by the IACUC; and
- that impact personnel safety.

Amendments that are not considered to be significant may be administratively approved by the IACUC Chair or the ORA. Changes that are considered to be not significant include:

- Date extension, not to exceed three years from original approval date.
    - Date extension must be reviewed by FCR or DMR if the original protocol had been designated for a certain approval period due to IACUC discussed stipulations (e.g., a pilot study having an original IACUC approval time period of 6 months due to the need for additional oversight).
- Changes in personnel other than the principal investigator
    - Personnel must be properly trained and qualified, enrolled in applicable occupational health and safety programs, and meet any other criteria as required by the IACUC

Veterinary Verification and Consultation (VVC)
Certain categories of significant changes described below, may be handled administratively in consultation with the University Attending Veterinarian (AV). The AV is not conducting Designated Member Review but is serving as a subject matter expert to verify that compliance with the IACUC reviewed and approved protocol is appropriate for the animals in this circumstance. VVC is recorded as a protocol amendment and reported to the IACUC at each official meeting. The AV may refer any request to the IACUC for review for any reason and must refer any request that does not meet the parameters of the IACUC review and approved policies. These include:

- Changes to anesthesia, analgesia, or sedation to referenced drugs and dosages for a given species listed. Examples may include:
    - A change in dosage, route, frequency, or duration within acceptable veterinary parameter.
    - Switching from one analgesic, anesthetic, or sedative agent to another.
- Changes in the dosage, timing or route of an experimental substance if the change will not increase the potential for animal pain or distress.
- Changes to experimental substances, including a change in test compound, dose, or route of administration as long as the changes do not result in a change in study objectives or greater pain, distress, or degree of invasiveness. (Note that the addition of a non-pharmaceutical grade drug requires additional justification and will not be authorized under this mechanism.)
- Changes in euthanasia to any method approved in the current AVMA Guidelines.
- Changes in duration, frequency, type, or number of approved procedures performed on an animal, as long as the change does not result in greater pain, distress, or degree of invasiveness.

X. Ongoing Activities

The IACUC will conduct continuing reviews of each previously approved, ongoing activity covered by PHS Policy at appropriate intervals as determined by the IACUC, including a complete review in accordance with the PHS Policy IV.C.1-4 at least once every three years. In accordance with USDA regulations, approved protocols covered by USDA regulations are reviewed annually. In year one and year two it is required that renewal applications be submitted to the IACUC for FCR or DMR. In year three, a de novo application is required and is handled in the same manner as a new protocol application.

A. Annual Reviews

The IACUC protocol approval date is used to determine the month in which the protocol is due for review. The PI is sent a reminder along with an annual review form via email approximately 30 days before the application needs to be reviewed. Upon receipt of the annual review to the ORA, a designee of the IACUC Chair reviews and makes recommendations for approval before the

expiration date. Principal Investigators may be asked to clarify or update certain information about the protocol.

If the PI fails to submit an annual review, or fails to respond to requests for additional information, the protocol approval will terminate on the expiration date. If a protocol expires, research may no longer be conducted under that protocol. Maintaining, acquiring or using animals under an expired protocol approval places the University out of compliance with federal regulations and guidelines.

B. Post-Approval Monitoring (PAM)

The purpose of a PAM program is to work with investigators to facilitate their animal research and to be proactive in identifying potential problems in compliance with active IACUC approved protocols, with an emphasis on education and training.

Post-approval monitoring of IACUC-approved protocols is achieved through several different mechanisms including: The Attending Veterinarian's observation of research and teaching procedures, IACUC semiannual inspections, annual reviews as stated in the above section, and inspections completed by the ORA personnel. In addition, the ORA also conducts periodic meetings with PIs to review and discuss ongoing research activities to maintain regulatory compliance throughout the life of active protocols.

Specific benefits of this PAM program:

- A mechanism for documenting compliance with applicable animal care and use policies, guidelines, and laws
- An opportunity for dialogue, education, and exchange of information between individuals conducting research and teaching involving animals and the IACUC/ORA
- Assistance to PIs preparing for visits by outside evaluators

XI. Program Review & Inspections

Missouri State University has regular inspections and program reviews; these practices monitor the welfare of animals and ensures our University is as up to date and relevant as possible with rules and regulations.

A. *Semiannual Reports of Program Review*

The IACUC will review at least once every six months the Institution's program for humane care and use of animals, using the *Guide* as a basis for evaluation. The IACUC's semiannual program evaluation will include:

- Review of institutional policies, standard operating procedures, and responsibilities
- Review of semiannual facility inspections
- Review of veterinary care
- Review of institutional training and occupational health and safety programs

The IACUC will utilize the *Sample Semiannual Review Checklist* resource recommended by OLAW in conjuncture with the *Guide* as a basis for program evaluation. They also use the OLAW Sample Semiannual Report to the IO to ensure that the reports are complete and meet the informational requirements of the PHS Policy and the AWARs and *Guide*. IACUC members will be given the semi-annual report and allowed time to edit and approve the report. After approval and signage from the majority of IACUC members, the semi-annual report will be submitted to the IO for review.

1. Departures from the PHS Policy & Guide

Any IACUC-approved departures from the *Guide* or the PHS Policy or the AWA and AWARs will be included in the report along with the reasons for each requested and approved departure. Departures submitted by investigators to the IACUC are reviewed and approved by the IACUC.

2. Deficiency Identification & Correction

Any deficiencies identified during the semiannual program review or facility inspections are identified as minor or significant. Additionally, for each deficiency, the report contains the plan for correction and correction schedule. The plan for correction identifies the parties responsible for ensuring the specific deficiency is corrected. In addition, the ORA monitors the status of corrections, assists the responsible parties when applicable, and reports the status of corrections to the IACUC and IO.

B. *Facility Inspection*

The IACUC will inspect at least once every six months all of the Institution's animal facilities, including satellite facilities, using the *Guide* as a basis for evaluation. Inspections of the animal facilities and animals conducted by the IACUC are to adhere to all USDA and PHS guidelines. The inspections are conducted by at least two IACUC members and a veterinarian (the IACUC veterinarian can fulfill both the IACUC member role and veterinarian role). However, all IACUC members are welcomed and encouraged to participate in the inspection. In addition, a representative from the ORA is encouraged to attend. The IACUC utilizes the *Sample Semiannual Facility Inspection Checklist* resource recommended by the Office of Laboratory Animal Welfare in conjuncture with the *Guide* as a basis for inspection of the animal facilities. The individual reports will be used to prepare a final report which must be approved by the full committee and then submitted to the IO.

XII. Training

In accordance with the Animal Welfare Act [13(d)], the University shall provide training for all personnel involved in animal care and use. No persons are permitted to be involved in care and use of animals until they have been certified as completing the training prescribed by the ORA and by their supervisor.

A. Online Training Program

1. General Training

- All persons involved in the care and use of animals are required to complete general training courses that include an overview of the federal laws and implementing regulations, University policy and SOP, the IACUC, occupational health and safety concerns, and general species-specific information. These courses also include information regarding the humane practices of animal care and use, research and testing methods that minimize or eliminate the use of animals or limit animal pain or distress, and utilization of electronic and published information sources that could prevent the unintended duplication of animal experimentation or improve the methods of animal experimentation. Specific courses required are detailed on the ORA website.

- A refresher training course is required every three years to ensure covered persons understand applicable laws, regulations, and policies.

2. Survival Surgery Training

- All persons involved with rodents that will undergo surgical procedures or a procedure that will cause more than momentary/slight pain and distress are required to complete an online

training course for survival surgery of rodents and pain category E procedures. This course focuses on information regarding reducing pain and distress in mice and rats.

- All persons involved with animals (other than rodents) that will undergo surgical procedures or a procedure that will cause more than momentary/slight pain and distress are required to complete training according to the Hands-On Training Program described below. An online training course specific to reducing pain and distress for animals other than rodents is not currently available.

B. Hands-On Training Program

- All hands-on training must be documented for each person involved with animals. They must be made available upon request by the IACUC or the ORA. These records are intended to demonstrate each individual's knowledge of specific animal and laboratory procedures.

- PI's are responsible for providing their staff and students with hands-on training related to particular hazards associated with their activities, experimental procedures, and equipment to be used while working with animals. In some cases, ORA personnel may assist with hands-on training.

- Hands-on training should be refreshed as needed. Competency checks for hands-on procedures will be conducted periodically by PI's and/or ORA personnel. In some cases, retraining may be needed. Reasons for retraining may include but are not limited to: length of time between performance, improper performance of procedure, or modifications to a procedure.

C. Training of IACUC and Other Responsible Officials

To assure that the University Policy is in compliance with this policy, and that the SOP is effective and efficient, members of the IACUC and the responsible units will participate in training programs offered by the federal agencies, and other national organizations recognized for their leadership in matters related to animal care and use.

A. <u>Initial Training</u>

All members of the IACUC will undergo training prior to being involved in decision making by the committee. This training will include completion of online training specific to IACUC members. The following materials will also be provided:

- Animal Welfare Act
- USDA Regulations – 9 CFR Chapter 1
- PHS Policy on Humane Care & Use of Laboratory Animals
- US Government Principles for the Care & Use of Animals Used in Testing, Research, & Education
- University's Animal Care & Use Policy
- University's Standard Operating Procedures for Implementation of the University's Policy (Missouri State University Animal Care & Use Manual)
- University's approved Animal Welfare Assurance
- *Guide for the Care & Use of Laboratory Animals*
- *Occupational Health & Safety in the Care & Use of Research Animals*
- *Guidelines for the Care & Use of Mammals in Neuroscience & Behavioral Research*

B. <u>Follow-Up Training</u>

Members of the IACUC will participate as possible in relevant training programs offered by Primr/ARENA or other relevant organizations. The University attendees will provide a review of the materials covered in these training programs for members of the IACUC, as well as other University officials having responsibilities under the Animal Care and Use Policy.

XIII. Occupational Health & Safety Program (OHSP)

A. Purpose

The OHSP is intended to provide University personnel with a safe work place and provide information that will enable compliance with the SOP. The ORA administers the OHSP with the assistance of Magers Health and Wellness Center.

Persons working with animals may be exposed to hazards, including zoonotic diseases (transferable between animals and humans), bites, and scratches, etc. These persons also may be exposed to hazardous biological and chemical substances that are used as part of these activities. No faculty, student, or staff member is allowed to work unsupervised in a position in which they are exposed to risks as described above, handle or are exposed to hazardous materials or wastes, or are involved in spill response until they have received the required hands-on training.

B. Required Enrollment

All persons (covered person), including faculty, staff, students, and volunteers, who will be working with or have a reasonable expectation of exposure to animal tissues, fluids, secretions and/or excretions (collectively referred to as "exposure to animals") while involved in research and/or education projects at on or off-campus locations are required to enroll in the OHSP. In addition, non-employees (e.g., visiting researchers and educators) are required to enroll in the MSU OHSP or provide certification that they are participants in a similar program at their home institution.

C. Enrollment Process

1. Initial Enrollment

   a. Risk Assessment Form

   A Risk Assessment Form will be completed by the supervisor of covered person and covered person. The Risk Assessment Form includes a brief health and vaccination history, animal contact information, and other occupational hazards that could and are encountered. The form will be signed by the covered person, PI or manager/supervisor and submitted to the ORA. The ORA will then enroll the covered person into the program. Based on the level of exposure, health and vaccination history of the covered person, the ORA may require the covered person to schedule a Medical Risk Assessment though Magers Health and Wellness Center. Any covered person can request a waiver of participation in the completion of the Medical Risk Assessment. Such a request must be approved by his/her supervisor, the medical professional at Magers Health and Wellness Center and the ORA. Approval of waiving participation will be based on the relative risk of potential exposure to zoonotic diseases (transferable between animals and humans) and other hazards associated with the intended involvement with animals, and the apparent health of the participant. A waiver will not be permitted for completion of applicable training programs and the use of personal protective equipment (PPE).

   b. Medical Risk Assessment

   Depending on the level of exposure recorded and health of the participant, the ORA may require the person to schedule a Medical Risk Assessment through Magers Health and

Wellness Center. The risk assessment will involve review of the covered person's medical history (e.g. allergies to animals), duties that may result in exposure to animals or other hazards, and the need for vaccinations required as protection against specific hazards. The health professional will also provide the person with information on the potential hazards related to their involvement with animals and extra precautions necessary to be taken during periods of illness or pregnancy. All screening charges and any prophylactic vaccinations (with consent of person) will be paid for by the ORA. Tetanus vaccination and/or prophylaxis is offered to the employees at the recommendation of the health professional. A record that the assessment took place will be forwarded to the ORA. These records may contain protected health information (PHI) and be maintained in accordance with the Privacy and Security Rules of the Health Insurance Portability and Accountability Act (HIPAA).

Any covered person can request a waiver of participation or opt out of any medical recommendations such as vaccinations. Such a request must be approved by the covered person's PI/Supervisor, the ORA, and the healthcare professional at Magers Health and Wellness Center after the medical risk assessment appointment. Approval or disapproval of waiving participation for frequent or substantial contact with animals is considered on a case-by-case basis and will be based on the relative risk of potential exposure to zoonotic diseases (transferable between animals and humans), other hazards associated with the intended involvement with animals, the apparent health of the participant, and accommodations that can be made to further decrease risks.

c. Additional Information

The ORA will provide a listing of sources and information related to all the identified hazards associated with current animal/facility activities to Magers Health and Wellness Center, supervisors, and covered persons. The supervisor is responsible for instructing the worker of the required training programs, procedures, and PPE intended to minimize the assessed risks, as well as assure the prescribed health and safety precautions will be implemented. Records of hands-on training must be documented and kept on file by the supervisor in order to be reviewed by the IACUC and/or ORA at any time requested.

2. Annual Renewal of Enrollment

Each year the person covered is required to renew enrollment in the OHSP by filling out a new Risk Assessment for Animal Contact Form (provided by the ORA). If the person's duties or health status have changed since their last enrollment, depending on the new associated risk(s), the ORA may require the person to schedule a Medical Risk Assessment through Magers Health and Wellness Center, a medical clinic on campus.

D. Other Components of the OHSP

1. Surveillance Measures

a. The ORA, Magers Health and Wellness, and the IACUC may recommend surveillance measures that are to be undertaken for activities that use species known to have zoonotic diseases. It will be the responsibility of the Supervisor to implement these measures. Inspections by the IACUC and the ORA, as described elsewhere, will include review of these surveillance measures.

b. There are a number of personal hygiene issues which apply to all workers who are exposed to animals. These include:

- There should be no eating, drinking, smoking or applying of cosmetics in areas where animals are housed or used.

- Appropriate personal protective equipment must be worn when working with animals, but should be removed before leaving the facility.
- Careful hand washing should be done after handling of animals.
- Certain infections are transmitted from animals to humans primarily by contaminating hands with animal feces or urine and then putting contaminated objects into the mouth. Examples of organisms utilizing this mode of transmission are *Salmonella spp*. and *Cryptosporidium*. Every precaution should be taken to avoid this mode of transmission by alertness and careful personal hygiene. Additional health problems are encountered when these organisms are carried home and children/infants are exposed.
- Appropriate personal protective equipment, in addition to the standard components outlined above, will be documented and described in individual laboratory standard operating procedures. These SOPs will be reviewed by the IACUC and ORA.

2. Injury or Illness

a. Injury or Illness Coverage

Injuries or illnesses resulting from involvement with research and educational activities approved in accordance with the University Policy are covered as listed:

- Faculty, staff, and student employees will be covered by Workers' Compensation.
- Students not employed by the University will be covered by their personal health insurance.
- Visiting researchers and educators participating in projects as part of their employment by external organizations will be covered by their employer's insurance or their personal health insurance.

b. Injury or Illness Reporting

Individuals should contact Magers Health and Wellness Center at any time for medical review and consultation if the individual becomes injured, feels that an allergy may be developing, or have other health concerns related to animal research exposure. In the event Magers Health and Wellness Center is unavailable (e.g., after hours, field study emergency, etc.), the nearest medical facility with services applicable to take care of the injury should be utilized. In the event that an individual suffers an injury (such as an animal bite) or is exposed to a hazardous biological or chemical agent during the course of a project, medical treatment or assistance will always be the first priority. However, the supervisor and ORA must be notified as soon as possible. University policy will be followed in reporting an injury via the university website "Accident Investigation Report." All major emergencies should call 911 immediately. Signs are posted in animal areas on what to do in case of injury.

c. *Precautions for Pregnancy, Illness or Decreased Immunocompetence*

Covered persons are advised during initial training if they are pregnant, planning to become pregnant, become ill, and/or have impaired immunocompetence, they should consult with an authorized medical provider or healthcare professional/physician regarding their condition and how it pertains to working with animals. If warranted, work restrictions and accommodations are coordinated between the covered person, his/her health care provider, HR, etc. All gas anesthesia equipment has signs in the room prohibiting pregnant personnel from entering. All machines are equipped with scavenging equipment.

d. *Provisions for Personnel Not Involved in Animal Care Use and Entering Animal Areas*

Custodial personnel having indirect animal contact within research animal facilities are required to fill out a risk assessment form and be in the OHSP with training formatted to their situation. When maintenance or other non-animal care and use personnel must access animal rooms, they are provided with necessary PPE and briefed on appropriate precautions. A member of the animal care staff will be available for escort.

e. *Animal experimentation involving hazards*
Animal experimentation involving hazardous materials are carefully considered during protocol review. Cross memberships of IBC and IACUC allow review of protocols in each committee to ensure biological agents and waste are properly handled and disposed of. Radiation Safety Committee and RSO also review any protocols using radiation and ionizing agents. Environmental Management is consulted when chemicals are utilized resulting in hazardous waste. The ORA reviews the protocols from all committees to ensure all hazards listed are being reviewed by the appropriate committee. The PI is responsible for applying to each committee separately for approvals.

XIV. Public/Media Access to Animal Facilities

In order to provide stable, healthy environments for the animals, tours and access for persons not directly involved in animal activities are restricted in University animal facilities. However, in rare cases, access to animal facilities may be permitted as long as the following conditions are met:

- For tours related to University educational objectives, the appropriate dean, the ORA, and the principal investigator(s) must give approval.
- For media access, University communications, the appropriate dean, the ORA, and the Principal Investigator(s) must give approval. The PI must be present when public contact takes place.
- There is no disruption to the animals that would alter the science under investigation. This may include the use of lights, flash or other photographic restrictions.
- There are no health issues (human or animal) which would prohibit public contact.

Pictures and videos of animal related activities should be considered confidential, unless created for education, research, or other University approved reasons. Distribution to other institutions, companies, or posted on personal web pages is prohibited.

XV. Issues of Non-Compliance

The IACUC takes seriously concerns regarding the care and use of animals at the institution whether staff, employees, members of the IACUC, or individuals in the community raise these concerns.

A. Allegations

1. When an employee or student identifies a concern about a suspected compliance issue, he/she is encouraged to make a report to his/her immediate supervisor, an appropriate University official, IACUC member, IACUC chair, AV, or ORA representative. If, however, a student or employee is uncomfortable discussing concerns with a University official, the University has made available a third-party anonymous hotline service, provided by EthicsPoint. An individual may submit a report through this hotline service: Via telephone, call 1-888-233-8988 (toll free) or Via internet, http://www.missouristate.edu/internalaudit/Ethics%20Hotline.htm.

2. Missouri State University has an established Whistleblower Policy in place. In addition, the University utilizes “Ethicspoint,” an online reporting system for individuals to anonymously report compliance violations. Every lab and animal facility posts a sign informing individuals

about how to report a concern. The sign states the following:

NOTIFICATION OF ANIMAL ABUSE

Persons suspecting that activities being conducted in the University or by University personnel are not in compliance with the USDA Animal Welfare Act and the PHS Policy on Humane Care and Use of Laboratory Animals and are to report their concerns to the Institutional Animal Care and Use Committee. In accordance with applicable laws and implementing regulations, whistleblower protection will be afforded to these persons reporting suspicion of violations. Written reports should be submitted to Carrington 405 or emailed to: IACUC@missouristate.edu.

Missouri State University has an established Whistleblower Policy in place which includes language that diligent efforts will be made to protect the complainant from retaliation for his/her activities in cooperation with, or initiation of, an inquiry or investigation, provided the complaint is not undertaken in bad faith. The full Whistleblower Policy can be accessed at: www.Missouristate.edu/internalaudit/Whistleblower-Policy.htm

B. Investigation of Complaints

1. The IACUC will investigate the validity of all complaints. This will include inspection of the applicable animal facilities and research or educational sites, discussions with the supervisor and other involved personnel, and further discussion with the person submitting the allegation. The Attending Veterinarian will advise a supervisor to make corrections in a timely manner where the facilities or practices are determined to be significantly deficient, defined as *a threat to animal health or safety*.

2. All reported concerns and investigations will be reviewed by the IACUC and any necessary actions will be voted on by a quorum of IACUC members. The IO is made aware of any investigations. Outcomes of the vote with recommendations for discipline or correction will be forwarded to the IO. A formal report will be drafted by the IACUC and submitted to the IO. The IO can request a meeting with the IACUC chair, AC, or ORA representative for report review and has access to all IACUC documents.

3. Written notification of the findings of the complaint will be filed with the supervisor of the research or educational activity, that person's supervisor, the Dean of the Academic College, the IO, and the ORA. Where required under applicable federal laws and implementing regulations, the IO will report violations to the agency sponsoring such activities. OLAW will be notified if violations are determined to be due to noncompliance.

C. *Suspension of Activities*

In order to deal promptly with conditions that may jeopardize the health or well-being of animals, the Attending Veterinarian and/or IACUC Chair is authorized to halt procedures that he/she believes do not comply with institutional policies until the IACUC can be convened and consider the matter formally.

The IACUC may suspend a protocol only after review of the matter at a convened meeting of a quorum of the IACUC and with the suspension vote of a majority of the quorum present. The IO, in consultation with the IACUC, shall review the reasons for suspension, take appropriate corrective action, and report that action to any federal agency based on requirements. A decision by the IACUC to suspend an activity may be appealed. Research may not continue on a protocol

that has been suspended by the IACUC, even if during the appeal process. In the event of an appeal, the IACUC Chair will report the IACUC vote to the IO and the ORA, who will consult with the IACUC regarding the suspension. The IO will take appropriate corrective action based on the appeal decision and a full report of that post-appeal action with an explanation will be made to the Office of Laboratory Animal Welfare (OLAW) as required. However, only when the IACUC is satisfied that problems leading to a suspension have been corrected will that suspension be lifted. A suspension is lifted after a majority vote of the quorum present at an IACUC meeting.

D. *Remediation*
The supervisor of the cited activity will submit a report to the IACUC for review. On-site inspections also may be conducted by the IACUC. If corrective measures are found to restore compliance, written notification will be submitted to all involved parties.

XVI. Veterinary Care Program

Missouri State University will have a Veterinary Care Program. The mission of the Veterinary Care Program shall be to ensure the health and safety of the animal collection and to preserve the integrity and efficacy of any and all animal research and teaching activities at Missouri State University. Please see the Missouri State Veterinary Care Program manual for specific information.

XVII. Greenwood Laboratory School

Elementary and secondary schools are specifically excluded from the definition of research facility in the Animal Welfare Act Regulations (1.1) and Animal Welfare Act (Sect. 2132.e.) Accordingly, the regulations do not apply and IACUC oversight is not required. However, while not required, the IACUC, AV, and ORA are available to review projects and provide guidance as needed by Greenwood Laboratory School.

Missouri State IACUC oversight is also not required under PHS Policy, since it applies only to institutions that receive funds for vertebrate animal activities from an agency of the PHS or from any agency that requires compliance with PHS Policy. *Note:* Although IACUC oversight is not required, Greenwood Laboratory School should notify the ORA in writing prior to animal acquisition.

Greenwood is required to ensure that animals are properly cared for and treated humanely, responsibly, and ethically. Decisions to incorporate organisms in the classroom should balance the ethical and responsible care of animals with their educational value. The IACUC recommends the following principles be followed (adapted from the *Principles and Guidelines for the Use of Animals in Precollege Education*):

Principle 1
Observational and natural history studies that are not intrusive (that is, do not interfere with an animal's health or wellbeing or cause it discomfort) are encouraged for all classes of organisms. When an intrusive study of a living organism is deemed appropriate, consideration should be given first to using plants (including lower plants such as yeast and fungi) and invertebrates with no nervous systems or with primitive ones (including protozoa, planaria, and insects). Intrusive studies of invertebrates with advanced nervous systems (such as octopi) and vertebrates should be used only when lower invertebrates are not suitable and only under the conditions stated below in Principle 10.

Principle 2
Supervision shall be provided by individuals who are knowledgeable about and experienced with the health, husbandry, care, and handling of the animal species used and who understand applicable laws, regulations, and policies.

Principle 3

Appropriate care for animals must be provided daily, including weekends, holidays, and other times when school is not in session. This care must include:

a. nutritious food and clean, fresh water;
b. clean housing with space and enrichment suitable for normal species behaviors; and
c. temperature and lighting appropriate for the species.

Principle 4

Animals should be healthy and free of diseases that can be transmitted to humans or to other animals. Veterinary care must be provided as needed. Greenwood Laboratory School is encouraged to contact Missouri State University's Attending Veterinarian (AV) as needed.

Principle 5

Students and teachers should report immediately to the school health authority all scratches, bites, and other injuries; allergies; or illnesses.

Principle 6

Prior to obtaining animals for educational purposes, it is imperative that the school develop a plan for their procurement and ultimate disposition. Animals must not be captured from or released into the wild without the approval of the responsible wildlife and public health officials. When euthanasia is necessary, it should be performed in accordance with the most recent AVMA Guidelines for Euthanasia. It should be performed only by someone trained in the appropriate technique. Greenwood must contact the Missouri State AV if euthanasia is necessary.

Principle 7

Students shall not conduct experimental procedures on animals that

a. are likely to cause pain or discomfort or interfere with an animal's health or well-being;
b. induce nutritional deficiencies or toxicities; or
c. expose animals to microorganisms, ionizing radiation, cancer-producing agents, or any other harmful drugs or chemicals capable of causing disease, injury, or birth defects in humans or animals.
d. In general, procedures that cause pain in humans are considered to cause pain in other vertebrates.

Principle 8

Experiments on avian embryos that might result in abnormal chicks or in chicks that might experience pain or discomfort shall be terminated 72 hours prior to the expected date of hatching. The eggs shall be destroyed to prevent inadvertent hatching.

Principle 9

Behavioral conditioning studies shall not involve aversive stimuli. In studies using positive reinforcement, animals should not be deprived of water; food deprivation intervals should be appropriate for the species but should not continue longer than 24 hours.

Principle 10

A plan for conducting an experiment with living animals should be prepared in writing prior to initiating the experiment or to obtaining the animals. Proper experimental design of projects and concern for animal welfare are important learning experiences and contribute to respect for and appropriate care of animals. Written plans should include the following:

a. a statement of the specific hypotheses or principles to be tested, illustrated, or taught;

b. a summary of what is known about the subject under study, including references;
c. a justification for the use of the species selected and consideration of why a lower vertebrate or invertebrate cannot be used; and
d. a detailed description of the methods and procedures to be used, including experimental design; data analysis; and all aspects of animal procurement, care, housing, use, and disposal.