

University of Wisconsin Oshkosh
College of Letters and Science



Investigator's Handbook for Animal Care and Use

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Section 1: Introduction

It is the responsibility of those working with research animals to ensure animals are treated with the most compassionate and humane care. This high expectation of conduct serves a dual purpose: it allows animals to be used responsibly so that scientific conditions can be met or exceeded and also to make sure ethical objectives are satisfied.

The University of Wisconsin Oshkosh (UWO) and its employees pursue high ethical standards in animal research. We support and enact the belief that animals must be used responsibly and humanely. This Investigator's Handbook for Animal Care and Use has been developed as a tool to assist those working with animals in research and teaching.

Section 2: Animal Care and Use Program Management

An effective animal care and use program requires clearly defined roles that comply with regulations and guidelines. U.S. federal law requires the following program oversight: (1) Institutional Official (IO), (2) Attending Veterinarian (AV), and (3) Institutional Animal Care and Use Committee (IACUC). These three components must maintain open lines of communication and together strive to support high-quality science and humane animal care and use.

Institutional Official (IO)

The IO is the individual who, as a representative of senior administration, bears ultimate responsibility for the Program, although overall Program direction is a shared responsibility among the IO, AV, and IACUC. The IO has the authority to allocate the resources needed to ensure the Program's overall effectiveness. The IO is responsible for resource planning and ensuring alignment of Program goals with the Institution's mission. Program needs should be clearly and regularly communicated to the IO by the AV and the IACUC.

Attending Veterinarian (AV)

The AV is responsible for the health and well-being of all laboratory animals at UW Oshkosh. The AV must be provided sufficient authority to access all animals and resources necessary to manage the program of veterinary care. Provisions must be in place to provide appropriate clinical, preventative, and emergency veterinary care. The AV is responsible for ensuring appropriate animal procurement and transportation and works closely with the Laboratory Animal Manager to oversee animal care activities such as husbandry and housing.

Institutional Animal Care and Use Committee (IACUC)

The IACUC is responsible for assessment and oversight of the Program's components and facilities. The IACUC's oversight functions include: review and approval of proposed animal use and of proposed changes to animal use, inspection of facilities and animal use areas, ongoing assessment of animal care and use, and establishment of a mechanism for receipt and review of concerns involving the care and use of animals at the institution. The IACUC must have sufficient authority and resources (staff, training, equipment) to fulfill this responsibility.

IACUC membership must include the following:

- A Doctor of Veterinary Medicine (DVM) that is certified or has training and experience in laboratory animal science or medicine or in the use of the species at the Institution
- At least one practicing scientist experienced in research involving animals
- At least one member from a nonscientific background
- At least one public member to represent general community interest in the proper care and use of animals
- Student members are also welcome to become IACUC members
- Alternates are available to fill in for members (to ensure a quorum for voting)

Other Components involved in the Animal Care and Use Program

Laboratory Animal Manager: Oversees the animal care facilities including HACF and CACF and works as a liaison between the campus veterinarian, department chairs, principal investigators, and animal oversight agencies. Handles the training of animal caretakers, STEP students, research staff and PIs in the animal colonies. The Laboratory Animal Manager also works in conjunction with the IACUC Administrator to train newly appointed IACUC members.

IACUC Administrator: The liaison between IACUC Chair, Institutional Official, Campus Veterinarian, and Laboratory Animal Manager. Handles the administrative work and training of the IACUC members. Ensures regulatory compliance, assists in program review and facility inspections, and is the primary AAALAC correspondent.

Director of Office of Sponsored Programs & Faculty Development: Signs off on animal-related funding documents negotiated between the campus and various funding agencies. The IACUC is administered out of the office of Sponsored Programs and Faculty Development.

Principal Investigators (PIs): Various faculty and academic staff who are directly responsible for bringing animals onto campus (only after approval by the IACUC). Animals are used for the purposes of research, teaching, or testing. Each PI is ultimately responsible for the proper care and use of his/her animals.

Student Research Assistants: Graduates or undergraduates who work under the direct supervision of a PI. Completion of Animal Care Certification in addition to training by the PI in species- or lab-specific techniques is required. These students are permitted to handle animals when actively carrying out experiments and may also assist in the care and maintenance of the animals only after receiving the appropriate training tailored to their job duties.

Animal Husbandry Staff (Caretakers): Responsible for the daily care of animals. Husbandry staff observe animals daily, clean cages, feed and water animals, and assist in daily upkeep of the animal care facilities under direct supervision of the Laboratory Animal Manager. Caretakers are trained in species-specific care and are Animal Care Certified at UWO prior to beginning work.

Campus Occupational Safety Coordinator: Responsible for administering occupational health and safety initiatives on campus. Visits the animal care facilities annually to complete PPE and hazard assessment safety inspections and provides recommendations.

Facilities Management: In charge of the physical plan, including lighting, air quality, heating, cooling, ventilation, temperature, humidity, and plumbing.

See **Appendix 1** for the Animal Care and Use Program Management Organization Chart.

Section 3: Laws, Regulations and Guidelines

General Information

The University of Wisconsin Oshkosh strives to follow all applicable laws, regulations and guidelines established by both federal and state agencies. Federal and state laws regulate animal welfare, the use of endangered species, and the use of controlled substances. The following paragraphs provide a brief summary of current and established regulations and standards from the Federal Animal Welfare Act, the U.S. Public Health Service Policy and AAALAC Accreditation Standards.

The intimate review of research protocols and regular inspection of animal facilities help to ensure animals are provided with the utmost care. Additionally, these aspects of the research program ensure that facility improvements are made when necessary and problems within the facility can be resolved in a timely manner. Positive inspection reports can help minimize concern that the general public may have regarding the health and well-being of research animals. Favorable reports can also provide support that facilities are appropriate and meet the needs of animals and researchers alike.

The Institutional Animal Care and Use Committee (IACUC) at the University of Wisconsin Oshkosh is responsible for ensuring all research and procedures utilizing animals have approved protocols and, additionally, follow the most recent version of the *Guide*. Amendments to any research protocol must be pre-approved by the IACUC before the change in research becomes effective. The IACUC is also responsible for maintaining documentation that USDA regulations and PHS policy are followed. Semi-annual program review and inspections of the animal facilities and any laboratory where animal procedures are conducted are completed to identify potential issues and to ensure protocols are followed. Inspection findings and results are documented and follow-up is provided.

Federal Animal Welfare Act (AWA)

The Animal Welfare Act was first enacted in 1966. Several amendments have been issued since that time. The AWA is governed by the United States Department of Agriculture (USDA) and representatives of the USDA complete unannounced record review and inspections of our animal facilities. The focus of these unannounced visits is to ensure UWO compliance with standards for housing, feeding, facility cleanliness, ventilation, veterinary care and to review IACUC proceedings and data records. Additionally, USDA inspectors also review adherence to standards regarding post-operative care and use of necessary analgesics or anesthetics for potentially painful procedures.

Animal Welfare Act covers the care and use of all warm-blooded animal species but excludes the following groups from USDA oversight:

- 1). Rats of the genus *Rattus* and mice of the genus *Mus* bred exclusively for research
- 2). Farm animals intended for use as food or fiber, breeding, production efficiency or animal nutrition improvements
- 3). Birds bred exclusively for research purposes
- 4). Reptiles, amphibians
- 5). Fish
- 6). Invertebrates

U.S. Public Health Service Policy

The U.S. Public Health Service (PHS) has a *Public Health Service Policy on Humane Care and Use of Animals*. This policy applies to any institution that receives funding from any agency of the PHS. These agencies can include the National Institutes of Health (NIH), Center for Disease Control (CDC) and a number of other government agencies. All institutions (including UWO) receiving PHS funding must follow the recommendations and guidelines provided in the most recent edition of the *Guide for the Care and Use of Laboratory Animals* (also known as the *Guide*), in addition to guidelines established by the Animal Welfare Act. The *Guide* applies to all species of vertebrate animals.

The University is required to keep an assurance statement on file with PHS Office for Protection from Research Risks (OPRR) stating how PHS policy is implemented and followed. Assurance statements are submitted by the University on an annual basis.

AAALAC Accreditation: Voluntary Standards

The Association for the Assessment and Accreditation of Laboratory Animal Care (AAALAC) represents an independent peer review process with voluntary membership of organizations.

Receipt of accreditation is based on adherence to strict standards. Institutions holding AAALAC accreditation demonstrate an animal care and use program that maintains these high standards. Accreditation is the best means by which PHS and other public and private agencies determine an institution is supported by an effective and regulated animal care program.

The University of Wisconsin Oshkosh received full AAALAC accreditation in 2008 and accreditation renewal in 2011 and 2015.

1. Principles of Animal Care

The Institutional Animal Care and Use Committee (IACUC) at UWO follows the principles for animal care outlined by the Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC):

The transportation, care, and use of animals should be in accordance with the Animal Welfare Act (7 U.S.C. 2131 et seq.) and other applicable federal laws, guidelines, and policies.

Procedures involving animals should be designed and performed with due consideration of their 1). relevance to human or animal health, 2). the advancement of knowledge or 3). the good of society.

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.

Proper use of animals, including the avoidance or minimization of discomfort, distress, and pain when consistent with sound scientific practices, is imperative. Investigators should consider that procedures that cause pain or distress in humans may cause pain or distress in other animals.

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.

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.

The living conditions of animals should be appropriate for their 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.

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.

Where exceptions are required in relation to the provisions 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 purposes of teaching or demonstration.

At UWO, we strive to follow the three 'R's of ethical animal research prior to any research being conducted:

Reduction: Reducing the number of animals used on a research study or project through alternate means

Replacement: Replacing animals used in research with alternate methods such as computer simulations, models or in-vitro techniques.

Refinement: Refinement of techniques that result in less pain and/or distress associated with study procedures or experience by animals. Efficient surgical technique, use of anesthetics, analgesics or tranquilizers are all considered refinement techniques.

Section 4: Getting Started

Prior to conducting any animal research at UWO, PIs must meet the following basic

requirements:

- A. Complete Animal User Certification Training & Disaster Plan Training
- B. Submit Occupational Health and Safety Paperwork
- C. Submit an **Animal Use Protocol Application** to the IACUC for review and approval (protocol must be approved by the IACUC before study commences)

A. Animal User Certification Training

Animal Welfare Regulations and PHS require institutions to have an animal welfare training program to ensure personnel are qualified to work with animals. Training is required for new personnel or students planning to work with animals. Initial training sessions are conducted by the Laboratory Animal Manager. Further training on species-specific information or animal husbandry will be conducted by either the Laboratory Animal Manager or the PI responsible for the particular animal species. Once certified, certification lasts for three years. At that time, you will need refresher training to extend your certification for another three years.

Certification training consists of the following:

1). Animal Certification Class: New personnel and students are required to attend one session of Animal User Certification class. This is an opportunity for new animal users to become familiar with the policies and guidelines that govern animal research at UWO. Classes last approximately 2.5-3 hours and are conducted by the Laboratory Animal Manager or their designee. The class is divided into the following components:

- a). **Powerpoint presentation by Lab Animal Manager**
- b). **Certification exam**
- c). **Initial animal facility tour(s)**
- d). **Read Animal Care Manual (for caretakers) OR read Investigator's Handbook (for PIs, faculty)**
- e). **Read Disaster Plan Manual. Disaster Plan Training completed with Lab Animal Manager within 30 days of an employee's start date (commencement of work duties).**

2). Online CITI Program Training: In addition to the Animal Certification class, UWO requires users to complete an online certification through Collaborative Institutional Training Initiative (CITI). CITI offers online training modules which animal users can complete for initial certification or refresher certification. Learners are required to renew their certification every three years through CITI. Renewal of certification consists of completing 1-2 CITI refresher courses based on employee job duties. If learners are actively involved with surgical procedures, they are also required to renew their surgery certification annually through CITI or scheduled with the Laboratory Animal Manager or Veterinarian.

To access CITI program: www.citiprogram.org

First-time learners must register in the system prior to completing any training modules. Register as a learner with UWO. During registration, you will be asked a few brief questions which will direct you to the set of training modules you will be required to take. New learners who are PIs, students, faculty/staff, or veterinary staff are required to take the following basic courses:

Animal Care Facility Workers

- 1). ***Working with the IACUC***
- 2). ***Post Procedure Care: Minimizing Pain and Distress***
- 3). ***Aseptic Surgery*** (Required if you are actively assisting in surgeries)

Field & Observational Researchers

- 1). ***Working with the IACUC***
- 2). ***Wildlife Research***

IACUC members have a different set of required courses. The course depends on whether the committee member is Affiliated with the University as a Scientist/Non-Scientist/Student or Non-Affiliated (Community Member).

- 1). ***Essentials for IACUC Members*** (Course for Affiliated Members)
- 2). ***IACUC Community Members*** (Course for Non-Affiliated Members)
- 3). ***IACUC Chair*** (for those who are or will be chairperson of the IACUC)

*If the new learner is both a PI and an IACUC member, learner will be required to take the ***Essential for IACUC Members***, but will not have to take the ***Working with the IACUC*** module.

In addition to the core courses, new learners (PIs, students, staff, veterinary staff) are also recommended to take elective courses that pertain to their animal group:

- 1). ***Working with Amphibians in Research Settings***
- 2). ***Working with Reptiles in Research Settings***
- 3). ***Working with Mice in Research Settings***
- 4). ***Working with Rats in Research Settings***
- 5). ***Working with Hamsters in Research Settings***
- 6). ***Working with Gerbils in Research Settings***
- 7). ***Working with Fish in a Research Settings***
- 8). ***Working with Rabbits in Research Settings***
- 9). ***Working with Non-Human Primates in Research Settings***
- 10) ***Wildlife Research***

Refresher courses: Core courses must be renewed on a 3-year basis through CITI. Annual surgery refresher for personnel actively working on or assisting with surgical

procedures is completed annually through CITI or with the Laboratory Animal Manager or Veterinarian.

- 1). **Working with the IACUC-Refresher Course** (PIs, staff, students)
- 2). **Aseptic Surgery** (Required for personnel working on surgical procedures)
- 3). **IACUC Members Refresher: Case Studies** (Affiliated and Non-Affiliated Members)

Returning learners can login with their username and password. CITI tracks your progress and completion of training modules. Upon completion of a module, a completion report is e-mailed to the Laboratory Animal Manager and IACUC Administrator. These reports are kept on file in their offices. Learners will also receive e-mail reminders 90 days and 30 days before their certification expires then one day and 30 days after expiration. Learners are expected to take the time and renew their certification before it expires.

Principal Investigators and research staff planning to perform work with biohazardous or potentially biohazardous materials must also complete CITI training under the Biosafety and Biosecurity program as required by the UW Oshkosh Institutional Biosafety Committee (IBC). Approval and oversight by the IBC will also be required as part of the intended research or teaching activity if the work will involve live vertebrate animals. Please contact IBC Administration at biosafety@uwosh.edu if this is applicable to your work.

3). Animal Handling: Following initial Animal Certification training, animal handling and species-specific training is conducted on an individual basis by either the Laboratory Animal Manager or the PI responsible for the species. All animal users, carestaff and students must be trained in the proper handling, restraint and care of the animal species they plan to work with prior to conducting their research. Researchers and their staff must be able to operate at a skilled and comfortable level with animals. Personnel can request additional training in handling or restraint techniques from the Laboratory Animal Manager.

4). Disaster Plan Manual and Training: Within 30 days following commencement of job duties, active animal facility personnel, researchers working with animals, and caretakers are required to attend Animal Facility Disaster Plan training with the Laboratory Animal Manager. A training checklist of key items is discussed and the details covered in the training will depend on the individual's involvement in the animal care program. For example, PIs and caretakers will receive more extensive training than Facilities Management personnel who occasionally perform maintenance work within the colony. Carestaff and researchers are much more likely to notice a potential disaster or emergency because they are more familiar with the facilities and animals. Staff such as Facilities Management workers and University Police will receive tours of the animal colonies to review facility layout and contents. All active facility personnel have access to Emergency Calling Trees which they are expected to use in a facility emergency. Copies of the calling tree are updated and provided to PIs, students and carestaff at least annually.

5). Animal Facility Procedures: The University follows specific Standard Operating Procedures (SOP) for a multitude of procedures conducted in the animal care

facilities. SOPs are located within both animal facilities, in the Laboratory Animal Manager's office and are available online. New employees are given a packet of SOPs tailored to their expected job duties at Animal Care Certification training. Animal users are expected to review and understand these procedures. SOPs are reviewed annually by the Laboratory Animal Manager and IACUC Administrator and significant changes are approved by the IACUC. A selection of very useful SOPs are listed below:

SOP #17: Policy on Visitors to Animal Facilities

Contact between visitors to the University and animals used in research, teaching, and outreach can constitute both a positive learning experience for the visitors and a health risk to the animals and visitors. This policy is intended to ensure a minimally disruptive environment for the animals housed within the facility, to protect the health of research animals, and to protect the confidentiality and integrity of research. Personnel wishing to bring visitors into the animal facilities must follow the requirements listed in this SOP.

SOP #21: Reporting an Animal with Abnormal Clinical Signs

Concerns about animal health can be directed to the campus veterinarian (see contact information on page 2 of this guide). Animals exhibiting unusual behavior or those exhibiting abnormal clinical signs can be more closely inspected by the veterinarian. Personnel can complete a '**Abnormal Clinical Signs**' report and notify the veterinarian. The veterinarian will visit the animal and provide recommendation for additional care. The following form is used. This form is also found in **SOP # 21: Reporting an Animal with Abnormal Clinical Signs** and copies are available from the Laboratory Animal Manager or can be found in either ACF. See **Appendix 2** for a copy of this form.

SOP #22: Animal Caretaker Injury Reporting

Always attend to cuts and scrapes promptly and pay attention for signs of allergy, rashes or respiratory symptoms. Personnel that are injured while at their worksite (animal bites, cuts, needle sticks, sprains, trips, falls, etc) must report the accident or incident to the Laboratory Animal Manager and complete the 'Employee Accident/Incident Report' within 24 hours of the incident. This form must be submitted to the Laboratory Animal Manager who will then submit it to the Facility Director and Human Resources. Copies of this form can be found in both animal facilities and also in **SOP # 22: Animal Caretaker Injury Reporting**. The Laboratory Animal Manager always recommends that injured personnel receive attention from campus Student Health Services or their personal physician following an injury.

Injury Reporting form: <http://www.uwosh.edu/hr/employment/benefits/workers-compensation>

See **Appendix 3** for a copy of this Employee Injury Reporting form.

SOP #23: Whistle Blower Policy for Animal Welfare Concerns

It is the responsibility of every person in contact with the research animals to report any animal welfare concerns that jeopardize the safety and welfare of the research animals outside of approved IACUC protocol research methods. This policy is intended to provide guidelines, which meet regulatory requirements, for the reporting of animal welfare concerns. Animal welfare concerns can be reported directly or anonymously, depending on the preference of the reporting party. Blank copies of the 'Reporting Animal Welfare Concerns' report can be found in both animal facilities and the Laboratory Animal Manager also has copies.

SOP #41: Room Check Procedure

It is a federal requirement that animals are checked daily for good health, that food and water levels are sufficient to maintain animals, and that the facility is at appropriate environmental conditions. This procedure is explained in **SOP #41: Room Check Procedure**. Various caretakers are assigned room checks during the fall and spring semesters. During the summer months, animal care duties fall to the responsible PIs. Many PIs have students from their research labs serve as caretakers during the summer months. Persons assigned room checks are required to complete them between 8:00 a.m. and 4:00 p.m. CST and report the completion of checks to their backup. Contact lists are posted in the animal facility. Caretakers and backup room checkers are asked to store important phone numbers in their personal cell phones.

B. Occupational Health and Safety Requirements

In addition to the initial Animal User certification and training, animal users must also complete the following health documentation paperwork. Before you can be considered certified in animal use, the following paperwork is required:

1). Animal Worker Health Evaluation: This form must be completed by the employee prior to beginning work within the animal facility. This form is intended to protect the health of employees working in the animal facilities. This form is collected by the Laboratory Animal Manager at Animal User Certification training and is submitted to the Student Health Center on campus. The Student Health Center reviews the employee's health information and will contact the employee directly regarding any questions or follow-up they may have. Once the Student Health Center has reviewed the form they will notify the Laboratory Animal Manager. At this point, the Laboratory Animal Manager may schedule personnel for Respirator Fit-Testing (see section # 5 below).

Note: The Animal Worker Health Evaluation form can be obtained from the Laboratory Animal Manager.

2). Vaccination record: A copy of the employee's immunization or vaccination record must be submitted with their Animal Worker Health Evaluation. The Student Health Center requires that personnel working within the animal facilities have a current tetanus vaccination (within the last 10 years). Personnel may choose to opt out of the vaccination requirement for personal or religious reasons. In these rare cases, a Tetanus Vaccination Waiver must be completed, signed and submitted to the Laboratory

Animal Manager. The person is not permitted to enter the animal facility until this form is submitted and receipt acknowledged.

3). OSHA Respirator Medical Evaluation: The OSHA Respirator Medical Evaluation is also completed by the new employee. All new employees expecting to work in either animal facility must fill out and submit this form to Student Health Center (along with the two forms listed above). Personnel planning to work in the animal facilities will need to be fit-tested for N-95 respirator use (see Section 5). Fit-testing will be scheduled through the Laboratory Animal Manager following Animal User Certification training.

4). Animal Facility Visitor Disclosure (facility visitors only): Visitors to the animal facility are required to complete a 'Animal Facility Visitor Disclosure' form. This form must be completed and submitted to the Laboratory Animal Manager and approval must be received prior to the visitors entering the animal facilities. University policy for visitors is described in **SOP #17: Policy on Visitors to Animal Facilities.**

In general terms, pre-approval for visitors must be obtained from the Laboratory Animal Manager, IACUC Administrator, Veterinarian, or Facility Director prior to the visitors entering the facility. If visitors plan to handle animals during their visit, they must take the Animal User Certification training offered by the Laboratory Animal Manager.

Certified and experienced veterinary staff can provide documentation of their training/experience through another institution and this will meet the requirement for visitors. Government officials are exempt from this rule. Visitors must be accompanied by the Laboratory Animal Manager, IACUC Administrator, Campus Veterinarian, PI (or designees) or the Facility Director at all times. Lastly, visitors are required to abide by the SOPs posted in the facilities. Blank copies of the Visitor Disclosure form are available in the animal facilities or from the Laboratory Animal Manager.

5). Respirator Approval and Fit-Testing: Personnel planning to work closely with animals, especially people who will be responsible for animal husbandry (cage cleaning, sanitization, etc) must be fit-tested to wear an N-95 respirator. This is a requirement listed by the UWO Respiratory Protection Program, initiated in the fall of 2011. Once fit-tested, personnel should wear the respirator anytime there is a potential respiratory exposure to dust, dirty bedding, aerosols or animal products. The Laboratory Animal Manager will schedule a time between personnel and the Occupational Safety Coordinator to get fit-tested. The campus Occupational Safety Coordinator (or designee from Occupational Safety staff) conducts fit-testing on an as-needed basis. Fit-testing is conducted in groups of 4-5 people and lasts approximately 30-45 minutes.

C. Preparing an Animal Care and Use Application for IACUC Review

1.) Animal Care and Use Application for IACUC Review

Animal Use Protocol Applications are submitted to the Office of Sponsored Programs and Faculty Development, Dempsey Hall Room 214. Researchers must receive protocol approval from the IACUC prior to the commencement of any research. New protocols, renewals,

exemption forms, and modifications to protocols are reviewed by members of the IACUC and approvals may occur through Designated Member Review or Full Committee Review during convened meetings.

1. The application submitted to the IACUC will be based on the type of research that will be conducted (Animal Use Protocol, IACUC Wildlife Protocol or IACUC Field Study Exemption). The IACUC Protocol Application Forms can be found on the Forms page of the Office of Sponsored Programs and Faculty Development website.
 - a. The *Guide for the Care and Use of Laboratory Animal, Eighth Edition* (pp. 25-26) provides specific topic areas that should be considered in the preparation of a protocol by the PI and in the review by the IACUC.
 - b. If a protocol is expected to cause more than momentary pain or distress to the animals, the Principal Investigator must consult with the Campus Veterinarian during the protocol development process.
 - c. If the PI is planning to do research with wild-caught animals and capture efforts will be completed, the PI's protocol must address the possible event of unintended capture of non-target species.
 - d. Submission instructions:
 - 1). The Principal Investigator must submit two hard copies of the protocol or exemption application, with signatures, to the Office of Sponsored Programs and Faculty Development, Dempsey Hall 214 along with a copy of their CITI Training Certificate. Upon approval, a hard copy of the protocol/exemption application will be retained in the Office of Sponsored Programs and Faculty Development and one copy will be distributed to the Laboratory Animal Manager.
 - 2). The Principal Investigator must submit an electronic copy to iacuc@uwosh.edu for electronic storage and distribution to the IACUC Committee.
 - 3). The protocol or exemption application form must be submitted at least two weeks prior to the next scheduled meeting to be placed on the meeting agenda. Application deadlines and upcoming meeting dates are posted on the Research Compliance-IACUC page of the Office of Sponsored Programs and Faculty Development website.

Principal Investigators have the option of requesting a pre-read of their protocol/exemption application. Those requesting a pre-read must submit their application to iacuc@uwosh.edu three weeks prior to the scheduled meeting date. The IACUC Chair will perform the pre-read and reserves the right to ask the veterinarian, Laboratory Animal Manager, or IACUC Administration to assist with the pre-read. The pre-read may result in a request for revisions to the application. These will be shared with the PI in a timely manner. Once the PI has completed the revisions they will send

updated applications to iacuc@uwosh.edu. At this point, IACUC Administration will enter the protocol into an IACUC Excel Spreadsheet where it is assigned a project number for tracking purposes. The IACUC Administrator sends the electronic version of the protocol to the IACUC Chair to begin the review process. See Section 5 for more details on the review process.

2. Memorandum of Understanding (MOU)
 - a. If the PI plans to perform animal work in collaboration with another PHS-assured institution and the animal work will occur off-site then a Memorandum of Understanding must be submitted with the protocol application. Contact the IACUC office at iacuc@uwosh.edu or by calling 424-3215 to discuss MOU setup.

Section 5: Program Oversight

A. Personnel Management

1). Training and Education

It is the personal responsibility of all researchers and staff to ensure they are fully trained in any procedure or technique they plan to use in the animal facility or while working with animals. Additionally, PIs and the Laboratory Animal Manager must ensure that all student researchers, GAs or student volunteers are fully trained in any procedure or task delegated to them. Initial Animal User Certification training covers the general aspects of working with animals in teaching and research.

Additionally, more specific training will consist of animal handling and restraint, animal husbandry and care, species-specific knowledge, surgical procedures, noticing abnormal clinical signs or behaviors, facility cleaning schedules, basic understanding of UWO SOPs and other crucial information. Students, staff, researchers and all others working with animals must exhibit a level of comfort, skill and professionalism prior to handling any procedure or task on their own. The Laboratory Animal Manager is responsible for ensuring new facility personnel are animal-user certified prior to entering the animal facilities or working with animals. More specific training can be conducted by either the Laboratory Animal Manager, PI, or their trained designee.

Training documentation binders are located in the animal facilities and each PI has a training documentation binder for their research laboratory. Whenever research staff, students, PIs, or caretakers receive training (or refreshers) or review updated manuals (Animal Care Manual, Disaster Plan) or SOPs, they must document this in the training binder.

2). Occupational Health and Safety of Personnel

a. Hazard Identification and Risk Assessment

Annually, the Laboratory Animal Manager conducts a facility inspection with the Environmental, Health, and Safety Department's Occupational Safety Coordinator with the dual purpose of spotlighting potential health hazards and the contingent minimization or elimination of said hazards. Health and safety issues discovered during the facility inspection will be discussed

between the Occupational Safety Coordinator (or designee), Laboratory Animal Manager and other relevant personnel and a decision will be made as to a course of action.

The proper functioning of the animal facilities and the equipment within is crucial to the success of research projects and the health of animals. The performance of the facilities is monitored closely by the Laboratory Animal Manager and other staff working in the facilities. Equipment within the facilities is also monitored on a regular basis. Any issues with facility function or equipment are reported to the Laboratory Animal Manager immediately.

b. Use of Personal Protective Equipment (PPE)

Upon entering the animal facilities and when performing work with animals or within animal housing rooms, it is required that certain PPE be worn by personnel and visitors. When entering the ACF, all persons are supplied with shoe covers that must be worn at all times. The alternative to shoe covers is to wear a pair of 'colony shoes' or shoes designated for use when in the animal colony. Lab coats or scrubs are also available to personnel and must be worn when performing work within the facility and when handling animals. Hearing protection is required when running the cagewasher. Ear plugs and a set of ear muffs are available for use in both animal colonies on campus. Splash goggles and safety glasses are required when cleaning chemicals are in use. Respirators (typically N-95) are required for caretakers when dumping dirty cage bedding during cage cleaning activities.

Other types of available PPE include nitrile exam gloves, sterile surgery gloves, dust masks, ear plugs, safety glasses, rubber boots and plastic face shields. These options can be worn dependent on the activity being performed. Talk to the Laboratory Animal Manager regarding which PPE should be worn for your specific research or procedure.

Additional options for PPE are available upon request. Submit requests to the Laboratory Animal Manager.

c. Allergies

Personnel have the potential to come into contact with various chemicals, cleaning products, anesthetics, analgesics, and animal products while working in the animal facilities. Personnel with allergies should state in their 'Animal Worker Health Evaluation' that they have existing allergies. These personnel may be required to wear additional PPE as deemed fit by their personal physician and/or the Student Health Center on campus as a preventative measure.

Reference the following website for information on how to reduce worker's allergic and asthmatic reactions to animal products while working in the animal facilities:

<http://www.cdc.gov/niosh/docs/97-116/>

d. Personal Hygiene

Good hygienic practices are of the utmost importance when working in the animal facilities. Animal care workers have the potential to be exposed to dust, dander, dirt, feces, urine and other allergens. Practicing good hygiene before, during and after leaving the facility will help ensure the health of personnel and animals alike. Facility personnel should wash hands after handling animals and before leaving the animal facility. Sinks and soap are available in most

rooms in the Halsey animal facility and in the cagewash room in the Clow animal facility. Hand sanitizer is also available at the facility entrances and in the cagewasher rooms.

Good hygiene also helps prevent the zoonotic transmission between humans and other species. See Section e. for more information on zoonotic diseases.

e. Zoonoses

Anyone working in the animal facilities must be aware that all animals have the potential to carry infectious organisms. Organisms that have the ability to cross-infect between species are known as zoonoses. Generally, the term zoonosis refers to infection passed between animals and humans, or vice versa. Zoonotic diseases can be parasitic, viral or bacterial in nature.

Animal to human

Examples of infectious organisms which can be passed from animals to humans in a research setting can include, but are not limited to, herpes B (primate to human), shigella (primate to human) salmonella (primate to human), tuberculosis (primate to human), toxoplasmosis (feline to human), plague (rodent to human), hantavirus (rodent to human) and rabies (canine to human).

Human to animal

An example of infectious organisms which can be passed from infected human beings to animals includes tuberculosis (human to primate).

In certain research communities, there is also concern not only with naturally-occurring zoonotic diseases but also with ones that are experimentally induced for research. It is important to be aware that some infectious organisms can develop a 'carrier state' in individual animals which show no clinical signs of disease (i.e. subclinical). Certain species housed at UWO animal care facilities are experimentally induced to be carriers for certain infectious diseases. Facility rooms housing infected animals will be designated with a door sign that signifies the Biosafety Level of the room (BSL 1 or 2), the type of PPE that should be worn when working in the room and the PIs contact information.

To prevent cross-contamination incidents, the guidelines listed below are adhered to when working in the animal facilities:

f. General Principles to Follow when Working in the Animal Facilities:

- 1). Do not eat, drink or smoke in the animal colony rooms or any procedure rooms
- 2). Avoid contact between your hands and your eyes, mouth and nose. Wash hands often: during work and before leaving the animal facility.
- 3). Wear appropriate PPE when working in the facility or handling animals. PPE signs are posted throughout the facility and PPE is available to personnel
- 4). Handle with care all needles, syringes, surgical instruments and other items that have been in contact with animals or animal products. Do not recap needles after

use! Sharps are placed into Biohazard sharps containers after use (not the wastebasket).

- 5). Biohazardous waste (blood, tissues, etc.) is collected in Biohazard waste containers (red bags) and these containers are regularly emptied then autoclaved prior to disposal. Biohazardous waste is never placed in the general/landfill trash.
- 6). Report any injuries (scratches, bites, cuts) to your supervisor and the Laboratory Animal Manager. Appropriate paperwork for injury reporting will need to be filled out (**SOP# 22: Animal Caretaker Injury Reporting**). This form can also be found at:

<http://www.uwosh.edu/hr/employment/benefits/workers-compensation>

3). Investigating and Reporting Animal Welfare Concerns

The UW Oshkosh Animal Care Program has a policy for reporting and investigating animal welfare concerns. **Standard Operating Procedure #23: 'Whistleblower Policy for Animal Welfare Concerns'** provides a detailed procedure for personnel wishing to report an animal welfare concern. Personnel who have a concern or have seen an animal abuse incident are required to complete the form provided with this SOP. This form is then submitted directly or anonymously to the IACUC. From there, the IACUC will review the concern and decide on an appropriate course of action, as outlined in SOP #23.

B. IACUC Review Process

1). Review Process for New Protocols and Renewals

a. Federal Policies, Regulations and Guidelines used in the Review Process:

- PHS Policy on Humane Care and Use of Laboratory Animals
- Animal Welfare Act (USDA Regulations)
- Guide for the Care and Use of Laboratory Animals, 8th edition
- University of Wisconsin Oshkosh's Animal Welfare Assurance

b. Categories of IACUC Actions

As a result of the review of a protocol, renewal, or amendment, an IACUC may take one of several different actions depending on their findings:

- Approval
- Modification to secure approval
- Withhold approval
- Defer or table protocol
 - a. If approval is withheld, the IACUC must provide reasons for their decision in writing and give the investigator an opportunity to respond

c. Conflict of Interest

The PHS Policy and the Animal Welfare Act regulations state that no IACUC member may participate in the IACUC review or approval of an activity in which the member has a conflicting interest (e.g., is personally involved in the activity) except to provide information requested by the IACUC. Neither recused nor excluded members may contribute to the quorum necessary to conduct IACUC business.

d. Methods of Review

Designated Member Review:

1. The IACUC Chair or her designee (IACUC Administrator) will send out a Designated Member Review Determination Email with the protocol attached and brief summary of the proposed project to all IACUC members for animal use USDA Pain Category B and C protocols to determine if review may be conducted by Designated Member Review. IACUC members respond to the email that they agree to Designated Member Review or they may call for Full Committee Review.
2. Every IACUC member will have the opportunity to call for Full Committee Review within 3 business days of the email and protocol distribution. Lack of reply to the Designated Member Review Determination Email within established time frame (3 business days) is equivalent to declining to call for Full Committee Review.
3. Other IACUC members may provide the designated reviewer(s) with comments and/or suggestions concurrent to DMR Review that are for the reviewer's consideration only; concurrence to allow/use DMR may not be conditioned.
4. If Full Committee Review is not requested by any IACUC member within the established time frame, the protocol can go to Designated Member Review. At least one member of the IACUC, designated by the chairperson and qualified to conduct the review, will review the protocol and has the authority to approve, require modifications (to secure approval), or request Full Committee Review of the protocol.
5. The protocol is sent to the designated reviewer(s) electronically along with a Designated Member Review Checklist. The designated reviewer(s) must return the Designated Member Review Checklist with their recommendation electronically to iacuc@uwosh.edu.
6. A Designated Member Reviewer has the authority to approve, require modifications in (to secure approval), or request Full Committee Review. Designated Member Review may not result in approval withheld.
7. After all required modifications are made, a final revised protocol, i.e., an identical document with all required modifications included, is submitted to all designated reviewers for review and approval.
8. If the protocol is assigned more than one Designated Member Reviewer, the reviewers must be unanimous in any decision.
9. Protocols approved via Designated Member Review are reported to the IACUC at the next meeting. All IACUC members have access to all approved protocols.

Full Committee Review

1. If the protocol application is determined to need Full Committee Review (USDA Pain Category D or E, or called for Full Committee Review by any IACUC member) it will be reviewed at the next scheduled IACUC meeting. The IACUC Chair or Administrator confirms a meeting date when a quorum can be present and prepares the meeting agenda and distributes the materials to the IACUC prior to the meeting. The PI or their designee is invited to the IACUC meeting to explain the proposed research and answer any questions.
2. Meetings are typically conducted in person however in rare circumstances teleconference may be used.
3. Any use of telecommunications will be in accordance with NIH Notice NOT-OD-06-052 of March 24th, 2006, entitled [Guidance on Use of Telecommunications for IACUC Meetings under the PHS Policy on Humane Care and Use of Laboratory Animals](#).
4. Protocols for Full Committee Review can only be approved at a convened meeting of a quorum of the IACUC, with the approval vote of a majority (>50%) of the members present, and with a formal vote.
5. Required Modifications Subsequent to Full Committee Review:
If the convened IACUC requires modifications (to secure approval), of a protocol, such modifications are reviewed as follows:
 - a) Full Committee Review (OR)
 - b) Designated Member Review following all applicable procedures as delineated in the PHS Policy and elsewhere in Part III.D.6 (above) in this Assurance (OR)
 - c) Designated Member Review if approved unanimously by all members at the meeting at which the required modifications are developed delineated AND all IACUC members have agreed as documented in the IACUC Procedures Manual that the quorum of members present at a convened meeting may decide by unanimous decision to use Designated Member Review subsequent to Full Committee Review when modifications are needed to secure approval. However, any member of the IACUC may, at any time, request to see the revised protocol and/or request Full Committee Review of the protocol. The IACUC Procedures Manual is given to all new IACUC members and reviewed triennially by the IACUC. In addition, new IACUC members undergo orientation with the IACUC Administrator and discuss the IACUC review process and agree to this review process.
 - If the IACUC uses Designated Member Review subsequent to Full Committee Review, the approval date is the date that the designated member(s) approve the study.
 - Minor modifications of an administrative nature, i.e., typographical or grammatical errors, required signatures, etc. may be confirmed by IACUC administrative/support personnel.

e. IACUC Notification to Principal Investigators

The IACUC shall notify investigators and the institution in writing of its decision to approve, withhold approval, or require modifications to secure IACUC approval. A protocol is considered “approved and actionable” (i.e. work can begin) as soon as the IACUC Chair receives a

unanimous designated review in writing (campus email or letter) OR upon vote to approve in a Full Committee Meeting when a quorum is present.

1. IACUC notifications will be sent from the IACUC administrative staff in the Office of Sponsored Programs and Faculty Development.
2. If the IACUC decides to withhold approval, the IACUC Chair will provide written notification with a statement of the reasons for the decision and give the Investigator an opportunity to respond in person or writing.
3. If modifications are required to secure approval, two hard copies with signatures of the revised protocol are resubmitted to the Office of Sponsored Programs and Faculty Development and one electronic copy to iacuc@uwosh.edu. If a protocol needs a specific modification or clarification to secure approval; these administrative details are reviewed by the IACUC Administrator to obtain approval. If a protocol is missing substantive information or if extensive modifications are required prior to approval, the revised protocol is sent to the IACUC Chair to initiate the IACUC review process.

f. IACUC Review of Protocol Modification Requests for Ongoing Research

A protocol modification (amendment) is the act of changing or altering an existing protocol.

1. Types of Modifications: (1). **IACUC Protocol Modification Request Form**, (2). **IACUC Veterinary Care Modification Request Form**, (3). **IACUC Animal Number Increase Form**, (4). Miscellaneous Administrative Modifications

Examples of Protocol Modification Requests:

This modification requires formal IACUC review before the modifications can commence.

- Change in animal numbers (>20% of original number approved)
- Change in objectives of study
- Change in PI or Co-PI
- Change from non-survival to survival surgery
- Change in my animals' housing
- Change resulting in greater pain, distress, or degree of invasiveness
- Change in species used
- Change that may have impact on personnel safety
- Change in animal location that is currently not part of the animal program overseen by the IACUC
- Change in euthanasia to any method not approved in AVMA Guidelines
- Addition of new procedure that was not previously approved in protocol

Examples of Verification and Consultation (VVC):

This modification requires formal campus veterinarian review and approval.

- Change in anesthesia

- Change in analgesia
- Change in sedation
- Change in experimental substance
- Change in euthanasia method (must remain under AVMA guidelines)
- Change in duration of procedure performed on animal
- Change in frequency of procedure performed on animal
- Change in type of procedure performed on animal
- Change in number of procedures performed on animal
- Change in diet, including feed restriction

VVC may be used provided the changes do not 1) result in greater pain or distress, 2) involve change in procedure from non-survival to survival surgery, 3) alter housing location to an area not previously approved by IACUC as part of the animal program, or 4) modify species, study objectives, Principal Investigator/Co-Principal Investigator, or have an impact on safety.

Examples of Animal Number Increase Requests:

This modification requires review and approval by the IACUC Administrator and the Laboratory Animal Manager before the requested increase can commence. The IACUC Administrator and Laboratory Animal Manager have the option of referring the modification to formal IACUC review. In that case, the PI would be notified to submit a IACUC Protocol Modification Request Form.

- Change in animal number ($\leq 20\%$ of original number approved)

Examples of Miscellaneous Administrative Modifications

These modifications can be sent to IACUC Administration at iacuc@uwosh.edu

- Correct typos, grammatical errors in protocol
- Update contact information of persons listed on protocol
- Change list of personnel other than PI (must provide documentation that personnel have appropriate training)

Submission Process for a Protocol Modification Request:

- a) An IACUC Protocol Modification Request Form is submitted electronically to iacuc@uwosh.edu for protocol amendments as listed above.
 - i. The IACUC Administrator sends the request to the IACUC Chair. The Chair assigns one or more members for Designated Member Review.
 - ii. The IACUC Chair or the designated reviewer(s) can request Full Committee Review for any protocol modification request.

- b) Modifications that request changes outside of the scope of the original research hypothesis must submit a new Animal Use Protocol Application for *de novo* review.

Submission Process for a Veterinary Care Modification Request:

- a) An IACUC Veterinary Care Modification Request Form is submitted electronically to iacuc@uwosh.edu and the campus veterinarian for veterinary care protocol amendments as listed above.
 - i. The campus veterinarian will review the request.
 - ii. The veterinarian can decide to refer the modification to full IACUC review. In this case, the PI is notified by the veterinarian or IACUC Administrator to convert this modification into an IACUC Protocol Modification Request Form for formal IACUC review.
- b. Modifications that request changes outside of the scope of the original research hypothesis must submit a new Animal Use Protocol Application for *de novo* review

Submission Process for an Animal Number Increase Request:

- a. An IACUC Animal Number Increase Form is submitted electronically to iacuc@uwosh.edu for a requested increase in animal use to a protocol that is $\leq 20\%$ of the original number approved
 - i. The IACUC Administrator and Laboratory Animal Manager will review the request
 - ii. Either party can decide to defer the modification to full IACUC review. In this case, the PI is notified by the IACUC Administrator to convert this modification into an IACUC Protocol Modification Request Form for formal IACUC review.

Submission Process for Miscellaneous Administrative Modification Requests:

- a. Submit request electronically to iacuc@uwosh.edu
 - i. The IACUC Administrator will review the request
 - ii. If the request involves addition of personnel to the protocol, documentation of their appropriate training must be included with the request.
 - iii. An approval letter will be sent to the PI as notification that the modification request was approved.

g. Continuing Review of Animal Use Protocols

1. The IACUC Administrator will track the expiration dates on all active protocols and notify Principal Investigators at least one month prior to the expiration of their project.
2. The IACUC shall conduct continuing review of research activities at least annually per USDA regulations. The IACUC Administrator will send out an IACUC Annual Continuing Review Form (Year 1/2 or Year 3-Project Summary) to all Principal Investigators with active protocols prior to the anniversary date. Upon completion, this form is returned to the Office of Sponsored Programs and Faculty Development.
3. The IACUC continuing review process is an opportunity for the Principal Investigator to submit proposed modifications to an ongoing protocol. These modifications must be reviewed and approved prior to the Principal Investigator implementing. Please note that the PI must complete the IACUC Annual Continuing Review Form, students cannot complete this form.
4. The Laboratory Animal Manager and IACUC Administrator will perform Quality Assurance assessments (Post Approval Monitoring) as needed or by request of the IACUC, Veterinarian, or Principal Investigator. The veterinarian may attend any quality assurance visit.
 - a. It is University policy, in conjunction with USDA Animal Welfare Act 2.31 regulations ('IACUC Functions') and Public Health Service Policy (PHS), that procedures from any active IACUC teaching, research or testing protocol at UWO may at any point in time be reviewed and monitored to ensure research is being conducted in accordance with written protocol procedures.

The goals of Post-Approval Monitoring include the following:

- i. Ensure compliance with federal, state and institutional regulations, policies and guidelines
 - ii. Ensure quality and integrity of research
 - iii. Ensure animal well-being
 - iv. Identify research and teaching support needs
 - v. Compare approved written procedures with day-to-day work
 - vi. Communicate to IACUC any problems with husbandry, procedures, facility operation, etc.
- b. **Quality Assurance Visit:** The Quality Assurance visit, (or 'PAM' visit) will be as unobtrusive and informal as possible. Post-Approval Monitoring is a means of working with and providing support to Principal Investigators and their research members and to confirm accurate written protocol procedures. If necessary, these visits may lead to additional training, protocol modifications, and/or support for the PI and their teams so they can align daily methods with written protocol procedures. The PAM visit may cover the following general areas:
- Study Procedures
 - Surgical Procedures/Surgical Suite
 - Anesthesia and Analgesia

- Post-Operative Monitoring and Care
 - Euthanasia
 - Record-Keeping
 - Personnel
 - Procedure Areas
 - Housekeeping and Husbandry
- c. Deviations from or discrepancies between approved written procedures and the procedures viewed during the visit will be recorded on the **IACUC Quality Assurance Checklist**. An exit briefing with the PI may be completed directly following the visit. Alternately, the PAM team may choose to review findings internally prior to discussing the results with the PI.
 - d. The PAM inspection team will provide a draft report for the PI and will discuss findings either directly following the visit or within 1 week through e-mail, phone or in person. Discrepancies will be noted and support will be given by the PAM inspection team to either refine current procedures or to submit an amendment to procedures.
 - e. The PI has the opportunity to rectify any discrepancies either through procedural refinement or through submission of a protocol amendment. The PAM team will finalize the report and complete a brief follow-up visit after the initial visit, if necessary, to ensure discrepancies were resolved and to provide further support or training.
5. The IACUC shall conduct a complete review (*de novo* review) of each previously approved, ongoing protocol at least once every three years per PHS Policy. The triennial continuing review process for renewals must meet all new proposal review criteria.
 - a) When a protocol is renewed, an R and a number (R1, R2, R3, etc) will be added to the project number to track the progress of the project and to signify the renewal status.

h. IACUC Record Retention

1. Record-keeping requirements from USDA and PHS Policy state that all records be maintained for at least 3 years after the completion of the activity.
2. University of Wisconsin Oshkosh requires all records and reports be maintained for at 7 years after the completion of the activity. Records that relate directly to the project that were reviewed and approved by the IACUC, (i.e.: original protocol, modifications in ongoing activities, renewals, required permits, training documents) must be maintained for the duration of the activity and for an additional 7 years after the completion of the activity.

C. Special Considerations for IACUC Review

1. Experimental and Humane Endpoints

Definition: Experimental endpoint occurs when the aims and objectives of a study have been met.

Definition: Humane endpoint occurs when pain or distress in an animal is relieved, prevented or terminated. Provides an alternative to experimental endpoint.

Investigators should identify and explain the reasoning behind the chosen experimental and humane endpoints of their research protocol. Determination of endpoints should involve the PI, veterinarian and IACUC. Endpoints should always be set before the start of a study and a communication plan should also be set up with the IACUC for the entirety of the study. According to the *Guide*, 8th Edition, the IACUC should consider the following when assessing appropriate endpoints:

- Research protocol includes precise definition of humane endpoint
- Frequency of animal observation
- Training of responsible personnel for recognition of humane endpoint
- Necessary response when humane endpoint is reached

2. Physical Restraint

General restraint procedures are commonly used in the animal care facilities at UWO. Physical restraint generally lasts a few seconds to a couple minutes and is beneficial when changing cages, administering drugs or treatments and when performing examinations, such as body condition scoring. Proper physical restraint is safe for both the animal and handler and prevents injuries in the former and latter. Personnel must be trained in proper technique and appropriate PPE prior to restraining or handling animals.

Investigators planning to utilize restraint devices or use prolonged restraint on animals must have this pre-approved by the IACUC in a research protocol. If restraint devices will be used, they must be designed and size-appropriate for the species being used and must reduce pain, distress and discomfort in the restrained animal. Restraint devices must not be considered normal animal housing. Many animals can be trained to cooperate with restraint procedures.

According to the *Guide*, 8th Edition, prolonged restraint should be avoided if possible unless it is crucial to the study. The following guidelines should be followed when using restraint (these are also found in the *Guide*):

- Restraint devices are not normal housing and must be justified in the protocol
- Alternatives to physical restraint should be considered
- Period of restraint should be the minimum required to reach the research objective
- Animals placed in restraint devices should be given prior training
- Animals that won't adapt to the particular restraint should be removed from study
- Animals should be observed at appropriate intervals (determined by IACUC)
- Veterinary care must be provided if the animal begins to show abnormal clinical signs or if lesions or illness associated with restraint are observed

3. Multiple Survival Surgical Procedures

Principal Investigators wishing to conduct multiple survival procedures on an individual animal must explain this plan in a research protocol and submit to the IACUC for review. The IACUC will review the protocol and the justification or reasoning for completing multiple survival surgeries and will vote on whether to approve the protocol.

4. Food and Fluid Regulation

Generally, animals at UWO are offered ad-libitum food and water. Investigators who plan to regulate food and/or water must have this approved in a protocol. Justification of why animals require feed regulation must be provided. Feed and/or water regulation cannot begin until the protocol has been IACUC-approved. Reference **SOP #33: Guidelines for Rodent Food and Fluid Regulation** for more information regarding procedures that must be followed when animals are regulated.

5. Use of Non-Pharmaceutical-Grade Drugs and Other Substances

Definition: Pharmaceutical grade compounds are defined by the USDA, OLAW and APHIS as a ‘drug, reagent or compound that can be purchased from a medical or veterinary supplier that is ready to use’.

According to USDA Policy 3, “Investigators are expected to use pharmaceutical-grade medications whenever they are available, even in acute procedures”. However, the use of non-pharmaceutical grade compounds in research animals can also be acceptable practice in certain situations based on scientific justification and must be pre-approved by the IACUC. General examples of scientific justification for using non-pharmaceutical grade compounds can include:

- Compound is not available through medical or veterinary supplier
- Compound is needed to produce replicable data from the previous year(s)
- Non-pharmaceutical compound is more pure than the pharmaceutical grade

Note: Cost savings is not an acceptable justification

Reference **SOP #29: Policy on the Use of Non-Pharmaceutical Grade Compounds** for further details regarding use of these compounds.

6. Field Investigations

Investigators planning to conduct field investigations may be required to follow additional regulations when working in field conditions or with non-domesticated vertebrate species. This may include the requirement to obtain federal, state and/or local permits prior to conducting the investigation. Input from the veterinarian may be utilized when designing the field investigation and this may include information on capture methods, identification, handling and restraint, transportation and release.

Investigators planning to capture animals from the wild must have a detailed explanation of the research plan and either how the animals will be returned to the wild or their final disposition. The PI’s protocol must also explain how ‘unintended captures’ on non-target

species will be handled and an explanation of what to do if an animal is found to be injured or ill in the wild (i.e. during trapping or capture events). Investigators must also consider the health and safety of personnel regarding prevention of zoonoses transmission. Annual or 'as-needed' monitoring for various zoonotic diseases is currently conducted for wild-caught species at UWO.

7. *Unexpected Events or Problems*

Any deviations outside of the regulatory guidelines (Animal Welfare Act, PHS Policy, and the *Guide for the Care and Use of Laboratory Animals*) must be reported to the IACUC within 72 hours of the event so that action can be taken to resolve the problem (For further details, see **SOP #24 Reporting Unexpected Events or Problems**). Some examples of unexpected events or problems are: natural disasters, equipment malfunction, concern with facility security or safety, temperature, humidity, air quality problems, transportation issues, animal health or well-being that is unanticipated in relation to a research protocol or standard operating procedure, failure to adhere to IACUC protocols, or failure to maintain appropriate animal records.

Section 6: Animal Environment, Housing and Management

The University has two separate animal care facilities (ACF) on campus. The first is located in Clow Faculty Building, the second is located in Halsey Science Center. The College of Letters and Science uses both facilities for animal use protocols in the Psychology and Biology departments.

Within the facilities, environmental factors such as temperature, humidity, photoperiod and air quality are monitored and strictly regulated to ensure the optimal comfort and well-being of all animals being housed.

A. Animal Environment

1). Temperature and Humidity: Temperature and relative humidity are both regulated within the animal facilities. The *Guide for the Care and Use of Laboratory Animals*, 8th Edition states the temperature in rodent rooms must be maintained between 68-79 degrees Fahrenheit with a humidity level of 30-70%. Temperature in the animal housing rooms is monitored 24-hours a day by the Sensaphone units. These units are located in each housing room and are pre-programmed with temperature limits. Temperatures falling outside the stated pre-programmed range will trigger an alarm call to alert Facilities Management, University Police and facility personnel. Portable temperature and humidity sensors are also located in every room of the animal facilities.

2). Ventilation and Air Quality: Air ventilation is required to provide proper air quality within the animal facilities. Specifically, ventilation provides adequate oxygen

supply, helps adjust the temperature and moisture content in the room, dilutes particulate contaminants and helps minimize animal odors. The *Guide* states that 10-15 fresh air exchanges per hour are acceptable for maintaining macro-environmental air quality. Personnel who notice issues with the HVAC system should notify the Laboratory Animal Manager immediately.

3). Noise and Vibration: It is of importance to consider noise and vibration levels within the animal facility. The *Guide* states that personnel should try to minimize the production of unnecessary noise in the animal facility. Excessive noise and vibrations can negatively affect animal health and behavior and as a result, can become an uncontrolled variable in research experiments.

Noise and vibration levels are minimized within both UWO animal care facilities. The main source of both noise and vibration within the facilities are the cage washer units. To minimize the negative sounds from these units, the cagewashers are stored in their own rooms, separate from animal housing rooms. While the cage washers are in use, personnel are asked to keep the cage washer room doors closed to minimize the level of sound and vibration that reaches the hallway and animal housing rooms.

4). Photoperiod: Appropriate illumination levels should be considered in animal housing rooms. Lighting and photoperiod can affect an animal's circadian rhythm, hormonal level, breeding behavior and numerous other factors. It is also good to consider whether an animal has had prior exposure to natural photoperiods (wild-caught animals) and whether or not maintaining the natural photoperiod indoors is beneficial. The animal facilities at UWO are maintained on a general 12L: 12D cycle with lights on at 7 a.m. and off at 7 p.m. Specific species may require alternate photoperiods. For example, during the spring and summer months the 13-lined ground squirrels are exposed to a natural photoperiod (approximately 14L: 8D). The lights in the animal housing rooms are on light timers set and regularly checked by the Laboratory Animal Manager.

5). Aquatic Species: Investigators wishing to house aquatic species within either animal facility should contact the Laboratory Animal Manager, IACUC Chair, or Veterinarian for a discussion regarding the special needs of the species. Generally, aquatic species housed on campus are used for teaching purposes and are not housed for longer than 2-3 days. Studies requiring the long-term housing of these species are required to have a functioning filtration system and water quality monitoring must occur on a fixed basis.

Researchers or instructors can reference **SOP #35: Amphibian and Reptile Care Procedures** if working with these groups of animals. These groups require special care and their needs may be more specific to the species. It is appropriate that the PI have a knowledgeable background on the species they plan to work with. Basic aquarium supplies can be acquired from Tom Perzentka in the Biology Department stockroom. Check with Tom to see what is on hand and what will need to be purchased. Reference **SOP # 26: Animals Used for Teaching Purposes** for further requirements when animals intended for teaching are housed on campus.

B. Animal Housing

1). Primary Enclosures

Primary enclosures, or the *microenvironment*, consist of the immediate surroundings the animal is exposed to while inside its cage: air quality, micro-environmental temperature and humidity, to name a few. Animals spend much of their time in their primary enclosure, therefore, enclosures should be kept above a minimum standard for cleanliness and provide adequate space and enrichment to maintain physical and behavioral needs of the animals.

The *Guide for the Care and Use of Laboratory Animals, 8th Ed.* provides minimum cage size requirements for animals used in research. Reference the table below for amount of space required for each animal housed in the UWO facilities. It should also be noted that space allocations for animals should be based on the information in this table but may need to be increased or decreased depending on the body size of individual animals. Generally, animals must not be overcrowded, must be able to stand up, turn around, and make normal postural movements.

Typical species found in either UWO ACF include 13-lined ground squirrels (wild-caught and captive-bred), rats, mice, Mongolian gerbils, Golden hamsters, meadow voles (wild-caught and captive-bred) and various wild-caught bird species. Occasionally, amphibians, reptiles and/or fish will be housed on campus in designated IACUC-approved teaching labs. See **Appendix 5** for a table that outlines minimum recommended space requirements for commonly used laboratory rodents. This table includes cage sizes used in the animal care facilities at UWO.

Note: Research institutions must apply to amphibians the regulations that govern the use of other research animals.

2). Environmental Enrichment, Social and Behavioral Management

a). Enrichment

Animals must be offered a source of enrichment within their primary enclosures to help maintain their behavioral and psychological well-being. Some rodents prefer chewable enrichment such as paper towels, wooden chew sticks or Nylabones. Other species may prefer ledges, sheltered areas or substrate for burrowing. At UWO, rodents are provided with various treats (seeds, insect larvae, fresh vegetables), chewable enrichment or enrichment that offers shelter, such as plastic or cardboard tubes or nestlets. Running wheels are offered to certain rodent species. Bird species housed in the facilities are offered seeds, a hiding tube and mealworm larvae. Cold-blooded species such as frogs are offered a naturalistic environment with moss substrate, dry resting places and water bowl.

b). Social Environment

Social enrichment in the form of group-housing is also provided whenever possible, according to University policy. Justification should be provided in cases when animals are housed individually and, in these cases, visual, auditory or olfactory specie stimuli should be available to single-housed animals. Justifications for single housing an animal include: incompatibility with

cagemates, post-operative recovery period, and veterinary-approved reasons. Many species prefer the company of cagemates to relieve boredom and the stress of being single-housed.

Care must be taken when housing individual animals together, especially if they have not been housed together before. Certain species, such as gerbils and hamsters, cannot be housed with new cagemates as adults as they may display territorial aggression. These species can be group-housed beginning as juveniles with little concern but as animals age, caretakers should watch for any aggressive behavior between individuals. Separating the animals may be necessary to prevent future injuries and stress if the animals are incompatible. Other species, such as meadow voles and 13-lined ground squirrels are only group-housed during breeding season and are separated after mating occurs since they prefer solitary housing.

c). Enrichment, Social and Behavioral Management Program Review

Semi-annual inspections of the animal facilities and review of the animal research program are performed by the UWO IACUC. During the facility inspections, the committee reviews availability of enrichment for animals and whether novelty of enrichment should be considered.

Extra forms of enrichment should be considered for individually-housed animals since they lack social enrichment. Animals should always be provided a source of enrichment within their home cage. Enrichment helps to alleviate stress and boredom and also helps to maintain typical species behavior and psychological well-being.

C. Animal Facility Management

1). Husbandry

a). Food

Research animals at UWO are offered *ad libitum* food unless pre-approved by the IACUC in a research protocol. Justification for regulated feeding must be pre-approved or added in a protocol amendment. The main food source for Mongolian gerbils, Golden hamsters, meadow voles, rats, and mice is Harlan Teklad 8604 Rodent Diet ad-lib. Thirteen-lined ground squirrels eat Iams ProHealth Chunk or Mini-Chunk dog food. Rodents are also offered seeds or other treats as a supplementary food source on cage cleaning days. Bird species housed in the facilities are offered various types of seeds and mealworm larvae.

Food bags are given a 6-month expiration date from the milling date printed on the bag. Animal care staff should consider expiration dates before offering food to animals. Personnel should not offer animals expired food or treats.

Animals on a feed-regulated diet should have regular body condition assessments performed.

For more details on feed restriction and limited diets, see **SOP #33: 'Guidelines for Rodent Food and Fluid Regulation'**. Personnel performing body condition scores on feed-restricted rodents should follow the diagram seen in **Appendix 6**. An example template for recording body weight and body condition of regulated animals is provided in this SOP.

Note: This diagram shows scoring for rat body condition. However, the same scoring concepts can be applied to other species (gerbils, hamsters, etc).

b). Drinking water

Drinking water is sourced through the City of Oshkosh and is quality tested on an annual basis. Water is provided *ad libitum* to animals unless pre-approved by the IACUC in a protocol or amendment. Water bottles are filled 75-80% with water and placed on the feed hopper (lid) of each cage housing an animal. Bottles are changed once per week during cage cleaning or more frequently, if needed. It is the responsibility of animal care staff or personnel performing daily room checks to ensure each cage has a water bottle and that it functions properly (doesn't leak but water able to flow through sipper tube). Personnel who find a cage without a water bottle should immediately fill a water bottle and provide it for the animals. Missing or empty water bottles should then be reported to the Laboratory Animal Manager and will be reported on an Unexpected Event Report form.

c). Bedding and Nesting Materials

Animals are provided a source of bedding and nesting material within their primary enclosures. Aspen chips are preferred as they are non-toxic and provide a comfortable base for animals in addition to suitable moisture and odor absorption. Aspen Sani-Chips are obtained from Harlan and are used as a bedding base for all rodents. Thirteen-lined ground squirrels also use Enviro-Dri bedding from Waldschmidt and Tek-Fresh bedding from Harlan for additional nesting material, particularly during late summer/early fall prior to and during hibernation. Gerbils, hamsters and rats are offered a handful of Enviro-Dri nesting material at cage cleaning. Clean, dry paper towel or Diamond Twist enrichment bedding can also be offered as supplemental nesting/enrichment. Both items are readily shred and used as nesting material for these species.

Animal care staff should give priority in use to 'older' bedding and regularly rotate stocks.

d). Miscellaneous Animal Care and Use Equipment

Standards must also be met to ensure the cleanliness and regular maintenance of equipment used within the animal facility:

i. Sensaphones: Halsey facility contains five Sensaphone units. Each unit is located in an animal housing room. Clow facility has one Sensaphone unit with four temperature sensors that each monitor a different animal housing room.

The Sensaphones provide continuous monitoring of temperature within the animal housing rooms. If temperatures fall below or rise above the preset temperature limits for rodents, the Sensaphone will dial out to a list of pre-programmed telephone numbers that belong to facility personnel. This automated call procedure is designed to contact a live person. The Sensaphone will continue calling down the contact list until a live person is contacted. Personnel who receive a call from the Sensaphone must acknowledge the call by pressing '555' on their phone and then visiting the animal facility where the call originated from. Each unit is pre-programmed with an outgoing message so personnel know exactly which room has the temperature issue.

The Laboratory Animal Manager performs regularlyl inspects the Sensaphone units to ensure proper working order. Questions about the Sensaphone units can be answered by contacting the Laboratory Animal Manager or referencing the Sensaphone user

manuals located in either facility. The Laboratory Animal Manager also regularly sends updated contact lists and directions for answering Sensaphone alarm calls to University Police. University Police includes this information in their dispatcher training.

ii. Cage Washers: Halsey facility has a semi-automatic cage washer unit, installed in 2010. The unit is capable of handling up to 20 cages per wash load and each wash load takes approximately 30 minutes to complete. The Laboratory Animal Manager or animal caretaker are responsible for checking the washer drain and filter cartridge once per month. Facilities Management personnel also perform a maintenance of the washer on an as-needed basis. Any issues with cage washer use should be directed to the Laboratory Animal Manager.

iii. Hibernaculum: The hibernaculum is an animal housing room located in Halsey ACF. Installed in 2010, the hibernaculum is equipped to accommodate animals housed at standard room temperatures of 68-79 degrees Fahrenheit but can also be set to maintain at lower temperatures for hibernating animals. Normally, torpid (hibernating) 13-lined ground squirrels are housed in the hibernaculum at 40 degrees Fahrenheit from Fall-Spring. From Spring-Fall, the hibernaculum is kept at 68-79 degrees Fahrenheit and is used as quarantine space for newly arrived rats, gerbils, hamsters or fully awake squirrels.

Questions regarding the hibernaculum can be directed to the Laboratory Animal Manager or Dana Merriman (x3076). Facilities Management is available to resolve any mechanical or electrical issues with the hibernaculum. Personnel who notice issues with the proper functioning of the hibernaculum should immediately contact the Laboratory Animal Manager who will contact Facilities Management. Hibernating squirrels may need to be evacuated to the backup cold room, HS 56A, in the event of a hibernaculum malfunction. The Laboratory Animal Manager will notify Facilities Management when significant changes in hibernaculum temperature are scheduled (transition from summer to winter temperature or vice versa). Facilities Management remotely controls the hibernaculum temperature.

e). Sanitation

According to the *Guide*, the goal of any sanitation program is to maintain clean and dry bedding, adequate air quality and clean cage surfaces and accessories. *Cleaning* removes excessive amounts of dirt and debris while *disinfecting* reduces or eliminates the number of microorganisms. The animal facilities at UWO are on both a weekly cleaning and monthly cleaning schedule.

Once per week, caretakers clean all animal primary enclosures, unless pre-approved on a research protocol to have an alternate cleaning schedule. Weekly cleaning consists of replacing cage bottoms, lids, water bottles and enrichment with clean items. Dirty bedding is dumped from cages and dirty cages and other accessories are placed in the cage washer for sanitation. Animal rooms and hallways are also mopped weekly. Once per month, animal housing rooms, housing racks, bins, mops and mop buckets are sanitized by either using disinfectant or by passing them through the cage washer. All rooms, including animal housing and support rooms, are swept on a daily basis during room checks. All cleaning procedures must be documented on the 'Animal Care Log' or 'Empty Animal Holding Room Log' located in each room.

Note: If something isn't documented then technically, it didn't happen!

f). Waste Disposal

Conventional, biologic and hazardous wastes should be disposed of on a regular basis. Waste receptacles are available in the animal facilities and are designated as trash, recyclables, sharps, broken glass or biohazardous waste. Removable liners are used in the waste receptacles for easy disposal and bins are sanitized on a monthly basis. Wastes produced in the animal facility are the responsibility of the animal caretaker, the PI (or designee) or the Laboratory Animal Manager. Custodial Services is not responsible for emptying trash within the animal facilities.

Garbage bins, glass disposal containers, sharps containers, recyclables and biohazard trash must be emptied on an as-needed basis by facility personnel. Full sharps containers and broken glass containers should be taken to Tom Perzentka in the Biology Department stockroom. Sharps containers contain biohazardous material so **personnel should wear exam gloves when delivering these containers to the stockroom!** Garbage and recyclables are normally emptied during cage cleaning days. Take full bags to the garbage or recycling dumpsters located behind both Halsey and Clow buildings. Biohazard trash bags should be brought to Halsey 172 and must be autoclaved prior to disposal. Questions about waste disposal can be directed to the Laboratory Animal Manager.

Chemical or drug waste disposal must first be discussed with the Laboratory Animal Manager. **Controlled substances regulated by the Drug Enforcement Agency (DEA) must be disposed of in a specific way and it is required that disposal be documented. Do not** dispose of these items yourself. Instead, contact the Laboratory Animal Manager or campus veterinarian (license holder) for disposal. Pharmaceutical drugs (non-controlled) can be disposed of in the 'Pharmaceutical Waste' container located in the surgery room of the Halsey animal colony or in the Physiology lab of the Clow animal colony. Fluids from syringes can be emptied into these containers, which hold absorbent material such as cat litter.

g). Pest Control

Vermin presence in the animal facilities must be minimized and eliminated if possible. In the animal facilities, a program has been implemented to monitor, control and eliminate the presence of vermin. Every room in the animal facilities contains a 'sticky trap' box meant to capture vermin. These traps are monitored and replaced as needed by the Laboratory Animal Manager. Pesticides or chemical means of elimination are avoided to ensure no toxicological effects on laboratory animals. Open bags of food and bedding are stored within labeled closed plastic bins to prevent vermin contamination.

h). Emergency, Weekend and Holiday Care

Animals must be cared for on a daily basis, including weekends and holidays. At the University, animal care responsibilities switch between personnel, depending on the time of year. During the fall and spring semesters, a designated graduate assistant (GA) is responsible for the majority of daily room checks, weekly cage cleaning and animal husbandry within each facility. This includes during holidays that fall within the semester and during weekends. If the GA is unable to make a scheduled room check or other animal facility duty, the GA *must* contact and speak to the Laboratory Animal Manager immediately. Room check duties **cannot** be assumed to be covered until the situation is discussed with the Laboratory Animal Manager.

For holidays that fall during interim and throughout the summer months, the Laboratory Animal Manager will work with the PIs to schedule others (PIs, research staff and students) to assist with cleaning and animal care duties. **The PI holds main responsibility for the care of their animals during the summer and interim periods.**

In the event of an emergency, the Animal Care Facility Disaster Plan will be followed. Contact lists and emergency calling trees have been posted in the animal facilities and have been submitted to University Police. This disaster plan and calling trees can be found in both animal facilities, available electronically through a shared folder or can be obtained from the Laboratory Animal Manager. The **Disaster Plan** provides facility personnel with information on how to proceed in the event of an emergency or disaster situation. Response efforts will depend on what the emergency or disaster is but staff are trained on the general response procedure during disaster plan training which is held by the Laboratory Animal Manager. Staff (animal caretakers, researchers, student volunteers) are required to read this manual prior as part of their job responsibilities so they are familiar with the plan before an emergency event occurs.

2). Population Management

a). Identification

Both animal care personnel and researchers alike must ensure that cages housing animals *a/ways* have an identification card or 'cage card' attached to the enclosure. It is pertinent that animals be quickly identified through use of a cage card and other identification, when necessary. In certain cases, the cage card is the only means of identification.

The minimum information that should be found on the cage card include:

- Species
- Protocol #
- PI name and contact information
- Number of animals in cage
- Source
- Date Acquired/Date of Birth

More specialized information can also be included on the card. This information may include infection status, special husbandry details (i.e. feed regulated) or other pertinent information about the study. It is suggested that specific study details such as body weight records or body condition scores be recorded in an individual animal record or study book.

Other means of identification appropriate for use in rodents and those utilized at UWO include ear punch and ear tag. Mongolian gerbils and Golden hamsters assigned to a study at UWO receive an ear punch for identification purposes. An example of a typical ear punch identification system can be seen in **Appendix 7**. It is also common practice for populations to have individual animal records. Individual records assist researchers and technicians in data collection and make animal tracking much simpler. The Laboratory Animal Manager has a template of common individual animal records that can be provided for use.

b). Record Keeping

Also of great importance in animal research is proper and consistent record keeping by research staff and animal caretakers. Personnel must document any data that is relevant to research goals, animal husbandry or sanitation within the facilities.

As a facility that houses research animals, the University is required by the USDA Animal Welfare Act to physically observe animals once per day. Daily room checks are documented in data binders found in each room within the facilities. Personnel must document daily room checks on the '**Animal Care Log**' located in animal housing rooms. This logsheet provides space for documentation of the time, room temperature and relative humidity level at the time room checks are completed. During room checks, responsible personnel must also view the feed and water levels available to all animals and restore amounts, if necessary. Certain species may receive a pre-established amount of food per day (not *ad-libitum*) or special diet. Please contact the Laboratory Animal Manager or PI with questions about food amounts for species.

Health status must also be assessed at each room check. This is important for ensuring all animals are alive, healthy and without illness or injury. Many ailments can be caught early and prevented from developing into something more serious. For reporting illness or ailments to the campus veterinarian see section '**SOP #21: Reporting an Animal with Abnormal Clinical Signs**'. Blank '**Abnormal Clinical Signs**' reports are also provided in each animal facility. These forms are located in a 'Vet Log' binder near the entrance of each facility.

On a monthly basis, the animal facilities are sanitized (ceilings, walls, racks, all bins, buckets, mops, etc). Documentation of these sanitization procedures is also required on each room 'Animal Care Log' or 'Empty Animal Holding Room Log'.

Surgical procedures and post-operative recovery of animals must be documented also. Any animal that receives anesthesia for a surgical or routine procedure must be entered into the **Small Animal Anesthesia Log**, located in the surgery room in Halsey. Read **SOP #11: Anesthesia Monitoring for Small Animals** for more details on surgery documentation. See **Appendix 8** for a copy of the **Small Animal Surgery/Anesthesia** log.

Section 7: Veterinary Care

A. Animal Procurement and Transportation

1). Animal Procurement

The *Guide* states that all animals must be acquired lawfully and the receiving institution should ensure that all procedures involving animal procurement are conducted lawfully. Before acquiring animals, the PI and Laboratory Animal Manager must ensure there are sufficient facilities to house animals and that personnel are well-trained in the management of the acquired species. Researchers at UWO typically purchase animals from a list of veterinarian-approved vendors. These lists are available in the animal facility or can be obtained from the veterinarian or Laboratory Animal Manager.

The species availability varies between these vendors. It is recommended to order animals and have them arrive at the facility *at least* two weeks prior to when they begin on study. Animal order requests can be found in **SOP #37: 'Animal Ordering Procedure'** or hard copies can be obtained from the Laboratory Animal Manager. Order requests are completed by the requesting PI and submitted to the Laboratory Manager. The Laboratory Animal Manager and IACUC Administrator will review the request and ensure there is available housing space for the animals and that animal use is within that approved on the protocol. The Laboratory Animal Manager will then forward the approved order to Tom Perzentka in the Biology Department stockroom or to Mary Bleser in Psychology for order placement.

To place an order:

First, SOP #37: Animal Ordering Procedure should be referenced.

a). Determine species, strain, age/weight and number of animals needed (See vendor website. Laboratory Animal Manager may also have order booklets you can borrow).

Note: Some vendors do not deliver directly to UWO. Instead, vendors may only deliver to UW Madison. Occasionally, PIs may need to travel to UW Madison to pick up their animals.

b). The PI or their designee will complete a '**UWO Animal Requisition**' form (found on electronically via Shared Folder and the Sponsored Programs & Faculty Development site) and submit as an approval request via email to iacuc@uwosh.edu and cc: Lab Animal Manager (Leah Mann: mannle@uwosh.edu).

c). Investigators should also cc other PIs listed on the protocol when ordering animals under a protocol with multiple investigators. The same holds true when an instructor orders animals under a protocol where multiple instructors are listed.

The order form must include the following information (please fill in the yellow sections of the order form):

- i. PI name
- ii. Protocol Number
- iii. Account number
- iv. Vendor/Supplier information
- v. Requested arrival date
- vi. Requested length of stay (how long will animals be housed)
- vii. Specie(s)
- viii. Age of animals requested
- ix. Number of animals to order (per species)
- x. Intended use of animals (teaching, research, etc)
- xi. Other pertinent details about the order
- xii. Number of animals approved on protocol
- xiii. Number of animals used on protocol

d). Reporting Animal Usage to Date:

- i. The Laboratory Animal Manager or IACUC Administrator can assist with reporting animal usage for animals used or covered under teaching protocols.
- ii. If requested the Laboratory Animal Manager or IACUC Administrator can provide a double-check for animal usage (research or teaching) reported by the PI or instructor.

e). The Laboratory Animal Manager and IACUC Administrator will review the applicable PI's protocol(s) regarding approved animal usage and will determine whether the requested number of animals can be ordered without exceeding IACUC-approved usage numbers. The Laboratory Animal Manager will also determine whether housing space is available for the animal during the requested dates. In the event that the Laboratory Animal Manager is out of the office, the IACUC Administrator can verify availability of space and protocol-driven animal usage.

Note: Space shortages are more common during the spring and summer months when the ground squirrels are awake and in their 'summer housing'

f). The Laboratory Animal Manager or IACUC Administrator will notify the PI via e-mail whether the animal order is approved or not. If the order is approved the Laboratory Animal Manager will assign a housing room for the animals and provide the PI with this information. The PI or designee *must* receive prior approval from the Laboratory Animal Manager or IACUC Administrator before animal ordering can commence.

g). The Laboratory Animal Manager will place approved animal orders with the Biology Stockroom Manager or with the Psychology Program Assistant.

h). The Stockroom Manager (Biology) or Program Assistant (Psychology) will provide the Laboratory Animal Manager and PI with documentation that the order was placed (e-mail, copy of order form, etc). This documentation will be filed in the Laboratory Animal Manager's office.

i). Retain all information about the order in your records.

j). Upon arrival, animals are immediately housed by either the Laboratory Animal Manager or the Principal Investigator who ordered the animals (or their designee). This duty will sometimes fall to the GA assigned to the animal colony (during 14-week semesters only).

k). When the animals arrive they must be immediately delivered to the reserved housing room in the appropriate animal facility. Personnel housing the animals must view every animal and ensure animals arrived healthy and unharmed. Different species must be housed separately and also according to health or infection status.

l). Upon arrival, the green 'Animal Census' form must be updated to reflect the addition of animals. On the form, write the date of arrival, the number of animals arrived in the shipment and your initials.

m). Newly arrived animals must enter a period of quarantine. Animals from pre-approved vendors require a **3-day quarantine**. Animals caught in the wild or from non-approved vendors must submit to a **2-week quarantine** period. See **UWO SOP #12: Animal Health Surveillance** for details on quarantine periods.

Emergency Response to Delayed Animal Shipments:

If the animals do not arrive at the expected time, generally the Stockroom Manager is responsible for contacting the company in order to track the shipment. In case of this event, contact the Stockroom Manager for information on the delayed shipment. If the animal delivery is expected to be late due to inclement weather or other issues, the PI should make arrangements with the Stockroom Manager to be sure someone is available to receive the animals when they are expected to arrive

Emergency Response to Erroneous Animal Shipments

If a company tries to deliver animals to UW Oshkosh that have not been ordered, they should not be accepted. Anyone signing for animals should check with the Stockroom Manager to be sure that the delivery is expected and accurate.

2). Transportation of Animals

Researchers at UWO must follow guidelines for animal transportation established by the Animal Welfare Act (AWA) and Public Health Service (PHS) Policy. Researchers planning to transport wild-caught animals must follow additional regulations provided in the Animal and Plant Health Inspection Service (APHIS) Lacey Act. The Lacey Act, amended in 2008, is a wildlife protection statute that serves to combat trafficking 'illegal' wildlife, fish and plants and provides established guidelines regarding transport of wild-caught animals.

Transport of animals is highly regulated and personnel are required to follow specific procedures prior to, during, and after the transportation of animals. The Animal Welfare Act Regulations Pertaining to Transportation outlines specific methods for ensuring animals are transported in an appropriate and safe manner so they arrive at their destination in healthy condition. For specific transport procedures at UWO, reference **SOPs #30 and 31: 'Policy on Ground Transportation of Laboratory Animals'** and **'Policy on Use and Maintenance of Animal Transport Vehicles'**. In general, SOP #30 outlines requirements for researchers planning to transport animals:

Requirements for Research Personnel: Personnel responsible for transporting animals will need to meet one of two requirements:

- a). Be trained and receive certification in the Animal User Certification training course prior to transporting any animals, or
- b). Complete the necessary occupational health paperwork and submit to the Laboratory Animal Manager prior to transporting animals.

The AWA regulations and UWO policy also include guidelines for minimum transport cage sizes, primary and secondary enclosures, animal access to food and water, appropriate temperature ranges for transport and expected communication standards between shipping and receiving facilities. The standards are enlisted to ensure the proper transport and safe arrival of animals to their destination. Animals designated for research/and or teaching applications at UWO can be transported in the department van, fleet vehicle or approved personal vehicle. Reference **SOPs # 30 and 31** for more details.

3). Animal Transfers and Holds

The University Animal Care Program has policies for animal transfers between PIs at UWO and between PIs at UWO and an outside institution. **Standard Operating Procedure #38: Animal Transfer Procedure** should be followed for any PI at UWO planning to transfer animals to a different protocol under their name or to a different PI at UWO or at an outside institution.

The University also has the ability to temporarily hold animals at their current facility if a PI unexpectedly leaves the university or their research is suspended. The holding procedure can be found in **SOP #39: Temporary Animal Holding Procedure**. Animals can be held in the animal care facility for up to three months while a new PI or protocol is found for them.

B. Clinical Care and Management

1). Emergency Care

It is pertinent that animals have access to emergency care when necessary. Animal care staff, PIs, researchers, the Laboratory Animal Manager, and veterinarian are responsible for learning the clinical signs that signify illness and injury in animals. Staff working in the animal facilities must also be familiar with UWO **SOP # 21: Reporting an Animal with Abnormal Clinical Signs**. The procedure for reporting abnormal clinical signs is as follows:

- a). Personnel will complete an '**Abnormal Clinical Signs**' report (**Appendix 2**) when reporting animals with injuries or illness.
- b). Personnel completing the form must notify the campus veterinarian, Laboratory Animal Manager and PI housing the animal via e-mail (if a non-emergency) or by phone/in person (emergency).
- c). If the health or well-being of the animal is considered an emergency, the veterinarian must be contacted directly via phone (x 1217 or 920-527-9331). The backup veterinarian is Lori L. Nagel, MS, DVM at Fox Valley Technical College (920-831-4387). The attending veterinarian will decide on an immediate course of action.

2). Surveillance, Diagnosis, Treatment and Control of Disease

Personnel working in the animal facilities must perform daily cageside observations (i.e. room checks) to ensure animal health and well-being. During daily health checks, personnel can survey animals and provide feedback to PIs and the veterinarian when abnormal health or

behavior is noticed. See **Appendix 9** for a list of abnormal clinical signs of pain and distress in laboratory rodents and birds that should be noted if present.

Personnel who find animals with wounds, abnormal clinical signs or behaviors must complete an '**Abnormal Clinical Signs**' report. Blank reports are located in both animal facilities. The reporting party must then notify the veterinarian, Laboratory Animal Manager and the PI responsible for the animals of the report. The veterinarian will view the animal, make an assessment of health and determine a course of action whether it be treatment, further monitoring of the animal or euthanasia.

Personnel must keep in mind the health and wellness of the entire animal colony at all times. Sick or diseased animals can be a potential vector of infection to the healthy colony animals. With this in mind, any wild-caught animals arriving in the animal care facility must be treated for ectoparasites within 1 day of arrival and for endoparasites within 3 days of arrival. Standard and required treatment includes:

- a). Flea and tick treatment using typical sprays meant for dogs/cats
- b). Ivermectin treatment using a 1/100 dilution in sterile diluent
- c). Droncit treatment using a 1:100 dilution in sterile diluent

Contact the Laboratory Animal Manager regarding specific details about these treatments. **The Laboratory Animal Manager should always be notified in advance when wild-caught animals are due to arrive in the animal facility so quarantine space is available for the required 2-week quarantine period for wild-caught animals.** The Laboratory Animal Manager can also prepare cages or ready the materials needed for these anti-parasitic treatments. Wild-caught animals should be monitored closely by carestaff throughout the two-week quarantine period. Any abnormal clinical signs or behaviors should be reported to the veterinarian, Laboratory Animal Manager and PI immediately.

3). Clinical Record keeping

Record-keeping and documentation of clinical procedures and health assessments is necessary in an animal facility. All procedures performed on animals must be documented in detailed fashion. Drug records and usage information must also be documented and reviewed during facility inspections.

If the PI plans to perform surgical procedures using animal subjects, it is *required* that the PI document all surgical procedures performed. This information must be documented on the '**Small Animal Anesthesia/Surgery Log**' seen below. Blank copies of this form are located in the surgery room and are maintained there by the Laboratory Animal Manager. Personnel acting as 'Surgeon' in any surgical procedure must complete the form in its entirety, including all post-operative care and monitoring of animals.

4). Diagnostic Resources

Animal health screening is performed at minimum on an annual basis. Health screening is crucial to ensuring the widespread health of all animals housed in the animal facilities, in addition to the health of personnel working with these animals. Various diseases can afflict research animals, therefore, health screens are performed to ensure animals are disease-free

and potential for zoonotic transmission between animals or animals and humans is minimized or eliminated.

On an annual basis, the Laboratory Animal Manager collects blood samples from 13-Lined ground squirrels, meadow voles and wild-caught mice (if present in the facility) and submits these samples to the Centers for Disease Control (CDC) and Charles River Laboratories Animal Diagnostic Services Laboratory for hantavirus analysis. It is preferred to collect samples from recently wild-caught animals as this will be a better determinant of whether animals are harboring disease. Positive test results will be brought to the veterinarian's attention immediately. The veterinarian will be consulted to determine an appropriate course of action regarding the infected animal. Caution must be taken and appropriate PPE must be worn when handling and moving any wild-caught animal(s) to ensure that personnel are at minimal health risk.

On an annual basis, fecal samples are analyzed in-house at UWO for presence of parasites and microbes. Various other diagnostic services for health screening can be utilized on an as-needed basis or as required by the veterinarian. The Laboratory Animal Manager maintains the submission and analysis records for all blood and fecal samples submitted for testing.

5). Drug Storage and Control

Personnel working in the animal facilities must ensure that drugs used in animals and during surgical procedures are properly stored and that usage is controlled at all times. Facilities utilizing DEA-controlled substances must follow additional regulations for drug use and storage.

Prior to obtaining controlled substances, a facility must apply for a state-assigned Special Use Authorization through the Department of Safety and Professional Services. The Controlled Substances Board must approve the application for use prior to controlled substances being ordered. Once an institution receives approval, they are able to order DEA-approved substances.

Use of these substances is strictly controlled. Facilities are only approved for a certain amount of each controlled substance *per year* and must justify the amount needed for that year.

Facilities are not allowed to use more than the approved amount, without first submitting an amendment and receiving approval from the Controlled Substances Board. Licenses for authorization must be submitted for re-approval on an annual basis. Once on hand, controlled substances must be stored in a lock box and only pre-approved personnel have access to the box.

Reference **SOP #36: Disposal of Pharmaceutical Drugs** for information regarding disposal of pharmaceutical drugs in the animal facilities.

C). Surgery

1). Pre-Surgical Planning

Researchers and their staff should possess time-management and planning, especially when performing surgical procedures. Preparation for surgical procedures should include input from the entire surgical team, including the PI, veterinarian, surgical technicians, Laboratory Animal Manager, and animal care staff. Preparation should include all aspects of surgery such as

personnel involved and their roles, scheduling, supplies and equipment needed, and recordkeeping requirements.

Multiple PI research labs use the Halsey surgery room for surgical procedures. Prior to using the surgery room, researchers or their staff should sign up for the days they plan to use the room on the Gmail 'Surgery Room Calendar'. This sign-up prevents scheduling conflicts between different research labs. You can request access to this calendar by contacting the Laboratory Animal Manager.

2). Surgical Facilities

Unless pre-approved by the IACUC, aseptic surgical procedures must be performed in dedicated surgical facilities. The *Guide* states that 'surgical facilities should be maintained in a way that promote cleanliness and minimize traffic'. Personnel involved with surgical procedures at UWO follow high standards of cleanliness and realize the importance of maintaining a clean and organized facility.

The animal care facilities at UWO have two sites considered as surgical suites. Halsey ACF surgery room is currently functional as an aseptic surgical suite. Clow ACF also has a room capable of maintaining aseptic conditions for surgery. However, surgeries are currently not performed in the Clow ACF surgery room. All PIs working with animals are welcome to use the Halsey surgery room. Please contact the Laboratory Animal Manager to reserve dates for your lab, or sign up on the Gmail 'Surgery Room Calendar'.

The surgery suite is utilized by multiple PIs and their research teams. The single most important item to remember when working in the surgery room is to clean up after yourself. This room is a dedicated space for surgical procedures and these procedures cannot be completed in any other room unless prior approval by the IACUC has been received. Most supplies needed for surgery will be located in the cabinets in this room. Additional supplies should be ordered at least one week in advance. PIs generally order their own surgical supplies and label with the PI name upon arrival. Certain items are general use. Contact the Laboratory Animal Manager to place orders or if you have questions about available supplies.

Note: Certain supplies are designated for use by a specific PI only (not for general use by everyone). It is recommended that prior to performing any procedures; take an inventory of supplies available and supplies you will need.

3). Surgical Procedures

Researchers must have an IACUC-approved research or teaching protocol prior to performing any surgical procedures on animals at UWO.

Any new surgical procedures will be performed under the direct supervision of the campus Veterinarian or her designee trained in the surgical procedure.

Surgical procedures are categorized into survival or non-survival (i.e. terminal). Survival procedures can then be categorized into 'major' or 'minor' procedures. The *Guide*, 8th Ed. defines major survival surgery as a procedure that 'penetrates and exposes a body cavity, produces substantial impairment of physical or physiologic function, or involves extensive tissue dissection'. Minor survival surgery is considered less invasive. Minor surgery does not expose

a body cavity and results in little or no physical pain or impairment. Refer to **SOP # 34: Surgery Requirements** for a detailed description of minor vs. major surgery.

Non-survival surgery requires the animal to be euthanized prior to recovery from surgical anesthesia. According to the *Guide*, it may not be necessary to follow all requirements for aseptic surgery when a non-survival procedure is utilized. At a *minimum*, gloves should be worn and all instruments, equipment and the surrounding area should be clean. It is recommended that surgery details and a procedure plan be discussed with the veterinarian prior to *any* surgery (survival or non-survival) being performed for the first time.

Research staff, the PI and veterinarian should also consider the following items when planning for a surgical procedure: type of surgery that will be performed, size and location of the incision, pain or complications resulting from the procedure, duration of the procedure, post-operative monitoring and treatment of the animal, health status and age of the animal.

4). Aseptic Technique

Aseptic surgery or technique is defined as a procedure that minimizes the level of microorganisms and, as a result, reduces the likelihood of microbial contamination and subsequent infection. Personnel performing surgery at UWO must follow surgical requirements prior to, during, and following surgery in order to maintain aseptic technique. Proper aseptic technique requires the use of sterile surgical instruments and fluids during the surgical procedure. Personnel involved with the surgery must also wear proper surgical attire. The surgeon should wear a lab coats/scrubs, shoe covers or designated colony shoes, mask, and sterile surgical gloves when performing a major survival procedure. Assistants should wear a lab coat/scrubs, shoe covers/colony shoes, mask, and exam gloves. When preparing for surgery, staff are required to:

- a). Pre-surgical scrub of surgeon
- b). Prepare surgical site (sterilize surgical instruments, prepare supplies, disinfect surgical area. Assistant or anesthetist can prepare these items.
- c). Prepare patient (anesthetize, remove hair or fur from surgical site, disinfect site with betadine/alcohol). Assistant or anesthetist can prepare the patient.
- d). Prepare surgeon (sterile surgical gloves, lab coat/scrubs, surgical mask)
- e). Assure patient is at an appropriate plane of anesthesia prior to beginning the procedure.
- f). Assure thermal support is utilized.

See **SOP #34: Surgery Requirements** for more details on preparing for surgical procedures.

5). Intraoperative Monitoring, Anesthesia and Analgesia

It is of the highest importance that the animal is monitored during the surgical procedure.

Careful intraoperative monitoring helps ensure a successful surgical outcome and ensures minor issues are resolved before they become larger problems. The University animal facilities IACUC-approved and capable of accommodating surgeries performed on small animals.

Necessary intraoperative monitoring of small animals consists of the following:

- a). Routine monitoring of anesthetic depth
- b). Routine monitoring of respiration rate and pattern
- c). Maintenance of body temperature

d). Nociceptive (pain) reflex

All monitoring should be documented appropriately on the '**Small Animal Anesthesia/Surgery Log**'. Blank datasheets are located in the Halsey surgery room.

Personnel must also document types of anesthesia or analgesics used during the procedure. At UWO, the anesthetic gas isoflurane (5% for induction, 2.5-3.5% for maintenance) is used during surgical procedures. Isoflurane is generally administered in 0.8-1.0 L/min of oxygen via a gas vaporizer that delivers the gas mixture through a nose cone to the anesthetized animal.

Anesthetic plane is easily monitored and regulated by this method. Surgical staff at UWO also have the option of using an anesthetic cocktail of ketamine/xylazine injected intraperitoneally, if appropriate to their research goals and approved on a protocol. See **Appendix 10** for a description of how to use the isoflurane vaporizer during surgical procedures.

Analgesic options include diluted ketoprofen (ketofen) or diluted buprenorphine (DEA controlled) administered subcutaneously or orally. Refer to **SOP #5: Analgesia** for further information on analgesic options. No matter which options are chosen for anesthesia or analgesia, personnel must maintain a good level of record-keeping that will include type of drug(s) used, concentration, dose administered, and the ID of the animal receiving the drug.

Use of alternative anesthetics or analgesics must receive IACUC approval or used as part of a required veterinarian care regimen prior to their use.

6). Post-operative Care

It is a USDA requirement and UWO policy that post-operative monitoring and care be provided to animals recovering from surgery. Post-operative monitoring must be documented on the '**Small Animal Anesthesia/Surgery Log**' located in the surgery room. Staff must document when the animal was observed during recovery and the appearance/behavior of the animal at that time. A minimum of two post-operative checks are required per animal.

Animals will likely require the most monitoring during recovery from anesthesia (typically within 30 minutes following cessation of anesthesia but post-operative monitoring should be extended to a few hours or even days post-surgery, depending on the procedure performed and the level of anticipated pain or distress. Surgical staff are responsible for ensuring complete recovery of the animal from anesthesia. It is standard practice at UWO to place the animal in a clean, dry recovery cage with heat support and keep them in the surgery room until the animal has recovered completely from anesthesia. Once normal biologic processes and behavior are noted (animal is Bright, Alert, Responsive), the animal can be placed back in its home cage. Surgical staff should take care to ensure the animal's cagemates will not disturb the surgical site or wound. It may be necessary to house the animal singly following surgery. Depending on the procedure performed, some animals may be administered analgesics 1-2 days following surgery, or as approved in the protocol or required by the veterinarian.

Animals exhibiting abnormal post-operative behavior, clinical signs that signify pain or distress, low food or water intake or other clinical signs should notify the veterinarian as soon as these observations are noted.

D). Euthanasia

It is the PI's responsibility to ensure animals receive a quick and humane death. The UWO IACUC adheres to the euthanasia procedures found in the **2013 AVMA Guidelines on the Euthanasia of Animals**. The *Guidelines* provide multiple 'Acceptable' and 'Acceptable with Conditions' options for a quick and painless death. Any method that is utilized must first be described in the research or teaching protocol and must be performed in a manner that avoids animal pain and distress. Occasionally, animals may vocalize or release pheromones during the induction phase of unconsciousness. For this reason, other animals should not be present in the same room where euthanasia is being performed.

Personnel who plan to perform the euthanasia procedure must be trained in the concepts of euthanasia, the method to be used, and the proper handling of the species involved. These personnel must also read and be familiar with **SOP # 13: Euthanasia of Rodents**. Personnel must be able to perform the technique in a proficient and skilled manner prior to performing the procedure on their own with live animals. Those who feel uncomfortable about performing the procedure should discuss this with their supervisor. It may be necessary to have a trained designee perform the euthanasia procedure instead.

The most common form of euthanasia performed at UWO is CO₂ inhalation. There are two CO₂ euthanasia chambers located in the animal facilities. One chamber is located in the surgery room of Halsey ACF. The second is located in the surgery room of Clow ACF. A third chamber is located in the Animal Physiology lab (Halsey 167). All chambers are fully functional. Following use, personnel are required to spray and wipe down the chamber with disinfectant.

According to the most recent version of the *AVMA Guidelines on the Euthanasia of Animals*, 'Acceptable with Conditions' methods of euthanasia performed on rodents include:

- a). CO₂ inhalation only (compressed gas cylinder, not dry ice) for adult mice, rats, hamsters
- b). Isoflurane induction followed by CO₂ (adult rodents)
- c). CO₂ inhalation followed by a secondary physical method such as cervical dislocation or decapitation (neonate rodents up to 7 days old)

'Acceptable' methods of euthanasia for rodents are the use of injectable barbiturates or barbituric acid derivatives, for example pentobarbital sodium.

Note: CO₂ inhalation as the sole method of euthanasia for neonates 14 days old and younger is not recommended. Neonates are resistant to the effects of CO₂ therefore, an additional method of euthanasia must be utilized.

Note: See '**SOP # 13: Euthanasia of Laboratory Animals**' for specific methods for CO₂ euthanasia (and other methods) at UWO.

Acceptable, AVMA-approved forms of euthanasia performed on amphibians include:

- a). An overdose of anesthetics such as injectable sodium pentobarbital, 60 to 100 mg/kg, intracoelomically or into the dorsal lymph sacs.

b). Buffered MS-222 (0.1-1% solutions) or benzocaine hydrochloride (at concentrations >250 g/L) may be used in a bath or by intracoelomic or dorsal lymph sac injection.

c). Severing the spinal cord behind the head by pithing. However, death may not be immediate unless both the brain and spinal cord are pithed. For these animals, pithing of the spinal cord should be followed by decapitation and pithing of the brain. This process of pithing the spinal cord and brain is also called "double pithing."

Note: Many amphibians can hold their breath and survive periods of anoxia (up to 27 hours for some species). Therefore, euthanasia of amphibians using inhalation agents such as CO₂ is **not acceptable**.

Note: Any euthanasia method used on amphibians or rodents must first be approved by the University IACUC and deemed appropriate by the veterinarian.

Upon completion of the procedure, death must be confirmed by performing cervical dislocation or decapitation as an adjunctive method to ensure death. Training on decapitation and cervical dislocation can be received from the Laboratory Animal Manager. Animals must be placed in a plastic Zip-Loc bag following death and the bag must be labeled with the animal ID and date. All deceased animals are placed in the chest freezer in Halsey 17 (cage storage room).

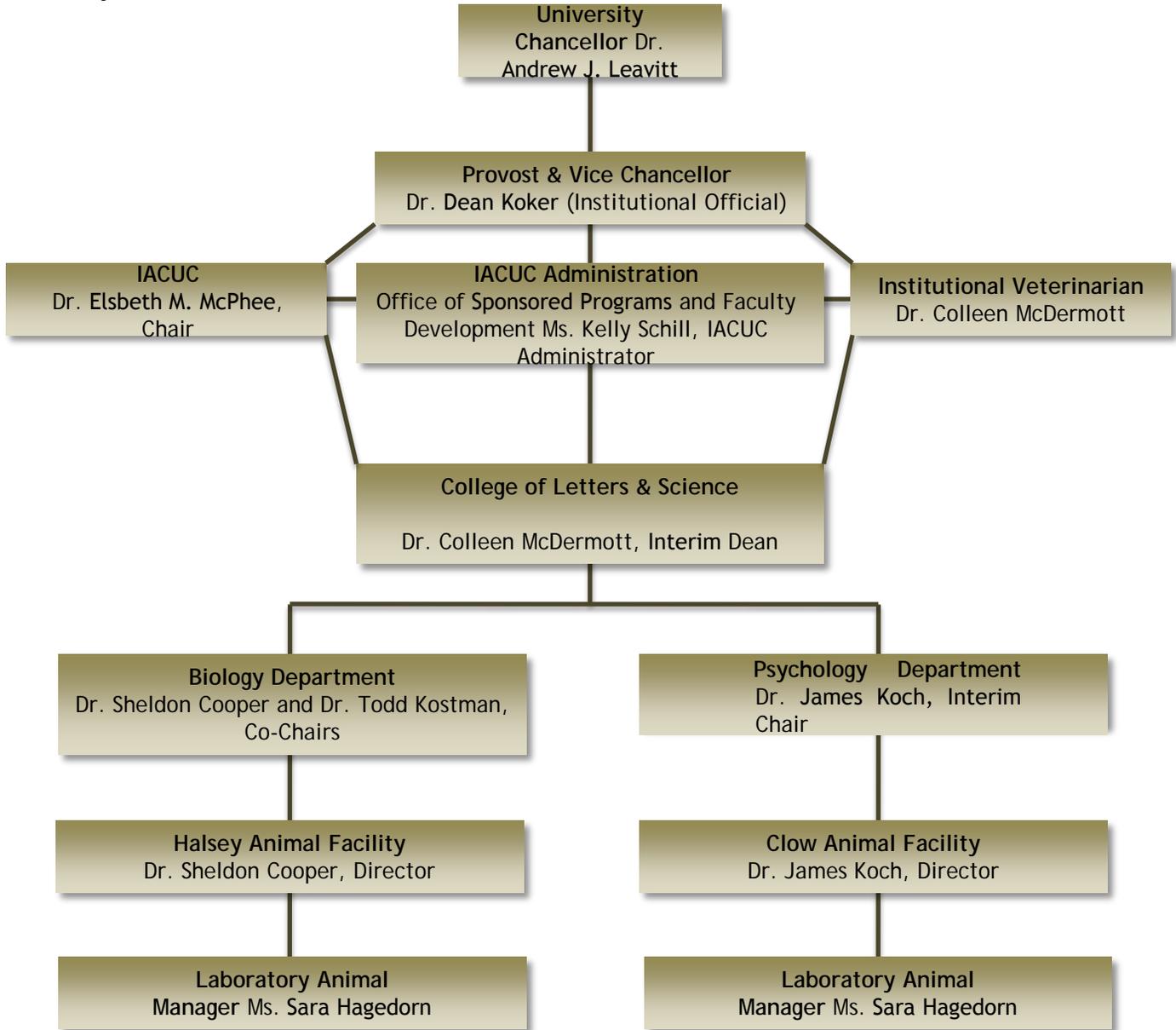
Animal Carcass Disposal

All animal carcasses are placed in the HS 17 chest freezer for short-term storage (once the animal is confirmed deceased). The freezer is divided according to infection status of animals. One side is designated for infected animals (i.e. infected with parasites) and the other side is designated for uninfected or 'clean' animals (i.e. not infected with parasites for research purposes). Uninfected animals are donated to the raptor program at Menominee Park Zoo in Oshkosh, WI. Animals with an infection status are collected by a local company for incineration once the freezer is full. The Laboratory Animal Manager is responsible for distributing the carcasses to the appropriate locations.

**Section 8:
Appendices**

Appendix 1: Institutional Program for Animal Care and Use

A. The lines of authority and responsibility for administering the program and ensuring compliance with PHS Policy are as follows:



Note: There are open and direct lines of communication between the IACUC, the IACUC Administrators and the Institutional Official and between the Veterinarian and the Institutional Official.

Appendix 2: Abnormal Clinical Sign Report

(To be filled in by animal care staff or PI)

Date:

Room #:

Species:

Sick Animal Tag #:

Animal ID# (if applicable):

Investigator:

Protocol #:

Observed By:

Description of Problem:

(To be filled in by Veterinary Staff)

Treatment or Action Taken:

Examined by:

Appendix #3: EMPLOYEE'S WORK

University Of Wisconsin System

UW-Oshkosh

UWS/OSLP-1Emp (10/11)

INJURY AND ILLNESS REPORT

Please Type or Print

INSTRUCTIONS:

1. Complete within 24 hours of the injury.
2. Sign and date the completed report
3. Submit to your supervisor to complete the WKC-12 form.
4. Direct any questions to your agency Worker's Compensation Coordinator.

FOR AGENCY USE ONLY
Claim Number
Claim Examiner / Representative

Employee Name (as it appears on payroll)		Time of Injury AM PM	Date of Injury
Work Telephone ()	Home Telephone ()	Social Security Number *	
Was Medical Treatment Required? <input type="checkbox"/> Yes <input type="checkbox"/> No	Name and Address of Treating Practitioner/Facility		
First aid only <input type="checkbox"/> Yes <input type="checkbox"/> No			
Time Lost From Work <input type="checkbox"/> Yes <input type="checkbox"/> No			
Last day worked (MM/DD/YY)			
Exact location of where accident took place (inside, outside, building name, room, vehicle, etc.)			
Witnesses (names, addresses, work telephone numbers)			
Describe in <u>detail</u> what you were doing when the injury /illness occurred. How exactly did it happen?			
Date the injury / illness reported to my supervisor (Month, Day, Year)			
Part of body injured (Check ALL that apply, and circle appropriate position) (Thumb = Finger 1, Great toe = Toe 1)			
Abdomen	Back U M L	Finger R L 1 2 3 4 5	Head
Ankle R L	Eye R L	Foot R L	Knee R L
Arm R L	Elbow R L	Hand R L	Leg R L
Mouth		Neck	
Shoulder R L		Toe R L 1 2 3 4 5	
Wrist R L		Nose	
Other (Please specify) _____ For Hand and Arm injuries circle your dominant arm : Right Left			
Have you ever been treated for a similar injury or condition? <input type="checkbox"/> Yes <input type="checkbox"/> No	If Yes Date(s) of Treatment	Name of Practitioner, Hospital or Clinic Which Provided Prior Treatment for Similar Injury:	

Please read carefully. I certify that the above statements are true and accurate and I understand that a false worker's compensation claim is a violation of Wisconsin criminal code, which may result in a fine, imprisonment, or termination from employment. Further I understand that the signature below authorizes medical, mental health and chiropractic providers to release all medical, mental health and chiropractic records to the State of Wisconsin, University Of Wisconsin System, Office of Safety and Loss Prevention, Worker's Compensation Department, or its designated representatives, at 780 Regent St., Madison, WI 53715

Employee Signature _____ **Date** _____

FOR AGENCY USE ONLY	PRIMARY ORGANIZATION CODE		FUND NUMBER	%
	1 - 2 - 8 5 - 0 - - - - -			
	SECONDARY ORGANIZATION CODE		FUND NUMBER	%
	1 - 2 - 8 5 - 0 - - - - -			
LOSS DESCRIPTION CODES	CAUSE / OCCURRENCE	OBJECT	RESULT	LOCATION
OSHA CODES	Incident was OSHA "recordable"? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Name of Authorized Representative			Date	

*Your Social Security Number must be provided and will be used for positive identification in the processing of any claims.

Appendix 5:

From The Guide for the Care and Use of Laboratory Animals, 8th Edition

“Space allocations for animals should be based on the following tables but might need to be increased or decreased...”

Taken from Guide Table 3.2. Recommended Minimum Space for Commonly Used Lab Rodents Housed in Groups

Species	Body Wt	Required Floor Area/Animal (in ²) ^a	Cage Size in Use at UWO	Height ^b , in ^c
Mice (vole) ^d	Up to 25 g	12 sq. inches / animal	Small mouse cage: 69.9 sq. in. or Standard rat/gerbil cage: 144.5 sq. in.	5
	>25 g	>= 15 sq. inches / animal	Small mouse cage: 69.9 sq. in. or Standard rat/gerbil cage: 144.5 sq. in.	5
	Female + litter ^d	51 sq. in.	Small mouse cage: 69.9 sq. in. or Standard rat/gerbil cage: 144.5 sq. in.	5
Rat (Squirrel) ^d	Up to 300g	29 sq. in. /animal " "	1. Standard Rat/gerbil/squirrel cage: 144.5 sq. in. 2. Large Rat cage: 220.4 sq. in. 3. Breeder cage: 330 sq. in. Or	7
	Up to 400 g	40 sq. in. /animal " "	1. Standard Rat/gerbil/squirrel cage: 144.5 sq. in. 2. Large Rat cage: 220.4 sq. in. 3. Breeder cage: 330 sq. in. Or	7
	Up to 500 g	60 sq. in. /animal " "	Standard Rat/gerbil/squirrel cage: 144.5 sq. in. Or Large Rat cage: 220.4 sq. in. Breeder cage: 330 sq. in. Or	7
	> 500 g	70 sq. in. /animal " "	Standard Rat/gerbil/squirrel cage: 144.5 sq. in. Or Large Rat cage: 220.4 sq. in. Breeder cage: 330 sq. in. Or	7
Female + litter ^d		124 sq. in.	Breeder cage: 330 sq. in.	7
Hamster ^d	Up to 80g	13 sq. in.	Breeder cage: 330 sq. in.	6
	Up to 100 g	16 sq. in.	Breeder cage: 330 sq. in.	6
	> 100 g	>= 19 sq. in.	Breeder cage: 330 sq. in.	6

Cage Dimensions:

mouse: 6.5W x 10.75L x 5H"

Standard rat cage: 8.5W x 17L x 7H"

Large rat cage: 10.75W x 20.5L x 7H"

Breeder cage: 15W x 22L x 6H"

- a. To convert square inches to square centimeters, multiply by 6.45
- b. From cage floor to cage top
- c. To convert inches to centimeters, multiply by 2.54
- d. Larger animals may require more space to meet the performance standards

Thirteen-lined ground squirrel space requirements are comparable to rat space requirements. Meadow vole space requirements are comparable to mouse space requirements (see text).

Appendix 6: Typical Body Condition Scoring Diagram



BC 1

Rat is **emaciated**

- Segmentation of vertebral column prominent if not visible.
- Little or no flesh cover over dorsal pelvis. Pins prominent if not visible.
- Segmentation of caudal vertebrae prominent.



BC 2

Rat is **under conditioned**

- Segmentation of vertebral column prominent.
- Thin flesh cover over dorsal pelvis, little subcutaneous fat. Pins easily palpable.
- Thin flesh cover over caudal vertebrae, segmentation palpable with slight pressure.



BC 3

Rat is **well-conditioned**

- Segmentation of vertebral column easily palpable.
- Moderate subcutaneous fat store over pelvis. Pins easily palpable with slight pressure.
- Moderate fat store around tail base, caudal vertebrae may be palpable but not segmented.



BC 4

Rat is **overconditioned**

- Segmentation of vertebral column palpable with slight pressure.
- Thick subcutaneous fat store over dorsal pelvis. Pins of pelvis palpable with firm pressure.
- Thick fat store over tail base, caudal vertebrae not palpable.



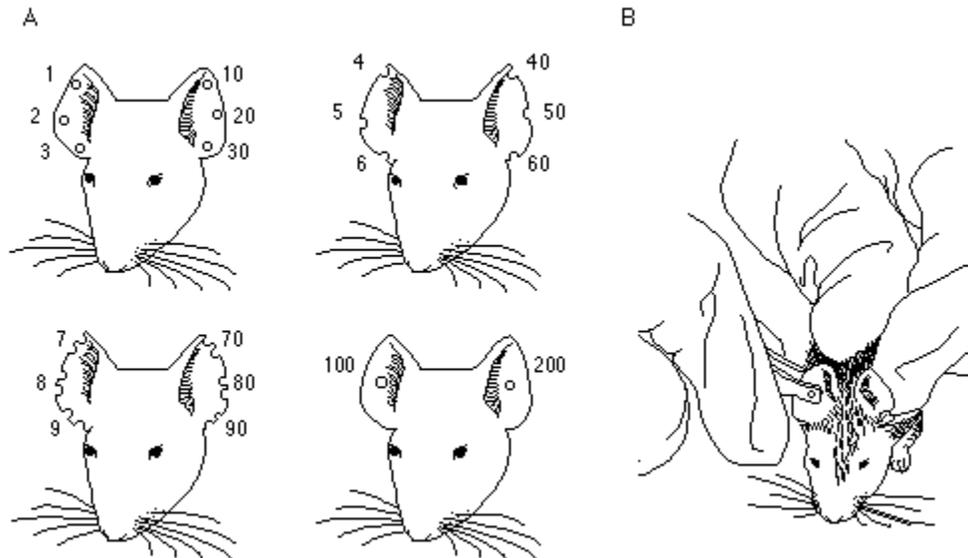
BC 5

Rat is **obese**

- Segmentation of vertebral column palpable with firm pressure; may be a continuous column.
- Thick subcutaneous fat store over dorsal pelvis. Pins of pelvis not palpable with firm pressure.
- Thick fat store over tail base, caudal vertebrae not palpable.

Appendix 7:

Example Ear Punch Identification System



- The marks on the animal's **right** ear denote units or **ones**: 1, 2, 3, 4, 5, 6, 7, 8, 9, 0.
 - The marks on the **left** ear denote **tens**: 10, 20, 30, 40, 50, 60, 70, 80, 90.

**Appendix 8:
SMALL ANIMAL ANESTHESIA/SURGERY LOG**

PI	Date	Protocol #
Species		Surgeon
Animal ID(s)/Animal weights/weight range (list all animal IDs)		
Pre-operative medication (if any)(dose, volume, route, and time)		Anesthetic agents(s) (dose and volume; % for inhalants)
Group anesthesia start time		Group anesthesia finish time
Group surgery start time		Group surgery finish time
Description of procedure /name of procedure		
Surgery Category (circle one): Minor (i.e. injections) Major (i.e. any open body cavity)		
Procedural complications/comments		
Intraoperative medications (pain meds, fluids) (include dose, route, volume, and time)		
Group immediate postoperative monitoring		
Time	Comments	Initials

Appendix 9:

Table of Clinical Signs of Pain in Laboratory Animal Species

Taken from UWO SOP #5: Analgesia

Table 1: Clinical signs of pain in laboratory animal species	
Species	Clinical Signs of Pain
Rodents (rats, mice, gerbils, ground squirrels)	<ol style="list-style-type: none">1. Avoidance, vocalization and aggressiveness (mainly if the animal cannot escape)2. Spontaneous activities are reduced. The animal is isolated from the social group3. Altered gait4. Hunched posture5. Pilo-erection (hairs stand on end)6. Reduced grooming, dark red stain around eyes and at nostrils7. Increased respiration rate8. Reduced appetite and subsequent weight loss9. Failure to explore cage when disturbed
Birds	<ol style="list-style-type: none">1. Inappetence2. Wasting3. Ruffled feathers4. Altered gait or posture5. Rapid open mouth breathing (panting)6. Dull eyes

Appendix 10

ANESTHESIA MONITORING FOR SMALL ANIMALS

A **Small Animal Anesthesia/Surgery Log** form must be used to record this information.

Gas Anesthesia for Small Animals:

The following is a standard procedure for using gas anesthesia on small animals. Species-specific needs may differ and consultation with the veterinarian is highly recommended prior to commencement of anesthesia. Please note that any new surgical procedure will be performed under the direct supervision of the campus Veterinarian.

Anesthesia will be performed by a trained and experienced member of a research team, the PI, Laboratory Animal Manager, or Veterinarian. Individuals can receive training from the PI, Lab Animal Manager, Veterinarian, or a trained and experienced member of the research team.

Before Anesthesia Procedure:

1. Check level of isoflurane in vaporizer prior to beginning anesthesia on any surgical procedure. Anesthetic level can be checked through the viewing window at the bottom of the vaporizer. If level is low or empty add more isoflurane prior to commencement of the procedure. A non-drip pour spout can be attached to the isoflurane bottle to prevent spills while pouring.
 - a. **Always wear PPE while handling isoflurane: gloves and a lab coat with long sleeves are recommended.**
2. Check and weigh the two carbon filter F/Air canisters attached to the machine. Write the date and weight on the side of each canister prior to any procedure. These canisters passively scavenge for excess isoflurane. They are effective at scavenging for up to 50 grams weight increase. After a canister gains 50 g. from initial weight it should be discarded and replaced with a new canisters.
3. Filling the vaporizer: Remove reservoir screw top on the right side of the vaporizer. Pour isoflurane into the opening. As you fill, watch the viewing window. Isoflurane level will slowly rise but do not to add too much at once as the vaporizer will overflow. Replace cap and tighten.
4. Turn on oxygen flow: The oxygen cylinder is located next to the surgery table and is connected to the vaporizer. Turn the main valve on the O₂ cylinder all the way open (counter-clockwise). Next, turn the small valve connected to the oxygen gauge counter-clockwise. You may hear a slight hissing sound as you open this second valve. Both valves must be open otherwise oxygen will not flow properly.

During Procedure:

5. When ready to begin the procedure, place one animal in the plastic induction chamber located on the surgery bench. Close and snap down the lid. Check the dual valve manifold attached to the anesthesia machine. This manifold controls where the oxygen

and isoflurane mixture flow to (to nosecone or induction chamber). The valve for the induction chamber should be 'Open', the valve for the nosecone 'Closed'. Begin the oxygen flow to the induction chamber by turning (counter-clockwise) the knob attached to the oxygen flowmeter near the vaporizer. The white ball in the flowmeter should float when oxygen is flowing. The appropriate level of O₂ flow is:

0.8-1.0 L/min O₂ (Gerbil, squirrel, hamster, rat, mouse)

6. Once oxygen is flowing, turn on the isoflurane vaporizer. There is a large dial at the top of the vaporizer. Press down on the white latch to release the dial. Dial can be set at '5' for inducing most rodent species (5% isoflurane). The vaporizer should be set at '4' for inducing hamsters (4% isoflurane) since they exhibit more sensitivity to isoflurane. It takes approximately 3-4 minutes to properly anesthetize an animal in the induction chamber.

Animal should be watched closely during induction and anesthesia and never left unattended.

7. The animal's respiration rate should be observed closely during induction. Most animals go through an initial 'excitement' phase where they exhibit increased activity (pacing, squirming, rapid respiration, ataxia). This typically only lasts about 30 seconds before activity and respiration both begin a steady decrease.
8. Once the animal is anesthetized (breathing rate has slowed and is steady), close the valve leading to the induction chamber and open the valve leading to the nosecone. This will divert the oxygen/isoflurane mixture to the nosecone.
9. Turn the isoflurane vaporizer dial to below '0' while moving the animal. This minimizes the flow of isoflurane into the room. Quickly move the animal from the induction chamber to the surgical site and immediately attach the nosecone. Animal must be placed on heat support during any procedure.
10. Turn the isoflurane dial up to '2.5-3' once the nosecone is attached. Maintain the isoflurane level at '2.5' to '3' for the entire procedure. Exact amount of isoflurane flow will differ slightly between species and even between individuals of a species. An assistant should be present during any procedure to assist with anesthesia and animal monitoring.
11. Check nociceptive response prior to commencement of the procedure. Nociception can be checked via a toe or tail pinch. Lack of stimulus signifies appropriate anesthetic depth.
12. Watch animal respiration rate during any procedure. If respiration rate drops, decrease isoflurane flow slightly until respiration increases again. This is typically the duty of the surgical assistant.

Following Procedure:

13. Upon completion of the procedure turn off the isoflurane flow to the animal. Allow the oxygen to flow for approximately another 1-2 minutes. A brief delivery of pure oxygen helps speed up recovery of the animal.

14. Turn the small valve and then the main valve on the oxygen cylinder clockwise to turn off flow.
15. Place the animal in a recovery cage with heat support and continue to monitor until awake.
16. Record anesthesia and surgery completion times on the **Small Animal Anesthesia/Surgery Log**

Appendix 11:

Recommended Dry Bulb Temperatures for Laboratory Animals

Recommended Dry Bulb Temperatures for Common Laboratory Animals

	° C
Mouse, rat, hamster, gerbil, guinea pig	20-26
Rabbit	16-22
Cat, dog, nonhuman primate	18-29
Farm animals and poultry	16-27

Taken from the *Guide for the Care and Use of Laboratory Animals*, 8th Edition, 2011,
National Academy of Sciences: National Academies Press, Washington, DC.

Appendix 12:

Basic Conversion Table

U.S. to Metric Conversion

U.S.	Metric
1 ounce (oz)	28.4 grams (g)
2.2 pounds (lbs)	1 kilogram (kg)
1 pound (lb)	454 grams (g)
1 fluid ounce (oz)	30 milliliters (ml)
1 quart (qt)	946 milliliters (ml)
1 quart (qt)	0.946 liters (L)
1 inch (in)	2.54 centimeters (cm)
1 inch (in)	25.4 millimeters (mm)
39.3 inches (in)	1 meter (m)

Originally from *ALAT Training Manual*, 2009 ed. AALAS. Taken from AALAS 2012 Reference Directory, 2012 ed. AALAS.

Appendix 13:

Suggested Needle Size, Injection Location and Injection Volumes for Common Laboratory Animals

Suggested Needle Sizes^a and Injection Volumes

Species	Intravenous (IV)	Intraperitoneal (IP)	Intramuscular (IM)
Mouse	Lateral tail vein, 0.2 ml, 23-25 ga	2-3 ml, 25-27 ga	Quadriceps, posterior thigh, 0.05 ml, 25-27 ga
Rat	Lateral tail vein, 0.5 ml, 22-25 ga	5-10 ml, 25 ga	Quadriceps, posterior thigh, 0.1 ml, 25 ga
Hamster	Femoral or jugular vein, 0.3 ml, 25-27 ga	3-4 ml, 23-25 ga	Quadriceps, posterior thigh, 0.1 ml, 25 ga
Guinea Pig	Ear vein (27ga), saphenous vein (25 ga), 0.5 ml	10-15 ml, 23-25 ga	Quadriceps, posterior thigh, 0.3 ml, 25 ga
Rabbit	Marginal ear vein, 1-5 ml (slowly), 22-25 ga	50-100 ml, 21-25 ga	Quadriceps, posterior thigh, lumbar muscles, 0.5 ml, 23-25 ga

^a The higher the gauge number, the smaller the needle. Use the smallest sized needle that will deliver the injection appropriately because this will minimize the pain of injection (non-anesthetized animals).

Adapted from AALAS 2012 Reference Directory, 2012 ed. AALAS.