SIU MEDICINE

Program Description
Animal Care and Use Program

Division of Laboratory Animal Medicine
Office of the Associate Dean for Research
School of Medicine
Southern Illinois University

For

AAALAC International

P.O. Box 19611

Springfield, IL 62794

July 23, 2018

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Appendices

Program Description

Section 1. Introduction

A. State the name of the program unit and, if applicable, its parent organization. List all organizations (schools, centers, etc.) included within the program unit.

The accredited unit is the Southern Illinois University School of Medicine (SIU SOM) in Springfield, IL.

B. Give a brief overview of the institution, its purpose and how the animal care and use program relates to the mission of the institution.

The SIU SOM charter class began in June, 1973. The mission of the School is to assist the people of central and southern Illinois in meeting their health care needs through education, patient care, research, and service to the community. The goals are to:

- Maintain leadership in medical education and develop programs that position the School to lead in the development of a medical workforce centered on rapidly evolving health care delivery demands;
- Maintain and advance the School's clinical programs as integral to the School's academic mission and as leading and vital regional forces in health care delivery;
- Enhance the School's status as a respected and influential academic institution and develop and expand scholarly and research programs centered on the medical and scientific matters of importance and relevance current among its peer institutions; and
- Promote the development of health care policy and practice especially as such policy and practice relates to the mission of the School of Medicine at the regional, state, and national levels.

The Animal Care and Use Program is an essential component of both the medical education and research missions of the SIU School of Medicine.

C. Note that AAALAC International's three primary standards are *the Guide for the Care and Use of Laboratory Animals* (*Guide*), NRC, 2011; the *Guide for the Care and Use of Agricultural Animals in Research and Teaching* (*Ag Guide*), FASS, 2010, and the European Convention for the Protection of Vertebrate Animals Used for Experimental and Other Scientific Purposes, Council of Europe (ETS 123). Other regulations and guidelines used (U.S. Department of Agriculture (USDA), Public Health Service (PHS) Policy, Good Laboratory Practice (GLP), Canadian Council on Animal Care (CCAC), etc.) may also apply. Describe which of the three primary standards and other regulations and guidelines are used as standards for the institutional animal care and

use program and how they are applied. For example, an academic institution in the United States with an Office of Laboratory Animal Welfare (OLAW) Assurance may use the standards of the *Guide* and PHS Policy for all animals, the Animal Welfare Act regulations for covered species, and the *Ag Guide* for agricultural animals used in agricultural research and teaching (see also *Guide*, pp. 32-33). In the European Union, the standards applied might be the *Guide*, ETS 123, Directive 2010/63, and any country-specific regulations.

SIU SOM uses the *Guide* and PHS Policy for all animals, and the Animal Welfare Act regulations for covered species.

D. Describe the organization and include an accurate, current, and detailed organizational chart or charts (see **Appendix 4**) detailing the lines of authority from the Institutional Official to the Attending Veterinarian, the Institutional Animal Care and Use Committee/Oversight Body (IACUC/OB), and the personnel providing animal care. Please include the title, name (*Note:* For individuals whose information is publically available, provide the titles and names; for individuals whose information is not publically available, you may provide titles only.), and degree (if applicable) of each individual at the level of supervisor or above. Names of animal care staff below the title of supervisor need not be included, but the titles and number of animal care personnel under each supervisor should be included. If animal care responsibility is administratively decentralized, including the management of satellite housing areas/locations, the organizational chart or charts must include all animal care programs, indicating the relationship between each administrative unit and personnel, the Attending Veterinarian, and the Institutional Official.

An organizational chart with names and titles of the individuals is included in Appendix 4. The Director of the Division of Laboratory Animal Medicine (DLAM) reports directly to the interim Associate Dean for Research (ADR), who reports to the Dean and Provost (the IO). The Director serves as the Attending Veterinarian (AV). The Facility Coordinator and Veterinary Technician report directly to the Director of DLAM. The animal husbandry staff members report to the Facility Coordinator. The Chair of the Laboratory Animal Care and Use Committee (LACUC) reports to the IO for all Committee matters.

E. Identify the key institutional representatives (including, but not limited to, the Institutional Official; IACUC/OB Chairperson; Attending Veterinarian; animal program manager; individual(s) providing biosafety, chemical hazard, and radiation safety oversight; etc.); and individuals anticipated to participate in the site visit.

Jerry Kruse, MD, MSPH
Institutional Official
Dean and Provost, SIU School of Medicine

Shelley Tischkau, Ph.D.
Chair, Laboratory Animal Care and Use Committee

Associate Professor of Pharmacology

Matthew Myles, DVM, Ph.D., DACLAM
Director, Division of Laboratory Animal Medicine
Attending Veterinarian

Lyndon J. Goodly, DVM, MS, DACLAM
Associate Vice Chancellor for Research
University of Illinois Urbana-Champaign
Director, Division of Animal Resource
Attending Veterinarian (contractual)

Helen Valentine, DVM, MS, DACLAM
Assistant Director, Division of Animal Resources
Clinical Assistant Professor, Shelter Medicine
University of Illinois, Urbana-Champaign
Attending Veterinarian (contractual)

Sean Snyder, DVM
Clinical Veterinarian (contractual)

Shirley Frost, LAT
DLAM Facility Coordinator

Donald Torry, Ph.D.
Interim Associate Dean for Research

Kristi Katcher, BS
Administrator, Laboratory Animal Care and Use Committee

Gary Pezall, PE
Executive Director, Capital Planning and Service Operations

Bree Schmulbach, RN
Employee Health Nurse

Karen Carlson, BS
Director, Office of Public Relations and Communications

Michael Zagotta
Safety Officer

Gregory Damarin
Director of Security

F. Briefly describe the major types of research, testing, and teaching programs involving animals and note the approximate number of principal investigators and protocols involving the use of animals. As mentioned in the instructions, please complete **Appendix 5** (Animal Usage) or provide the information requested in a similar format as an Appendix.

The major types of research that require the use of animals include cancer and tumor cell biology, geriatrics (Alzheimer's disease, longevity), surgery (microsurgery, reconstructive surgery, ischemic damage and repair), neurobiology (epilepsy, sleep, cerebral vascular control, neuronal function, hearing), diabetes, and infectious disease. Teaching programs that use animals are microsurgery skills training for plastic surgery residents and surgery skills labs for urology residents. As of July 5, 2018, 26 faculty members maintain 59 approved protocols.

G. Note the source(s) of research funding (grants, contracts, etc.) involving the use of animals.

As of July 5, 2018, sources of current funding for research at SIU SOM involving animal use include:
Federal: NIH, Department of Defense, Office of Naval Research

State: Illinois Department of Public Health, Illinois Department of Aging, Illinois State Board of Education, Illinois Department of Transportation, Illinois Emergency Management Agency, Illinois Department of Children and Family Services, Illinois Department of Human Services

Private Foundations: Kiwanis International, Memorial Medical Center Foundation, William E. McElroy Charitable Foundation, Plastic Surgery Education Foundation, Cystic Fibrosis Foundation, Susan G. Komen Breast Cancer Foundation, Josiah Macy Jr. Foundation, Hearing Health Foundation, American Psychiatric Association Foundation

Institutional: Grant Review Committee mechanisms (sources of funds include: indirect cost recovery, Bernie Eskridge Endowment for heart disease studies, Nowatski Eye Research Fund for the prevention and treatment of eye disease, Monjoiner Endowment for schizophrenia research, Illinois Health Improvement Association Endowment for diabetes and Alzheimer's Disease research, Malan-Harris Endowment for the study of neurological diseases, including Alzheimer's Disease, and Simmons Cancer Institute Funds to study various types of cancer. Departmental funds may also be used.

H. List other units (divisions, institutes, areas, departments, colleges, etc.) of your organization that house and/or use animals that are not included in this Description. If any of these are contiguous, physically or operationally (e.g., same IACUC/OB, same animal care staff), with the applicant unit, describe the association. Explain why such units are not part of this program application.

Note: Questions regarding this section should be forwarded to the AAALAC Office.

This document describes all animal housing and use areas. There are no other units of our organization which house or use animals separate from those listed in this document.

I. Contract Facilities: If the institution contracts for animal care facilities or services for animals owned by the institution, the contractor and its AAALAC International accreditation status must be identified. If a contractor's animal care and use program is not accredited by AAALAC International, a brief description, following this Program Description outline, of the relevant contractor's programs and facilities must be provided. In addition, the species and approximate average number of animals housed in the contract facilities and the approximate distance between the institution's animal facility and the contract facility must be noted. Incorporation of the contractor program into the site visit schedule will be discussed with institutional representatives. If the institution does not contract for animal care facilities or services, so note.

SIU SOM does not use contract facilities.

J. Note other relevant background that will assist reviewers of this report.

The Southern Illinois University School of Medicine has been fully accredited since 1982. AAALAC visited the facility July 23, 2015. The facility was awarded full accreditation on November 24, 2015, marking over 30 years of AAALAC accreditation for the school.

Section 2. Description

I. Animal Care and Use Program

A. Program Management

1. Program Management Responsibility [*Guide*, pp. 13-15]

a. The Institutional Official [*Guide* pp. 13-14]
Describe how program needs are clearly and regularly communicated to the Institutional Official by the Attending Veterinarian, IACUC/OB, and others associated with the program.

The IO (Dean and Provost) is informed of LACUC and DLAM activities through regular meetings with the interim Associate Dean for Research, an ex-officio member of the LACUC. DLAM activities are communicated to the ADR by the Director of the DLAM either through meetings or written communication. The LACUC Chair also meets with the IO and communicates findings or program needs. When the LACUC reports any incidents to OLAW, the Dean co-signs all letters. The IO is informed of all semi-annual program reviews and facility and laboratory inspection findings.

b. Role of the Attending Veterinarian [*Guide*, p. 14]

i. Describe the institutional arrangement for providing adequate veterinary care. Although individual name(s) and qualifications will be described below, identify by title the veterinarian(s) responsible for the veterinary care program, including:

- a list of responsibilities
- a description of the veterinarian's involvement in monitoring the care and use of laboratory animals
- the percentage of time devoted to supporting the animal care and use program of the institution if full-time; or the frequency and duration of visits if employed part-time or as a consultant.
  Note: If preferred, this information may be provided in a Table or additional Appendix.

Veterinary care is provided by Matthew Myles, DVM, Ph.D. DACLAM, Lyndon Goodly, DVM, MS, DACLAM; Helen Valentine, DVM, MS, DACLAM; and Sean Snyder, DVM.

Veterinarian's Institutional Role and Responsibilities	Plans/Advises	Oversees/Monitors	Conducts
Disease detection and surveillance, prevention, diagnosis, treatment, and resolution	Y	Y	Y
Handling and restraint; anesthetics, analgesics and tranquilizer drugs; and methods of euthanasia	Y	Y	Y
Surgical and postsurgical care	Y	Y	Y
Promotion and monitoring of animal well-being	Y	Y	Y
Oversees adequacy of the husbandry program	Y	Y	N
Training of staff in the care and use of laboratory animals	Y	Y	Y
Assist in establishment and/or monitoring OHS program	Y	N	N
Monitors for zoonotic diseases	Y	N	N
Advises on and monitors biohazard control policies and procedures relevant to the animal care and use program	Y	Y	N

ii. List others (e.g., Principal Investigators, veterinarians serving as Principal Investigators, veterinary faculty/staff, technical staff, farm managers) who have a *direct role in the provision of veterinary care* and describe their responsibilities. The Organizational Chart(s) provided in **Appendix 4** must depict the reporting relationship between these individuals and the Attending Veterinarian.
Note: If preferred, this information may be provided in a Table or additional Appendix.

Shirley Frost, Supervisor and Dr. Matthew Myles, DLAM Director and AV, perform animal evaluations and treatment, maintain animal health records, perform sample collection and testing for rodent health monitoring program, test to determine facility cleanliness, oversee testing and record for animal quarantine, perform Quality Assurance testing of cage wash equipment and sterilizers, and deliver training programs offered by DLAM. Shirley Frost oversees and maintains the surgery suite. Dr. Tischkau is responsible for drug distribution and record keeping. Shirley Frost reports to Dr. Myles. Dr. Tischkau has a weekly meeting with the AV to discuss routine issues. The veterinarians (full-time and

contractual) are available by phone 24 hours a day. Certain veterinary treatments can be administered by research or DLAM staff when directed by the AV. Dr. Sean Snyder also provides contractual clinical veterinary care. He visits the facility once per week and is available 24 hours a day for emergencies. Shirley Frost and the CVreport to Dr. Myles, Director of DLAM. Dr. Tischkau reports directly to the ADR for LACUC and animal care matters.

c. Interinstitutional Collaborations [*Guide*, p. 15]

Describe processes for assigning animal care and use responsibility, animal ownership and IACUC/OB oversight responsibilities at off-site locations for interinstitutional collaborations.

There are no off-site locations at SIU SOM.

2. Personnel Management

a. Training, Education, and Continuing Educational Opportunities

Describe *how* the IACUC/OB provides *oversight* and *evaluates the effectiveness* of training programs and the assessment of personnel competencies. Describe how training is documented.

Note: Do not include details about the training program, which should be described in the following sections.

The Attending Veterinarian oversees the training for all new personnel (faculty, research staff and husbandry staff) working with animals. Training is provided through an online Animal Handlers' Training Course that was developed by DLAM staff. Quiz questions are dispersed throughout the training to assess each participant's understanding of the information presented. If a participant gets less than 70% of the answers correct, the Attending Veterinarian will inform the participant's supervisor and arrange a meeting to clarify the information. Individuals must then complete the training again.

The participants in the Animal Handlers' Course and their quiz results are entered into a training database. Sign in sheets for the on-site section of the training are kept on file in the DLAM office. The LACUC is informed of all changes and updates in the training classes by the Attending Veterinarian.

During Semi-Annual Inspections, LACUC members will ask research staff about their training and the animal use protocols. The committee members can evaluate the understanding and competency of research personnel in this on-going manner. Descriptions of specific training relevant to an animal protocol are also included in the animal protocol reviewed by the LACUC.

i. Veterinary and Other Professional Staff [*Guide*, pp. 15-16]

For the Attending Veterinarian and other individuals having a direct role in providing veterinary medical care (veterinarians, other professional staff listed above, private practitioners, etc.), provide: name, credentials (including degrees), and a description of their qualifications, training, and continuing education opportunities.

Note: Please do not provide curriculum vitae of personnel; if preferred, this information may be presented in a Table or additional Appendix.

Matthew Myles, DVM, Ph.D., DACLAM, has almost 25 years of experience as a veterinarian. He completed Laboratory Animal Medicine residency training at the University of Missouri in 2001. Dr. Myles provides daily clinical care for animals and attends continuing education meetings.

Shirley Frost, LAT, has over 16 years of experience as a supervisor of animal care at SIU SOM; over 11 years of experience as a veterinary assistant; attends continuing education meetings.

Sean Snyder, DVM, has approximately 14 years of experience as a clinical practitioner in small animal medicine; provides on-call clinical care as needed.

Shelley Tischkau, Ph.D., has over 20 years of experience with rodents, birds and fish as a researcher. She has 10 years IACUC experience, including 7 as chair at SIUSOM. She attends continuing education meetings related to IACUC.

ii. Animal Care Personnel [*Guide*, p. 16]

1) Indicate the number of animal care personnel.

3 Laboratory Animal Technicians and 2 Laboratory Animal Caretakers

2) Summarize their training, certification level and type, experience, and continuing education opportunities provided.

Note: If preferred, this information may be provided in a Table or additional Appendix.

Lindsey Sime (Over 6 months experience at SIU SOM)
Jennifer Kirby (Over 18 months experience at SIU SOM)
Jeremy Nickerson (Over 8 years experience at SIU SOM)
Ann Webster (Over 12 years experience at SIU SOM)
April Kendall (1 month experience at SIU SOM)

The Coordinator provides on-the-job training for all animal care staff. All animal care personnel also complete the Animal Handlers' Training Course

and the Occupational Health Training Course near the beginning of their employment. Dr. Myles and Shirley Frost provide continuing education through periodic in-house training sessions.

iii. The Research Team [*Guide*, pp. 16-17; 115-116; 122; 124]

1) Describe the *general mechanisms* by which the institution or IACUC/OB ensures that research personnel have the necessary knowledge and expertise in the animal procedures proposed and the species used.

All personnel working with animals must complete the Animal Handlers' Training Course before working with animals. The training program for research staff on humane and ethical animal research consists of an online class followed by a 30 minute facility orientation. Dr. Myles oversees the material in the online class with the assistance of Dr. Tischkau and staff from Environmental Health and Safety. Supplementary educational materials are available on the website of the ADR.

Protocol PI's must describe the relevant animal experience and the role of each person on the protocol. Training specific to each animal protocol must also be described as well as the individual responsible for providing the training. The LACUC will ask for clarification if needed.

a) Briefly describe the content of any required training.

Topics covered in the Animal Handlers' Course include:

- Sources of information on the use of animals in research and related legislation
- Regulatory agencies and AAALAC
- Reporting improper care or use of animals and concerns
- Alternatives: replacement, reduction, and refinement
- Protocol preparation, review and LACUC functions
- Introduction to animal facilities: procedures, procurement, housing, and animal care
- Security
- Animal use: biocontainment, barrier housing, surgery, anesthesia and analgesia, euthanasia, and iatrogenic conditions
- Zoonotic disease, allergies, and injuries
- Public relations and animal welfare/animal rights groups
- Occupational health and safety
- Continuing education

b) Describe the timing of training requirements relative to the commencement of work.

Personnel must complete the Animal Handlers' Course, pass the quiz, complete the risk assessment questionnaire and attend the orientation prior to working with animals unsupervised. Personnel may work with animals prior to completing the course only if they are directly supervised by a trained staff member. Individual access is not granted to the facility through the key card system until training has been completed.

c) Describe continuing education opportunities offered.

DLAM and the LACUC provide continuing education by contributing to The Research Communique published by the Office of the ADR.

In addition, DLAM staff offers courses such as Mouse Techniques, Rat Techniques, Surgery Skills Basics, Necropsy Techniques, and Breeding Colony Management on a rotating basis.

LACUC members and the LACUC Administrator have the opportunity to attend courses, workshops, and meetings, such as PRIM&R, IACUC 101, and Essentials of IACUC Administration. DLAM staff attend AALAS meetings, webinars, and in-house training.

2) Describe the process(es) to ensure surgical and related procedures are performed by qualified and trained personnel, including:

- who determines that personnel are qualified and trained for surgical procedures
- the roles that the Attending Veterinarian and IACUC/OB have in this determination [*Guide*, pp. 115-116]

Personnel who perform survival surgery or conduct training classes that use non-rodent species have historically been surgeons or surgical residents. Experienced laboratory personnel or DLAM staff train new laboratory members to perform surgery on rodents. A rodent surgery training class is offered as needed by the Veterinary staff. The Attending Veterinarian provides one-on-one training for any individual who needs to improve his or her surgical skills. If the LACUC or the Attending Veterinarian are concerned that someone on the research team does not have adequate skills, the LACUC can require that the staff member be observed and/or work with the Attending Veterinarian to improve skills. Post-surgical animals are observed by the veterinary technician and AV. Concerns, if they exist, are handled by the AV.

Additionally, LACUC members will ask research staff about the protocols and surgical methods during the Semi-Annual Program Inspections. The committee members can evaluate the understanding and competency of research personnel in this on-going manner.

3) Describe the training and experience required to perform anesthesia. [*Guide*, p. 122]

The Veterinary Technician and Attending Veterinarian performs and/or supervises anesthesia during surgery on non-rodent species. Experienced laboratory personnel train new laboratory members to perform anesthesia on rodents. Training is also available through DLAM.

4) Describe how the proficiency of personnel conducting euthanasia is ensured (especially physical methods of euthanasia). [*Guide*, p. 124]

The Attending Veterinarian or Contract Veterinarian helping with surgery labs performs euthanasia of swine. Experienced laboratory personnel or DLAM staff train new laboratory members to perform euthanasia of rabbits, chinchillas, guinea pigs, and rodents. Documentation of this training involving USDA covered species is maintained by DLAM. Cervical dislocation (mice) or decapitation without anesthesia (mice or rats) must be scientifically justified in the protocol and approved by the LACUC. The names of the personnel authorized to perform physical methods of euthanasia without anesthesia must be listed in the protocol. In addition, a member of the LACUC must observe each person perform these methods to verify that euthanasia is conducted correctly and humanely. The AV also regularly observes individuals performing euthanasia during a routine walk through of the facility.

b. Occupational Health and Safety of Personnel [*Guide*, pp. 17-23]

i. Institutional Oversight [*Guide*, pp. 17-19]

1) List the institutional entities (units, departments, personnel, *etc*.) that are involved in the planning, oversight, and operation of the institutional occupational health and safety program related to animal care and use (e.g., office(s) of environmental health, institutional health services or clinics (*including contracted health services*), industrial hygienists, Institutional Biosafety Committee(s) and/or Officer(s), Radiation Safety Committee(s) and/or Officer(s).

- Include a brief description of their responsibilities and qualifications.
- If contracted services are used, also include their location (e.g.,remote offices to which personnel must report).

The Environmental Health and Safety Office, Human Resources, the Office of the interim ADR, the LACUC, and the Infection Control and Safety Committee (ICSC) all participate in planning, oversight and operation of the occupational health and safety as it relates to the facility and animal use. There are no contracted services currently. All personnel who must work with research animals are required to complete the Animal Handlers' Training course. This includes faculty (hired after August, 2005), students, and staff. Trained Animal Handlers must complete and submit the Occupational Exposure to Animals or Hazardous Materials Used in Animals form indicating the species of animals they are using, how frequently they will be in contact with animals, and what hazardous substances they will use. These forms are reviewed by the Employee Health Nurse. Noted potential health concerns are addressed in consultation with faculty in Infectious Disease in the Department of Internal Medicine. The Employee Health Nurse will then contact the individual to discuss potential health risks. These forms are kept on file with the Employee Health Nurse.

During the hiring process, individuals are informed of a list of potential health concerns if the position requires working with laboratory animals. This list of health conditions includes immune system disorders, malignancies, tuberculosis, allergies, etc. The notice is posted on the HR website containing the position description and requirements of the open position. All employees are encouraged to consult their own primary health care provider, an occupational health physician, or the Employee Health Nurse with any questions or concerns. This is administered by HR.

On an annual basis, the Employee Health Nurse sends a memo "Tetanus Immunization Update for SIU SM Laboratory Animal Handlers" to all Springfield SIU SM employees. When any accident or incident related to laboratory animals is reported by the online reporting form, the Employee Health Nurse is contacted. The Employee Health Nurse will evaluate the situation and contact the on-call Infectious Disease physician if needed.

The Infection Control and Safety Committee (ICSC) or the Radiological Control Committee (RCC), as appropriate, must review and approve the use of any hazardous biologic, chemical, radioactive, or physical agents. Questions in the animal protocol form also address biohazards, risk assessment, safety precautions, and employee right-to-know and training. The Veterinary Technician is a voting member of the ICSC. The interim ADR is an ex-officio member of the LACUC, ICSC, and RCC. The officers of the Environmental Health and Safety Office are members of the ICSC and ex-officio members of the LACUC. Radioactive materials to be used in animals cannot be ordered without approval by the LACUC and the RCC. The Radiation Safety Officer is a member of the RCC, ICSC, and LACUC.

The ICSC reviews and approves applications for the use of hazardous materials. The ICSC also receives Safety Data Sheets (SDS) for hazardous materials and together with the Environmental Health and Safety Office (EHSO) monitors the use of these materials. All SDS's are available on the ChemWeb site. SIU SOM and DLAM personnel can access this information on the SIU Intranet. Research laboratories maintain chemical safety plans within each laboratory.

2) Describe methods to identify work-related hazards and the processes used to evaluate the significance of those hazards in the context of duties and tasks. Describe both common approaches and differences, if applicable, for categories of personnel such as, but not limited to, researchers, veterinarians, husbandry staff, cage-washing staff, students, housekeeping, physical plant staff, security personnel, IACUC/OB members (including non-affiliated members), contractors, visitors, etc. [*Guide*, pp. 18-19; see also Chapters 2 and 3 in Occupational Health and Safety in the Care and Use of Research Animals, NRC 1997.].

The Radiation Control Committee (RCC) or the Infection Control and Safety Committee (ICSC), as appropriate, must approve all protocols that use hazardous agents. Only personnel named in the approved protocols may manage or use the approved hazardous materials. Individual research laboratories maintain site-specific chemical hygiene plans, with documentation of personnel training. Specific procedures for manipulating hazardous agents are defined in the approved protocols. Standard Operating Procedures (SOP) for handling animals exposed to chemical, biological, or radiation hazards are in place and reviewed regularly with the DLAM staff.

In order for an employee to use radioactive material, those employees must complete Radioactive Material Safety Training. This involves reading through the SIU Radioactive Material Safety Manual and passing a written exam with an 80% or better. Further hands on training is completed by the Radiation Laboratory Supervisor in the employees' lab. Annual refresher training is required for the employee to continue using radioactive materials.

In order for an employee to use X-Ray devices, the employee must complete X-Ray Safety Training. This involves reading through the SIU X-Ray Safety Manual and passing a written exam with an 80% or better. Annual refresher training is required for continued use of X-Ray producing equipment. If the employee is going to use the X-Ray cabinet irradiator, the employee will be trained directly by the Radiation Safety Officer prior to the first use.

Personnel with potential for exposure to human tissue or body fluids receive annual ICSC approved training for handling blood borne pathogens by the

Office of Human Resources. The principal investigator, the EHSO, and/or the Employee Health Nurse train all personnel who handle infectious biologic agents or hazardous physical or chemical agents. The EHSO provides training yearly on hazard communication, chemical hygiene, emergency and evacuation plans. Each research laboratory is required to maintain a site-specific chemical hygiene plan, with documentation of training.

The Animal Handlers' Training Course includes a section on use of hazardous agents in animals. This is overseen by staff from the Environmental Health and Safety Office. Topics covered include risk assessment, standard practices for methods and techniques, safety equipment and personal protective equipment, and facility design. Links to pertinent websites are provided, including the Biosafety in Microbiological and Biomedical Laboratories (BMBL), Guidelines for Research Involving Recombinant DNA Molecules from the National Institutes of Health, and the Laboratory Biosafety Manual from the World Health Organization.

The DLAM Occupational Health Program covers all persons who use or work with laboratory animals. Each new person who takes the Animal Handlers' Training Course completes a questionnaire concerning personal health risks. This information is evaluated by the Employee Health Nurse. She will make additional recommendations to the specific individual if needed.

The level of risk is determined based on the species and source of animals and the frequency of animal contact. New employees are informed of potential risks during the Animal Handlers' Training Course and, in addition, individuals may also contact the EHSO for information. Employees are advised to discuss personal health concerns with their private primary care physician or the Employee Health Nurse. Individuals with sporadic exposure to the facility like the unaffiliated LACUC member, security, facility engineers and operators, etc. receive basic training on the facility and occupational health administered through an on-line training course overseen by EHSO prior to entry into the facility.

3) Describe methods and frequency of reassessing work-related hazards.

Work-related hazards are reassessed after any reports are placed into the web-based incident reporting system, as needed. Hazards are also re-assessed if new equipment, materials, chemical/radiation/biological exposures, or facility changes occur or are procured. During the LACUC facility inspections, hazards may also be noted. The Facility Coordinator and AV continually observe procedures and operations to make changes as needed. Thus, assessments occur on an on-going basis.

4) Describe institutional programs or methods used to track and evaluate safety-related workplace incidents, including injuries, exposures, accidents, etc. Include the frequency of such assessments. [*Guide*, pp. 18-19]

Employees are instructed how to report workplace injuries and accidents at the new employee orientation, and during the Animal Handlers' course using the web-based reporting system. Employees must report an incident/hazard related to SIU School of Medicine facilities or operations by accessing the on-line reporting system. The incident is also reported to the immediate supervisor. The incidents entered into the on-line system are evaluated by the Employee Health Nurse, the staff of Environmental Health and Safety, and others, if needed. The Employee Health Nurse may recommend the employee seek care at the Emergency Room (if contacted directly by phone), from their personal physician, and/or consult with an SIU SOM Infectious Disease physician. Depending upon the nature of the hazard or injury, EHSO staff may review the area or working condition and make recommendations for correction/changes. A quarterly report of all employee workplace incidents is presented at the ICSC meeting.

If an emergency occurs, such as a chemical spill or severe animal bite, the injured person or coworker calls the Security Office for immediate assistance. The Security Office is staffed 24 hours a day, 7 days a week. Therefore, assistance is available at all times.

ii. Standard Working Conditions and Baseline Precautions

The following section pertains to the Occupational Health and Safety Program for all personnel associated with the animal care and use program. Specific information regarding the use of hazardous agents is included in ***subsection iii*** below.

1) Medical Evaluation and Preventive Medicine for Personnel [*Guide*, pp. 22-23] *Note:* Include blank forms used for individual health assessment as **Appendix 6.**

a) Describe who (e.g., personnel assigned to job/task categories in I.A.2.b.i.2) above) receives personal medical evaluation as a component of individual risk assessment. Describe who are ***not*** included and/or exempted from personal medical evaluation. *Note:* Do not include the names of personnel.

Personal medical evaluations are not conducted by SIU SOM. Individuals who will have animal exposure are provided information prior to employment and are instructed to discuss concerns with their personal physician. Individuals requiring respiratory protection (i.e. use of an N95

mask) complete a respiratory questionnaire that is reviewed by the Employee Health Nurse. Prior to entering the animal facility, individuals also complete a risk assessment form that is reviewed by the Employee Health Nurse.

b) Describe provisions for allowing an individual (following completion of individual health and job related risk assessments) to decline participation in all or part(s) of subsequently available medical and preventive medicine components of the institutional program, e.g., vaccinations, physical examinations, respiratory protection, as applicable. Provide an estimate (percentage) of personnel associated with the animal care and use program that have declined participation in the medical evaluation program.
Note: Do not include names of the personnel

Formal medical evaluations are not conducted (i.e. physicals, blood tests, etc). No one has declined to submit the risk assessment forms. Declinations would be handled by the Employee Health Nurse and confirmed in writing with paperwork maintained by HR.

c) Describe provisions for assuring confidentiality of medical information.

A Sensor electronic report (i.e. on-line incident reporting system) is submitted to the Employee Health Nurse. DLAM staff does not handle the records/paperwork as individuals submit electronically to the Employee Health Nurse. Risk assessment forms are placed in an interoffice envelope marked “Confidential” by the employee and placed directly into the mail to the Employee Health Nurse. No medical information is maintained by DLAM but all is maintained by HR (Employee Health Nurse) following all HIPPA regulations.

d) Describe safety considerations for individuals with incidental exposure to animal care and use (e.g., contractors, personnel working in open laboratories).

Individuals with sporadic exposure to animal care and use, such as the unaffiliated LACUC member, security, facility engineers and operators, etc. receive basic training on the facility and occupational health administered through an on-line training course overseen by EHSO prior to entry into the facility.

e) Describe general features of the medical evaluation and preventive medicine programs, within the context of work duties, including:

- pre-employment/pre-assignment health evaluation,
- medical evaluations (including periodicity),

- diagnostic tests (e.g., for tuberculosis),
- precautions for working with potentially hazardous species (e.g., nonhuman primates, sheep, venomous species)
- immunization programs, and
- procedures for communicating health related issues.

SIU SOM does not perform pre-employment or routine medical evaluations. New employees are tested for tuberculosis by the Employee Health Nurse. For DLAM personnel who work in cage wash, hearing tests are performed on a yearly basis. No hazardous species are currently housed in the animal facility. Employees are reminded by the Employee Health Nurse, on a yearly basis, to have their tetanus status updated as needed and to provide that documentation to her. All health-related concerns can be confidentially reported through the Sensor on-line system or directly to the Employee Health nurse.

f) Describe any other entities that provide medical services (e.g., emergency care, after-hours care, special medical evaluation, contracted services). Include a brief description of their credentials and/or qualifications, and how these entities remain knowledgeable about animal- or institution-related hazards and risks.

Employee health nurse, infectious disease physicians on call, and Memorial Medical Center or St. Johns Emergency Departments. The Employee Health Nurse is a member of the ICSC and contacts the AV as needed with questions or to clarify issues.

2) Personnel Training Regarding Occupational Health and Safety
[*Guide*, p. 20]

Describe general educational program(s) to inform personnel about:

- allergies,
- zoonoses,
- personal hygiene,
- physical injuries in animal facilities (e.g., noisy areas, large quantities of chemicals such as disinfectants, ergonomics) or species used (e.g., nonhuman primates, agricultural animals),
- other considerations regarding occupational health and safety.

Include in the description a summary of the topics covered, including:

- Entities responsible for providing the training
- Frequency of training or refresher training

Note: Do not include special or agent-specific training for personnel exposed to experiment-related hazardous agents; this will be provided in **Section iii.3** below.

Zoonoses, allergies, and bite/scratch injuries are covered in the Animal Handlers' course. In addition, personnel from the Environmental Health and Safety Office have a section on Animal Biosafety Levels and the use of hazardous agents in animals in the course. The AV and staff from EHSO oversee these courses which are mandatory prior to starting animal projects. No refreshers are required. All SIU SOM personnel must also attend the occupational health and safety seminars (separate from the Animal Handlers' Class) presented online or by personnel from the Office of Human Resources or EHS. HR provides Blood Borne pathogen (BBP) and TB training. These include annual refresher Hazard Communication, Blood Borne Pathogen training, and other topics as appropriate, such as Hand Hygiene, Laboratory Standard training, Chemical Fume Hood and Bio-safety Cabinet Safety, and Tuberculosis and Respiratory Disease Precautions training.

The use of hazardous agents must be approved by the ICSC and LACUC. Approved protocols include specific requirements for the safe use, transport, and storage of hazardous biological and chemical agents. Only personnel named on the approved protocols are allowed to manipulate the hazardous material(s). Training statements indicating completion of all applicable required training is submitted for each named individual in the application

3) Personal Hygiene [*Guide*, p. 20; *Ag Guide* pp. 4-5]

a) List routine personal protective equipment and work clothing provided and/or required for animal care personnel, research and technical staff, farm employees, etc.

The SIU SOM provides scrubs and boots for the husbandry staff and laboratory coats for other DLAM personnel. This footwear and work clothing are worn only at work. DLAM launders this clothing on site. Personnel change into street clothes or wear lab coats to cover their scrubs if they leave the DLAM area for lunch. In several areas of the facility, including barrier, containment, quarantine and contaminated areas, DLAM provides masks, gloves, surgical gowns, hair covers, and shoe covers to all personnel. Disposable clothing items are incinerated. Surgical gowns are laundered and then autoclaved. DLAM personnel wear disposable N95 respirators on a voluntary basis. Respirators are used for personal comfort not because they are exposed to a hazard environment. The respirators may be worn when steam cleaning rooms. N95 masks are fit-tested as needed. Hearing protection must be worn in the cage wash area. Eye protection, gloves, and masks are available at all times.

Hearing protection is provided for personnel working in the cage wash area. Boots are provided for the cage wash area to prevent wet feet and slipping. Eye protection and fitted (upon request only) N95 respirators are also provided. A mobile ventilated dump station is used in the cage wash area to reduce exposure to aerosols. Sharps containers are kept in appropriate locations. Employees are instructed about proper needle handling at Blood Borne Pathogens and Animal Handlers' training sessions.

Research and technical staff entering the animal facility are required to wear clean lab coats, closed toed shoes and gloves. These are provided by the individual labs and/or DLAM.

b) Describe arrangements for laundering work clothing.

DLAM launders this clothing on site in a dedicated washer and dryer. Laundry facilities are also available on-site for lab use.

c) Describe provisions and expected practices for washing hands, showering, and changing clothes, including instances where work clothes may be worn outside the animal facility.

Separate shower and change/locker room facilities are provided for male and female employees. Emergency showers are located in the necropsy room in Building A, and the hallways and chemical storage room in Building C. The work rooms in Building B have hand-held emergency shower stations. Eyewash stations are located in several places within the facility (Buildings A, B, and C). Hand washing sinks are available in the conventional corridor of Building B (SCLF) and at the main exit from the facility in Building A. In addition, all animal rooms in Building C have sinks/soap/towels for hand washing. All animal rooms without sinks have a hand sanitizer dispenser. Required protective clothing for research personnel is limited to shoes with closed toes and to laboratory coats that are laundered by the individual departments. In rodent barrier and containment areas, DLAM provides additional protective clothing. A locker room outside the rodent barrier is stocked with appropriate PPE and serves as a space to don PPE before contact with animals. PPE for other areas is donned in the corridor prior to entering the animal housing room.

Work clothing for DLAM staff must be removed or covered with a clean lab coat if personnel leave the building. Research staff are encouraged to remove dedicated lab coats when not working with animals.

d) Describe policies regarding eating, drinking, and smoking in animal facilities.

Smoking is not allowed in any building or on the grounds at the SIU SOM. Eating and drinking are not permitted in the animal facility.

4) Standard Personnel Protection [*Guide*, pp. 21-22]

a) Describe facility design features, equipment and procedures employed to reduce potential for physical injury inherent to animal facilities (e.g., noisy areas, large quantities of chemicals such as disinfectants, ergonomics) or species used (e.g., nonhuman primates, agricultural animals).

DLAM personnel wear disposable N95 respirators on a voluntary basis and are fit-tested, upon request. Respirators are used for personal comfort, not because they are exposed to a hazardous environment. The respirators may be worn when steam cleaning rooms. Hearing protection is provided and must be worn in the cage wash and swine areas. Eye protection, gloves, and masks are available for daily use. Boots are provided for the cage wash area to prevent wet feet and slipping. Mobile ventilated dump stations are used in the cage wash areas to reduce exposure to aerosols. Sharps containers are kept in appropriate locations. Employees are instructed about proper needle handling at Blood Borne Pathogens and Animal Handlers' training sessions.

Annual Chemical Hygiene Training Classes and Workplace safety are provided by the ICSC, including respiratory and hearing protection, chemical safety, and hazard communication. Annual safety refresher training also includes hand hygiene, blood borne pathogens, and bio-safety cabinet/chemical fume hood use and safety (the last for applicable DLAM personnel only).

DLAM makes on-going attempts to reduce ergonomic injury. For example, DLAM provides water to rodents by the Hydropac system, significantly reducing the potential for ergonomic injury associated with water bottle manipulation (corking, lifting, uncorking, etc.). Dollies are used for moving heavy equipment, feed and bedding barrels are placed on casters. Upon request, the EHSO presents periodic ergonomics and back safety training.

b) Describe likely sources of allergens and facility design features, equipment, and procedures employed to reduce the potential for developing Laboratory Animal Allergies (LAA).

Sources of allergens within the facility include animal dander, urine, and fur as well as dust from bedding materials and food stuffs. All static microisolator cages are covered with their filtered tops unless specifically excluded by the LACUC. Staff are provided with scrubs, coats, head covers, gloves and dust masks to decrease exposure. Frequent hand washing is recommended. Engineering controls include appropriate air changes in holding rooms, filtered and conditioned recirculated air, and the use of biosafety cabinets.

c) Describe likely sources of zoonoses and facility design features, equipment, and procedures employed to reduce potential exposure to zoonoses.

Zoonotic exposure is low as all animals are purpose-bred and have testing prior to acceptance into the facility. Routine surveillance through serology and PCR testing is completed if a zoonoses risk is suspected. Occasionally wild rodents are found within the research areas and may be tested although no zoonotic agents have been found to date. Procedures in place within the facility in regards to housing and handling the animals would aid in protecting staff.

d) Describe the procedures for the maintenance of protective equipment and how its function is periodically assessed.

DLAM personnel wear disposable N95 respirators on a voluntary and as needed basis after fit testing and completing an assessment form. Respirators are used for personal comfort, not because they are exposed to a hazardous environment. The respirators may be worn when steam cleaning rooms. N95 masks would also be required if described in an approved ICSC protocol.

Hearing protection is provided by ear plugs. These ear plugs meet EHSO recommendations for DLAM work conditions. Audiograms annually.

All biosafety cabinets, chemical fume hoods, and transfer stations are serviced and certified every 6-12 months by an outside contractor.

The DLAM staff clean and replace filters on the mobile ventilated dump stations daily.

e) Respiratory Protection

i) Describe situations where respiratory protective equipment is available or required, such as cage washing facilities, feedmills, etc.

DLAM personnel wear disposable dust masks and N95 respirators on a voluntary basis. Respirators are used for personal comfort, not because they are exposed to a hazardous environment. The respirators may be worn when steam cleaning rooms.

ii) Describe programs of medical clearance, fit-testing, and training in the proper use and maintenance of respirators.

The purpose of SIU ICSC Respiratory Protection Program (ICSC 11.0) is to ensure employees are protected from exposure to respiratory hazards. Administrative and engineering controls are the primary means to control exposure to airborne contaminants. General and local ventilation controls, such as fume hoods, are designed to reduce airborne contaminant levels. However, these controls are not feasible for all operations or may not adequately control identified hazards. In some situations respirators must be used. Employees are provided with respirators that are applicable and suitable for the purpose intended at no cost to the employee.

Voluntary use of respirators is allowed on a case-by-case basis, if the use of the respirator will not jeopardize health or safety. Voluntary respirator use is subject to the requirements outlined in the Respiratory Protection Program, under Scope and Application. Approved respirators used on a required and voluntary basis at SIU-SOM and SIU-HC are listed in Section III, Respiratory Protection Program, in Table 1.

iii) Describe how such respiratory protective equipment is selected and its function periodically assessed.

There are no airborne hazards above any established permissible exposure limits (PEL) or threshold limit value (TLV). The use of respirators for relief from nuisance dust is on a voluntary basis. Employees are provided respirator training and medical evaluation at no cost to the employee as part of the Respiratory Protection Program.

f) Heavy Equipment and Motorized Vehicles

i) Provide a general list of the types of cage-processing equipment used, such as rack/cage washers, tunnel washers, robotics, and bulk autoclaves. Describe training programs, informational signage, and other program policies designed to ensure personnel safety when working with such equipment.
Note: Details of specific equipment installed in animal facility(ies) are to be provided in **Appendix 15** (Facilities and Equipment for

Sanitizing Materials).

Within the facility there is a tunnel washer and two rack washers. A cabinet washer is used for water bottles and small pieces. A floor-loading autoclave services the barrier and two smaller autoclaves service the remainder of the facility. The DLAM staff members responsible for operating cage washing equipment receive on-the-job training from the Facility Coordinator. EHSO completed a survey of potential confined spaces and identified the requirements for safe access and egress from the tunnel and rack washers in Buildings A, B, and C. Requirements include Lockout/Tagout to control electrical and thermal hazards for all machines. DLAM staff receive Lockout/Tagout policy and procedures training. Signage is posted both inside and outside of the walk in equipment to indicate safety procedures and egress areas. The DLAM Facility Coordinator is responsible for ensuring program requirements are followed. Employees are given training at the time of hire and as needed at the start of each rotation in the cage wash area.

ii) List other heavy equipment such as scrapers, tractors, and farm machinery (manufacturer name, model numbers, etc. are not necessary). Describe training programs, informational signage, and other program policies designed to ensure personnel safety when working with such equipment.
Note: If preferred, this information may be provided in a Table or additional Appendix.

No such heavy equipment is used in the facility.

iii) If motorized vehicles are used for animal transport, describe how the driver is protected from exposure to hazards such as allergens or zoonoses and decontamination methods employed. Also describe instances where vehicles may be shared between animal and passenger transport.

No motorized vehicles are used for animal transport.

g) Describe safety procedures for using medical gases and volatile anesthetics, including how waste anesthetic gases are scavenged.

Anesthetic gases are scavenged by connection from the anesthetic machines to the building vacuum system in most cases. In some instances, charcoal canister filtration is used.

Previous badge monitoring of staff administering isoflurane anesthesia indicated no exposure to waste gas. All DLAM owned isoflurane

vaporizers, ventilators, and other components are serviced at least once a year by an outside company (Bio-Medic, Crestwood, IL). Most, if not all, of the faculty owned isoflurane vaporizers are also serviced at this time.

Gas cylinders within the facility for oxygen and carbon dioxide are appropriately secured, maintained and monitored by the veterinary technician.

iii. Animal Experimentation Involving Hazards [*Guide*, pp. 20-21]

1) List, according to each of the categories noted below, hazardous or potentially hazardous agents currently approved to be used in animals that are or will be maintained for more than a few hours following exposure. If the hazardous agent cannot be listed by name for security/proprietary reasons, identify it by the general category of agent and level of hazard.
Note: If preferred, this information may be provided in a Table or additional Appendix.

a) Biological agents, *noting hazard level* (CDC Biohazard Level, Directive 93/88 EEC, CDC or USDA/DHHS Select Agent, etc.). Examples may include bacteria, viruses, viral vectors, parasites, human-origin tissues, etc.

The SIU School of Medicine accommodates labs working at both ABSL-1 and -2.

The hazardous biological agents used in animals at SIU SOM are listed in Appendix 18.

b) Chemical agents, *noting general category* of hazard (toxicant, toxin, irritant, carcinogen, etc.). Examples may include streptozotocin, BrdU, anti-neoplastic drugs, formalin, etc.

The hazardous chemical agents used in animals at SIU SOM are listed in Appendix 19.

c) Physical agents (radiation, UV light, magnetic fields, lasers, noise, etc.).

The hazardous physical agents used in animals at SIU SOM are listed in Appendix 20.

2) Experiment-Related Hazard Use [*Guide*, pp. 18-19; See also Chapters 2 and 3 in *Occupational Health and Safety in the Care and Use of Research Animals*, NRC 1997].
Note: Written policies and standard operating procedures (SOPs) governing

experimentation with hazardous biological, chemical, and physical agents should be available during the site visit.

a) Describe the process used to identify and evaluate experimental hazards. Describe or identify the institutional entity(ies) responsible for ensuring appropriate safety review prior to study initiation.

The ICSC and RCC review research protocols to identify potential hazards and assign containment level. Recommendations and requirements from these committees are then provided to both the PI and the LACUC and are explicit in the animal use protocol.

b) Describe how risks of these hazards are assessed and how procedures are developed to manage the risks. Identify the institutional entity(ies) responsible for reviewing and implementing appropriate safety or containment procedures.

The ICSC and RCC (ex-officio members of the LACUC) review research protocols/amendments submitted to the LACUC for full committee review to assess and identify potential hazards and assign containment level. Once the level of containment has been assigned, the DLAM Coordinator and AV implement the procedures in conjunction with the PI.

c) Describe the handling, storage, method and frequency of disposal, and final disposal location for hazardous wastes, including infectious, toxic, radioactive carcasses, bedding, cages, medical sharps, and glass.

Carcasses are stored in the DLAM cooler and incinerated on site at least weekly. Medical sharps and other infectious items are incinerated off site by a licensed contractor who picks up material at least weekly and as needed. Chemical waste is stored by EHSO in their dedicated area and picked up by an outside contractor. Any radioactive carcasses or disposable cages are collected by the Radiation Control Officer and stored in a dedicated room with controlled access.

d) Describe aspects of the medical evaluation and preventive health program specifically for personnel potentially exposed to hazardous agents.

Any personnel potentially exposed to a hazardous agent would contact the Employee Health Nurse directly or complete an incident form in Sensor, an online reporting system. The Employee Health Nurse would determine the appropriate course of action. Standard Operating Procedures in DLAM exist that describe all procedures when hazardous agents are in use. This includes,

but is not limited to, appropriate PPE, caging, and room conditions such as air pressure differentials.

3) Hazardous Agent Training for Personnel [*Guide*, p. 20]
Describe special qualifications and training of staff involved with the use of hazardous agents in animals.

Laboratory staff are trained by the investigators or laboratory managers in the use of hazardous agents in animals. Chemical and biological hazardous substances must be approved by the ICSC (through their protocol review process) before the LACUC will approve the use of hazardous substances in an animal protocol. Ionizing radiation and radioactive isotopes must also be approved by the RCC (through their protocol review process) before the LACUC will approve the use of these physical agents. Additionally, only the Radiation Safety Officer can order radioactive materials.

4) Facilities, Equipment and Monitoring [*Guide*, pp. 19-20]

a) Describe locations, rooms, or facilities used to house animals exposed to hazardous agents. Identify each facility according to the hazard(s) and containment levels (if appropriate*).*
Note: If preferred, information may be provided in a Table or additional Appendix.

In general, animals exposed to hazardous agents are maintained in Building A. Two rooms in Building A comprise a dedicated ABSL-2 housing area. Other rooms in this building, that have negative air pressure relative to the corridor, may also be used for chemical and/or biological agents. These rooms are typically outfitted with either a BSC or chemical hood as appropriate. Individual cages with a chemical exposure may also be housed in rodent holding rooms. SOPs describe the handling and maintenance of these cages.

b) Describe circumstances and conditions where animals are housed in rooms outside of dedicated containment facilities (i.e., in standard animal holding rooms). Include practices and procedures used to ensure hazard containment.

Rodents exposed to chemical hazards may be housed in standard animal holding rooms. These rooms are negative to the corridor in regards to air pressure. Cages do not have grommets and are topped by a filter top. Cages are only opened in the hood. All cages with a hazard are clearly marked using a colored tag that is labeled with the hazard. Cage changes are often performed by research personnel wearing appropriate PPE as described in the approved ICSC and LACUC protocols. DLAM staff who handle caging

potentially exposed to a hazardous agent also wear approved PPE and bag materials in a biohazard bag.

c) Describe special equipment related to hazard containment; include methods, frequency, and entity(ies) responsible for assessing proper function of such equipment.

Biological safety cabinets, chemical fume hoods and autoclaves may be used in regards to hazard containment. Hoods are certified every 6-12 months by an outside contractor. Autoclaves are maintained through a preventative maintenance contract with an outside contractor. Autoclave functioning is also assessed through routine testing during the Quality Assurance testing by the veterinary technician.

d) Describe the husbandry practices in place to ensure personnel safety, including any additional personnel protective equipment used when work assignment involves hazardous agents.

All procedures, methods, and materials must have approval from the SIU SOM ICSC and the LACUC. Research personnel must have appropriate experience in animal handling to minimize risk of animal scratches or bites. If further animal handling experience is needed, the PI may contact the DLAM Attending Veterinarian or Veterinary Technician for training. Work with ABSL-2 agents or chemical hazards must be performed in accordance with all ICSC requirements (e.g., correct PPE use and engineering controls such as in a biosafety cabinet or in a chemical fume hood). All personnel must wash hands immediately after working with animals and biohazardous or chemical hazardous agents. Rooms in which biohazards or chemical hazards are used are maintained with negative pressure relative to the adjacent corridor. The PI and/or research personnel must notify the DLAM Director and/or Facility Coordinator in writing 24 hours prior to administering any agents to animals. The DLAM Coordinator posts a sign on the animal room or cube door stating the hazardous agent in use, name and phone number of responsible person in case of emergency, and all special requirements and PPE for entering room, and/or handling animals (e.g., gloves, mask, respirator, eye protection, gown or lab coat, shoe covers). Mice and rats must be housed in microisolator cages with well-fitting lids. If species other than mice or rats are used, the housing requirements are addressed by the PI, ICSC, and DLAM. For ABSL-2 agents, only animals used for a specific experiment may be housed in that room or cube. Dependent upon the biological or chemical hazard, disposable caging may be used. All surfaces where animals are brought into contact must be decontaminated with appropriate disinfectant or neutralizing agent after work is completed. Disinfectant must be labeled virucidal or bactericidal for

intended biological agent. All drain traps in the room (if present) must be filled with water (ABSL-1 or chemical hazard) or disinfectant (ABSL-2).

Cage changes are performed as specified by the ICSC: on a bench top (ABSL-1 or some chemical hazards), in a biosafety cabinet (ABSL-2 or some chemical hazards), or another option such as disposable cages. For most chemical hazards, cages (containing dirty bedding) are placed in a leak-proof, sealed container (typically a biohazard bag) for transport to the cage wash area. For ABSL-2 agents, cages (containing dirty bedding) are placed inside autoclave bags and sealed. Bags must be sprayed with disinfectant prior to leaving the room. Bags are then transported to the autoclave and processed. In the cage wash area, sprayed chemical hazard cages or autoclaved ABSL-2 cages are emptied in front of exhaust filter and contents sent for incineration. All cages are handled wearing appropriate PPE, including at the minimum a surgical mask (an N95 mask is used as needed), eye protection, gloves, and gown or apron over regular work uniform. Cages may also be emptied and scraped under a biological safety hood. Cages are washed in the cage wash machine with a wash cycle water temperature of 143-180^{o} F with use of appropriate detergent or acid and a final rinse temperature of at least 180-185^{o} F.

For projects involving chemicals that cannot be incinerated, animals are housed in disposable caging. The animal carcasses and used caging (including bedding) are placed in biohazard bags which are placed inside a box and sealed. The box is stored in the cooler for removal by EHSO.

Animal carcasses are placed in a biohazard bag and sealed. For ABSL-2 agents, the bag must be sprayed with disinfectant prior to removing bag from room. Biohazard bags are placed in a barrel in the animal cooler for incineration by on-site staff.

Veterinary staff have access to all animals at all times to permit evaluation of health status. Animals with clinical signs of illness or animals that are moribund receive appropriate veterinary care in accordance with LACUC and ICSC protocols. Necropsies of dead animals are performed in the most appropriate space: on the bench top (ABSL-1), in a biosafety cabinet (ABSL-2), or chemical fume hood (chemical hazards). Veterinary staff performing necropsies wear appropriate PPE, including at the minimum a surgical mask (an N95 mask as needed), eye protection, gloves, and gown or apron over regular work uniform.

Research personnel must maintain accurate records documenting agent used, amount, and route on the cage card and in a laboratory notebook. Cage cards of all animals must clearly indicate that a hazardous substance was given to the animals inside the cage in compliance with LACUC and ICSC policies

and protocols. Additional cage card identification (a removable half card) is placed in the cage card holder for the duration of the hazardous or infectious period. Special cage card identification is removed after the hazardous period has ended.

e) Incidental Animal Contact and Patient Areas

i) List and describe facilities that may be used for both animal-and human-based research or patient areas, including the policies and procedures for human patient protection, facility decontamination, animal transport through common corridors or elevators, and other personnel protection procedures.

No facilities have common areas for both animal and human-based research. Animals transported through common corridors are confined within a primary enclosure and shrouded.

ii) Describe any *other* circumstances in which animals or caging equipment are transported in common use corridors or elevators (e.g., have the potential to come in contact with individuals not associated with the animal care and use program), and measures taken to mitigate risks associated with such use.

Corridors in the animal facility are not open to the public. Only personnel working with animals, facility maintenance, or security personnel can enter the facility. Rodents are transported to laboratories via an elevator and interior halls. The elevator is not restricted to animal movement, but traffic is primarily personnel working in the laboratories. Access to general use areas such as classrooms, library, and administrative areas is usually via a different elevator that is not used for animal transport. Animals that leave the facility with a destination within the building are transported on carts in filter-topped cages that are covered with a paper or cloth shroud. Flexible nylon carriers are used to transport rodents to laboratories in remote laboratory buildings. Equipment is not transported outside of the animal facility.

B. Program Oversight

1. The Role of the IACUC/OB [*Guide*, pp. 24-40]

a. IACUC/OB Composition and Function [*Guide*, pp. 17; 24-25]
Please provide a Committee roster, indicating names, degrees, membership role, and affiliation (e.g., Department/Division) as **Appendix 7**.

i. Describe Committee membership appointment procedures.

A subcommittee of the Faculty Council makes recommendations for various committee assignments to Jerry Kruse, MD, MSPH, Dean and Provost (IO), who approves and appoints the membership of the LACUC.

ii. Describe frequency of Committee meetings. Note that **Appendix 8** should contain the last two IACUC/OB meeting minutes.

The Committee meets monthly to review research protocols (including new protocol submissions, amendments, 3-year rewrites, and continuing annual reviews) involving animals and to discuss issues pertaining to these protocols. On a semi-annual basis, the Committee reviews the institution's program for humane care and use of animals and inspects the animal facility and laboratories utilizing live animals in research. Issues of non-compliance are brought before the Committee at a convened meeting. Following discussion, members vote on the action, if any, to take in regard to the non-compliance issue.

iii. Describe the orientation, training, and continuing education opportunities for IACUC/OB members. [*Guide*, p. 17]

The LACUC Chair leads the orientation of new members following a complete outline that details all of the member duties. The AV also participates in the training sessions with new committee members. New members are given a copy of the Guide, Institutional Animal Care and Use Committee Guidebook, AVMA Guidelines on Euthanasia, PHS policies, SIU's Assurance of Compliance with PHS Policy, SIU Animal Use Protocol form, LACUC Policies and Standard Operating Procedures, Animal Welfare Act, SIU Program for Animal Care and Use Report, and other relevant material for reference.

The ADR has supported continuing education for the committee members. Recent opportunities include: PRIM&R Annual IACUC Conference, IACUC 101, SCAW meetings devoted to the Guide updates and IACUC basics. Additionally, the Interim ADR (an ex-officio member of the LACUC) regularly attends research meetings.

The LACUC Chair, DLAM Director, or other committee members have often led discussions at the monthly meetings for on-going continuing education.

b. Protocol Review [*Guide*, pp. 25-27]
A blank copy of your institution's protocol review form should be provided as **Appendix 9**. Also include forms used for annual renewal, modifications, amendments, etc., as applicable.

i. Describe the process for reviewing and approving animal use. Include descriptions of how:

- the IACUC/OB weighs the potential adverse effects of the study against the potential benefits that may result from the use ("harm-benefit analysis"),
- protocols that have the potential to cause pain or distress to animals are reviewed and alternative methodologies reviewed,
- veterinary input is provided, and
- the use of animals and experimental group sizes are justified.

Note: Make sure you address each of the items above.

The LACUC meets monthly. All new protocols and 3-year rewrites are initially reviewed at a convened LACUC meeting. All are reviewed in the same manner, regardless of the source of funding or species used. Prior to the meeting, the chair assigns primary and secondary reviewers and a veterinarian (designated reviewers) to each protocol. The assigned reviewers are charged to thoroughly review their assigned protocols for presentation to the convened Committee. The LACUC Administrator distributes the agenda listing all protocols to be reviewed and the protocols prior to the convened meeting. Principal investigators who have protocols to be reviewed are invited to attend the meeting to give a short synopsis of the protocol and answer any questions members may have to help clarify issues. Discussion of the protocol commences once the PI leaves the meeting. After assessment and discussion by the Committee, clarifications or modifications are almost always necessary. During full committee review at a convened meeting with a quorum present, the LACUC may vote, with a majority of the vote required, for one of the following outcomes for new protocols, 3-year rewrites, and amendments:

a. This protocol should be approved in the form presented.
b. This protocol requires modifications:
    1) Revisions are administrative or explanatory in nature and can be sent to designated/primary reviewers for review, and if warranted, for approval.
    2) Revisions are substantive in nature, and the protocol must be returned to the full committee for review, and if warranted, for approval.
c. This protocol should be disapproved/approval withheld.

Assigned designated/primary reviewers retain the option of returning the revised protocol for full Committee re-review after they see revisions.

Reviewers are instructed to evaluate the scientific merit of the proposed research in sections 1g and 2a of the Animal Use Protocol Form. The form includes sections designed to address potential adverse effects to animals (3c3 and in the Continuing Annual Review form), the level of pain or distress experienced by the animals and

definitions of humane endpoints (2b1), if alternatives have been considered to current methods (8b and 8c), and determination of experimental group size (a power analysis is encouraged) (2c). PIs are encouraged to contact the Attending Veterinarian for help on their protocol or a pre-review prior to submission.

The LACUC reviews annual progress reports at convened meetings. Annual reviews include a short description of the progress made on the Protocol, and ask if any adverse events to the animals occurred during the past year. All continuing protocols undergo a complete rewrite every three years.

LACUC members are trained in their responsibilities through a variety of mechanisms. First, new members receive copies of relevant regulations and policies and meet with the AV, LACUC Chair, and LACUC Administrator to review operating procedures. Second, information about current issues relevant to Committee procedures and deliberations is reviewed and discussed at convened meetings. A newsletter often contains information relevant to LACUC issues. Finally, the Office of the ADR supports travel of LACUC members to continuing education meetings.

ii. Describe the process for reviewing and approving amendments, modifications, and revised protocols. If applicable, include a description/definition of "major" vs. "minor" amendments.
Note: If preferred, this information may be provided in a Table or additional Appendix.

A similar process is used to review all significant changes to approved protocols as the process for reviewing protocols. Protocol amendments for minor changes, such as change of strain, addition of standard methods which do not increase pain or distress, or addition of animals fewer than 10% of approved total, may be eligible for the administrative review process. The amendment may be reviewed and approved by two permanently appointed designated reviewers (Chair or Vice Chair and Attending Veterinarian or Alternate for the Attending Veterinarian). All amendments which request additional procedures that may cause pain or distress, addition of more animals greater than 10% of the approved total, or other significant changes are reviewed in the same way as protocols (new and 3-year rewrite protocols) at the regular meeting. Personnel amendments (other than principal investigators) may be reviewed and approved by two permanently appointed designated reviewers (Chair or Vice Chair and Attending Veterinarian or Alternate for the Attending Veterinarian).

c. Special Considerations for IACUC/OB Review [*Guide*, pp. 5; 27-33]

i. Experimental and Humane Endpoints [*Guide*, pp. 27-28]

1) Describe the IACUC/OB's review of "humane endpoints," i.e., alternatives to experimental endpoints to prevent or in response to unrelieved animal pain and distress.

The Animal Protocol Form specifically asks PIs to address the humane endpoints for animals used in research. Section 2b1 states "What are the criteria and process for timely intervention, removal of animals from a study, or euthanasia if painful or stressful outcomes are anticipated? Describe the humane endpoints for the animals used in these experiments (i.e., at what point will be animals be sacrificed?)". Humane endpoints are thus established prior to the start of the study.

Clinical signs are often used to identify an animal in a moribund state. Examples of humane endpoints are outlined in the LACUC Policies (#15). Examples of humane endpoints included in the Policy are:
1. Chronic body weight loss (15-20% of BW) in the presence of other adverse clinical signs.
2. Clinical dehydration for longer than 48 hours and not treated.
3. Inability to ambulate which prevents access to food and water.
4. Lesions which interfere with biological functions therefore jeopardizing the quality of life.
5. Uncontrollable bleeding, excluding abortion unless other adverse clinical signs are present.
6. Tumor end points; see LACUC Policy.
7. Occurrence of a serious injury or trauma from which recovery is unlikely.
8. Hematological or biochemical parameters indicative of organ failure.
9. Adverse CNS signs (i.e. persistent convulsions, persistent circling, paresis/paralysis) which interfere with eating and drinking.
10. Persistent self-induced trauma.
11. Loss of righting reflex, progressing to prostration.
12. Clinical signs such as hypothermia, gasping/labored respiration, cyanosis, unconsciousness with no response to external stimuli.

The PI, the AV, and the LACUC are all involved with determination of humane endpoints for each study. PIs are encouraged to use a "scoring system" to determine humane endpoints appropriate for each study as a way to more objectively assess animal welfare. In certain studies, the LACUC has established specified endpoints that, when reached, justify the euthanasia of animals from the study. For example, in tumor studies, animals must be sacrificed when the tumors reach 2,000 mm^3 in mice, the tumors become ulcerated, or the animal has a 20% decrease in body weight.

Two investigators have approved protocols where death is an endpoint for some animals (mice). As the lifespan of each animal on the geriatric study is the data point collected, the PI has scientifically justified the need for this endpoint. The

PI has presented evidence that death as an endpoint is the accepted endpoint in the research field for longevity in mice. However, the PI stated in the protocol that the lab will euthanize all animals with death as an endpoint when they become moribund.

2) For studies in which humane alternative endpoints are not available, describe the IACUC/OB's consideration of animal monitoring and other means used to minimize pain and distress (e.g., pilot studies, special monitoring, other alternatives).

The LACUC has approved "Death as an endpoint" for mouse longevity studies. These animals are monitored daily by DLAM staff and weekly by research staff. Animals clearly moribund are euthanized. In general, all other studies reviewed by the LACUC have humane endpoints described.

3) Identify personnel responsible for monitoring animals for potential pain and distress and describe any mechanisms in place to ensure that the personnel have received appropriate species- and study-specific training.

In general, the AV is responsible for monitoring animals for potential pain and distress along with the veterinary technician during the conduct of regular rounds, and in response to notification by the husbandry staff and research staff. Research staff also monitor during study conduct and receive training during the Animal Handler's course and on-going oversight from the AV. LACUC members may also note potential issues during the inspections. In the animal use protocol, the PI attests to all members involved in the animal study having been appropriately trained.

ii. Unexpected Outcomes that Affect Animal Well-being [*Guide*, pp. 28-29]
Describe how unexpected outcomes of experimental procedures (e.g., unexpected morbidity or mortality, unanticipated phenotypes in genetically-modified animals) are identified, interpreted, and reported to the IACUC/OB.

PIs are encouraged to self-report problems or unexpected outcomes in their animal-based research to the LACUC. The DLAM Supervisor compiles a monthly mortality report to determine if the percentage of deaths in a rodent colony is high or increased from historical values. In addition, the DLAM animal care staff and veterinary staff monitor animals for problems associated with experimental manipulation. The Attending Veterinarian presents a monthly report to the LACUC describing any unexpected outcomes and plans for correction. The committee reviews these incidents and determines if additional action is needed.

iii. Physical Restraint [*Guide*, pp. 29-30]
Note: This section is to include only those protocols that require prolonged restraint. Brief restraint for the purpose of performing routine clinical or

experimental procedures need not be described.

1) Briefly describe the policies for the use of physical restraint procedures or devices. Include, if applicable, the IACUC/OB definition of "prolonged."

Restraint procedures are assessed as part of the normal protocol review process with particular attention given to the type and duration of restraint (sections 7a and 7c of the animal protocol). The LACUC Policy #21 states: "Animals should be gradually conditioned to prolonged restraint and to restraint equipment prior to initiation of the actual research unless scientifically justified in writing and approved by the committee."

2) Describe animal restraint devices that are used or have been used within the last three years. For each device, briefly describe

- the duration of confinement
- acclimation procedures
- monitoring procedures
- criteria for removing animals that do not adapt or acclimate, and
- provision of veterinary care for animals with adverse clinical consequences.

Note: If preferred, this information may be provided in a Table or additional Appendix.

PI: Faingold
Protocol: 5-07-006 – Audiogenic Seizure Network Mechanisms
Species: Rat
Description: Rats are connected by a headpiece to a tether. The duration of each session lasts from 30 minutes to 1 hour. Animals are kept in a confined space; however they can turn around and make postural adjustments. The experimental staff member observes the animals for the duration of the testing.

PI: Caspary
Protocol: 41-15-011 – Coding in Auditory Neurons: Temporal Processing and Attention
Species: Rat
Description: In order to better control directional nature of sound exposure when recording from awake rats, they will be placed in a restraining chamber. The modified Rodent ECU chamber is used for keeping rodents in a more confined space for a prolonged amount of time to perform pharmacokinetic studies. The chamber is slightly modified and has a 3cm x 6cm hole on the top of the chamber over the approximate position of the rat's head to allow access to advance-able tetrode drive and both ears to present acoustic stimuli. During tetrode advancement, the animal's headcap is held gently with a pair of forceps

while the advancement drive screw is turned to move the tetrode in 62.5 to 500um steps. The maximum advancement per day is to be 500um.

Animals will be kept confined in the chamber for no longer than 3 hours per day. They will be gradually acclimated to the confines of the chamber using 0.5-2 Froot Loops as a reward at the beginning and end of each recording session. The time of confinement to the chamber will be increased from 25 minutes on the first day, followed by one session daily of 50, 100, 140, and 180 minutes Animals will be monitored regularly during acclimation time.

iv. Multiple Survival Surgical Procedures [*Guide*, p. 30]
Note: One survival surgical procedure followed by a non-survival procedure is not included in this category.

1) Describe the IACUC/OB's expectations regarding multiple survival surgery (major or minor) on a single animal.

Multiple, major survival surgical procedures are approved only when they are scientifically necessary and justified in order to produce a functional animal model (section 5b3). Full Committee review is required for all such protocols and amendments. Approval is not granted for multiple major survival surgery for convenience or for economic reasons.

A protocol is reviewed by the full committee before it can be approved. At a convened meeting, if the members present vote for additional clarification, follow up review is conducted by the three primary/designated reviewers. Follow-up review is conducted outside of the full committee. However, any member can call for full committee review at any time. The committee reviews multiple survival surgery according to the LACUC Policy #24:

This approval will be based on scientific necessity (USDA 2.31 Cx and Guide page 30). Multiple major survival surgical procedures on a single animal are strongly discouraged. Under special circumstances, multiple major surgical procedures on a single protocol may be permitted with the approval of the LACUC (e.g., if individual surgical procedures are essential, related components of a research project). Care must be taken to provide sufficient recovery time between surgeries. Cost savings alone is not an adequate reason for performing multiple major survival surgeries.

Both research staff and the DLAM staff monitor animals used in these protocols on a daily basis. The PIs are required to submit annual reports to the LACUC indicating if any unforeseen effects occurred to the animals. On Semi-Annual Inspections, LACUC members speak to the research staff about the experiments to assess the experimental methods.

There are 2 protocols currently using multiple survival surgeries.

2) Summarize the types of protocols currently approved that involve multiple major survival surgical procedures

Note: If preferred, this information may be provided in a Table or additional Appendix.

PI: Mailey
Protocol: 229-16-010, Generating 3-Dimensional Cartilage in Vivo
Species: Rats
Description: Create vascularized capsule by inserting the silicone block followed by attaching a vein and artery to tissue near the silicone block so that the seeded scaffolds have a blood supply. To create a vascularized capsule, the lab will insert a silicone block, which takes approximately 3 weeks to form. After the vascularized capsule is formed, the second surgery for scaffold implantation will be performed.

PI: Bartke
Protocol: 178-15-002, Identification of Juvenile Protective Factors from Long-Lived Mice by Parabiosis
Species: Mice
Description: Surgery performed to join two mice at the joints to determine shared blood supply. After two weeks, shared blood circulation will be determined by injecting Evans blue dye. Eleven to fourteen days after surgery, animals will be observed for immune compatibility will be needed to see if parabiotic "disharmony" or "intoxication" occurs. Three months after the parabiosis, a reverse surgery will be performed for some animals to test if effect from parabiosis surgery on the animals remains or not.

v. Food and Fluid Regulation [*Guide*, pp. 30-31]. *Note:* This does not include pre-surgical fast.

Summarize the types of protocols that require food and/or fluid regulation or restriction, including:

- justification
- species involved
- length and type of food/fluid regulation
- animal health monitoring procedures and frequency (e.g., body weight, blood urea nitrogen, urine/fecal output, food/fluid consumption)
- methods of ensuring adequate nutrition and hydration during the regulated period

Note: If preferred, this information may be provided in a Table or additional Appendix.

Experimental situations that require food restriction are listed. The only other instances of food restriction are overnight fasting in preparation for surgery or blood withdrawal (specifically blood glucose or insulin testing). No approved protocols currently require extended water restriction.

PI: Bauer
Title: 149-15-015 – Tinnitus and Auditory Attention
Species: Rats
Duration: Up to 20 hours
The psychophysical procedure used to determine tinnitus is derived from an operant behavioral paradigm. The paradigm requires lever pressing for food pellets. Animals will only work for food reinforcement if they are motivated. Controlling motivation requires restricted access to food. Food restriction (only prior to imaging) in the MEMRI/MRS experiments reduces self-generated sound (gnawing). Animals are fed daily in their test environment and given daily supplementary standard lab chow sufficient to maintain body weight within 78 percent of their free-feeding baseline weight. At intervals of a few weeks, all animals are taken off diet restriction for 5-7 days. At the end of each free-feeding period, a new baseline weight, to be used as a benchmark, will be determined. Food restriction in the MEMRI/MRS experiments extends from 16-20 hours. This happens once, at the end point of the experiment.

PI: Caspary
Title: 41-15-011 -- Coding in Auditory Neuronal Temporal Processing and Attention
Species: Rats
Duration: For behavioral training, food will be available in daily training/testing sessions and afterward as necessary to maintain a minimum of 80 percent free-feeding weight. There is no restriction on food within testing, as the animals are on a variable ratio schedule when being tested, i.e., they can earn as much food as they are willing to lever press. The VR10 Schedule has been chosen to produce 1 hour of behavior from the majority of animals. Animals that show behavior across the entire hour are general given 1-2 pieces of additional food (same as standard DLAM food). This maintains the animals at 80% of free-feeding weight.

PI: Tischkau
Title: 200-11-001 – Effects of Aryl Hydrocarbon Receptor on Diet-Induced Alternations of Circadian Rhythm and Glucose Metabolism
Species: Mice
Duration: 4 hours of food availability per 24 hours, lasting 7 days to 2 months depending on the study.

Description: For certain experiments, the time of the availability of the food is restricted to 4 hours per day, either during the day or during the night. The total number of calories is not restricted, only the timing of the availability of the food. There are two purposes. First, the availability of food only during the day will alter the function of the circadian clock in the live animal (it creates a problem for these nocturnal rodents because now they have to eat when they would normally be sleeping). The hypothesis is that clock disruption will adversely affect glucose metabolism leading to metabolic syndrome. Thus, testing of the hypothesis requires food restriction. Food restriction to the nighttime may actually alleviate the effects of a high fat diet, which will also be tested in the hypothesis. Animals experience food restriction from 7 days to 2 months, depending on the experiment. Food is available for four hours during restriction, either 4 hours during the middle of the day or 4 hours during the middle of the night.

For all protocols involving restricted diets, daily provision of food is noted on the room log by the research staff member's initials. This is verified by the DLAM staff daily. If the log is not current, the Facility Coordinator or Attending Veterinarian will contact the lab directly.

Variables that are monitored to ensure animal health during food restriction:

- Body weight: Rats and mice are maintained at 70-90% or 80% of ad lib body weights for most protocols.
- Food/fluid consumed: For behavioral studies, research personnel monitor food intake of rats during training and provide supplemental food or treats if "earned" intake is inadequate. For caloric restriction studies, the research group feeds mice daily based on the consumption of age- and strain-matched mice that are fed ad libitum.

Food is restricted to maintain rats at 70-90% of their ad libitum body weight so that they will perform behavioral tasks. Mice are maintained at a reduced body weight to study the effects of caloric restriction on longevity and other health parameters. Animals are weighed regularly, and their intakes are monitored daily by the investigator. The LACUC and veterinary staff may obtain access to these records at any time. DLAM personnel also observe all of these animals daily. Animals that appear thin, hunched, unkempt or in poor body condition are reported to the veterinary staff.

vi. Use of Non-Pharmaceutical-Grade Drugs and Other Substances [*Guide*, p. 31]

Describe the IACUC/OB's expectations regarding the justification for using non-pharmaceutical-grade drugs or other substances, if applicable.

The LACUC Policy document states: "The use of expired fluids or medical devices, or non-pharmaceutical grade chemicals must be specifically requested by

the principal investigator on an individual protocol basis and must be approved by the LACUC. Requests may be made in the initial protocol or in a protocol amendment. Requests should indicate the anticipated level of risk to the animal when using expired fluids, medical devices, or non-pharmaceutical-grade chemicals."

There are several protocols using non-pharmaceutical grade drugs. Use of non-pharmaceutical grade chemicals are approved for anesthesia and/or euthanasia in two protocols (specifically: urethane). In each case, the PI has provided scientific justification for the use of such substances, and described the preparation, sterilization, and storage of such substances.

vii. Field Investigations [*Guide*, p. 32]

Describe any additional considerations used by the IACUC/OB when reviewing field investigations of animals (non-domesticated vertebrate species), if applicable.

There are no field investigations at our institution.

viii. Animal Reuse [*Guide*, p. 5]

1) Describe institutional policies regarding, and oversight of, animal reuse (i.e., on multiple teaching or research protocols).

Re-use of animals must be described in the approved protocol. The LACUC reviews these on a case-by-case basis.

2) Briefly describe the types of activities currently approved that involve the reuse of individual animals.
Note: A list of specific protocols involving reuse of animals should be available during the site visit.

There are currently no protocols that involve the re-use of animals.

3) Describe other instances where the final disposition of animals following study does not involve euthanasia, including adoption, re-homing, rehabilitation, etc.
Note: A list of specific protocols involving reuse of animals should be available during the site visit.

Animals other than rats and mice may be adopted out to individuals with AV and LACUC approval. A form is completed and submitted to the AV, PI and LACUC Chair for signature. In general, these animals were unused during the study. Rats and mice that are unused from a study are used for training under DLAM or re-assigned to other PIs under approved protocols. Animals are not re-used.

2. Post-Approval Monitoring [*Guide*, pp. 33-34]

a. Describe mechanisms for IACUC/OB review of ongoing studies and periodic proposal/protocol reviews (e.g., annual, biennial, triennial, or other frequency).

The LACUC requires that all PIs submit an annual review on experiments using animals. The PI must describe all animal use during the previous year. This information is reviewed by the Committee at a convened meeting. Each protocol is valid for three years. If the PI wishes to continue the research, the protocol must be resubmitted after three years and evaluated as a new protocol by the Committee.

The Committee also uses the semi-annual inspection as an opportunity to review all activity in labs using animal models. The Committee members assess the knowledge of the staff and lab facilities by using an objective, complete checklist. As needed, the Attending Veterinarian can review animal use of any lab at SIU SOM.

b. Describe the process and frequency with which the IACUC/OB reviews the program of animal care and use.

The Committee performs a semi-annual review of the Program, the animal housing facility, and all laboratories performing animal research every six months. The lab of every PI with an active Animal Protocol is inspected. There are no satellite facilities or contract laboratories. The inspection team is composed of two or three members of the Committee. Each team completes a checklist (modeled based on the OLAW checklist) of major points for review. PIs are sent a letter noting whether there were no deficiencies found or a list of deficiencies found during the inspection. Each PI has three weeks after the receipt of the letter to correct any deficiencies and report back to the Committee. PI responses to deficiency letters are sent to the LACUC membership prior to the next meeting. A majority of the Committee signs off on the program review and facility inspection report. The program review and results of the facility inspections are forwarded to the IO.

c. Describe the process and frequency with which the IACUC/OB conducts facility and laboratory inspections.

- Describe the rationale or criteria used for exempting or varying the frequency of reviewing satellite holding facilities and/or animal use areas.
- If contract facilities or contractor-provided personnel are used, describe procedures used by the IACUC/OB to review such programs and facilities.

Note: A copy of the last report of these reviews should be included as **Appendix 10**.

The Committee performs a semi-annual review of the Program, the animal housing facility, and all laboratories performing animal research every six months. Every PI with an active Animal Protocol is inspected. There are no satellite facilities or contract

laboratories. The inspection team is composed of two or three members of the Committee. Each team completes a checklist of major points for review. PIs are sent a letter noting whether there were no deficiencies found or a list of deficiencies found during the inspection. Each PI has three weeks after the receipt of the letter to correct any deficiencies and report back to the Committee. PI responses to deficiency letters are sent to the LACUC membership prior to the next meeting. A majority of the Committee signs off on the program review and facility inspection report. The program review and results of the facility inspections are forwarded to the IO.

d. If applicable, summarize deficiencies noted during external regulatory inspections within the past three years (e.g., funding agencies, government, or other regulatory agencies) and describe institutional responses to those deficiencies. *Note:* Copies of all such inspection reports (if available) should be available for review by the site visitors.

USDA Inspections:
May 31, 2018 – No non-compliant items identified during this inspection.
May 24, 2017 – No non-compliant items identified during this inspection.
August 8, 2016 - No non-compliant items identified during this inspection.
May 12, 2015 - No non-compliant items identified during this inspection.

e. Describe any other monitoring mechanisms or procedures used to facilitate ongoing protocol assessment and compliance, if applicable.

The LACUC and veterinary staff work closely with investigators to promote animal welfare and regulatory compliance. The veterinary staff can investigate any animal health issue and make reports to the LACUC. The Committee will decide if additional action is needed on a case-by-case basis.

3. Investigating and Reporting Animal Welfare Concerns [*Guide*, pp. 23-24]
Describe institutional methods for reporting and investigating animal welfare concerns.

Procedures for reporting animal welfare concerns are outlined in the Animal Handlers' Course, which is mandatory for all new personnel working with animals. Signs describing the procedures to report a concern are posted in the facility. Any member of the School community can report animal welfare concerns to the Director of DLAM, the LACUC Chair, the ADRFA or any member of the LACUC. Reports can be made anonymously. The report is investigated by the AV and LACUC Chair and reported to the Committee at the monthly meeting. The committee will discuss the incident or report and decide if additional action is required (e.g., additional training, report to OLAW, etc.). Individuals making such a report are protected under the Illinois Whistleblower Act (740 ILCS 174/1).

4. Disaster Planning and Emergency Preparedness [*Guide* p. 35]

Briefly describe the plan for responding to a disaster potentially impacting the animal care and use program:

- Identify those institutional components and personnel which would participate in the response.
- Briefly describe provisions for addressing animal needs and minimizing impact to animal welfare.

Note: A copy of disaster plan(s) impacting the animal care and use program must be available for review by the site visitors.

Consistent with the Federal National Incident Management System (NIMS) standards, the SIU SOM All-Hazards Emergency Operations Plan addresses all four phases of emergency planning: Prevention, Preparedness, Response, and Recovery. This plan provides procedures for addressing any disaster or emergency affecting the SIU SOM campus. In some cases, plans for addressing specific/known hazards have been developed and are detailed in the SIU SOM AHEOP Emergency Procedures Manual. When this plan is activated, the Dean and Provost of SIU SOM delegates authority to the Incident Commander to take all necessary steps to ensure the safety and welfare of School's people, facilities, and operations. He/she further authorizes the Incident Commander to activate individuals assigned to the Incident Command Organization (ICO), as outlined in this plan, and instructs the SIU SOM community to follow the direction of the Incident Commander, his/her delegates, and staff. The Dean and Provost retains ultimate responsibility for SIU SOM.

This represents the line of succession in the overall operations of SIU School of Medicine during periods of emergency response and recovery.

1. Dean and Provost

2. Associate Provost, Finance and Administration

3. Associate Provost, External and Health Affairs

The line of succession for leadership of the Incident Command Organization when the AHEOP has been activated is noted below. These individuals will serve as the primary and deputy Incident Commanders.

1. Executive Director, Capitol Planning and Service Operations

2. SIU SOM Director of Environmental Safety and Security

3. Senior staff person on campus from the SIU SOM Environmental Safety and Security SIU School of Medicine has established a NIMS-compliant Incident Command Organization (ICO) to direct and perform disaster response and recovery activities. The ICO is led by the Incident Commander with specific roles and responsibilities for other essential functions (i.e., operations, planning, logistics, administration, and staff) established by this plan. All members of the ICO are existing SIU SOM employees who are assigned to and prepared for their ICO responsibilities prior to assuming them. SIU SOM's ICO is activated according to procedures outlined in this plan; portions of the organization may be activated as needed in order to scale recovery/response to particular

situations. Assignments to the ICO are authorized by the Dean and Provost. The Dean and Provost receives her/his administrative authority from Southern Illinois University.

It is expected that the majority of incidents occurring at SIU SOM will have little to no impact to the ongoing operations of the School or the health/welfare of the School's population, including the animal facility and animal population. These situations are classified as Type 5 Incidents and include minor wind damage, minor water leaks, or a minor fire damage that results in minimal smoke damage.

An emergency or disaster incident classified as Type 4 or greater will necessitate the activation of this All-Hazards Emergency Operations Plan and some or all of the Incident Command Organization. As part of their role and responsibility, members of the ICO staff will conduct disaster intelligence, damage assessment, and recovery operation activities. The Incident Commander identifies and directs the ICO staff to report to the Campus Emergency Operations Center and is ultimately responsible for ensuring the completion of the activities discussed in the Plan.

SIU School of Medicine staff may become aware of emergency situations or disasters through a number of means, including direct contact with the public, learners, faculty, or staff; weather radios/sirens/web postings; notification from governmental agencies (city, county, state, or federal); or the initial observation of a hazard by Security staff. Regardless of the means, the SIU SOM Security Department is the locus for the initial notification and response to an incident that is imminent, under way, or that has already occurred.

Upon notification or observation of an incident, the SIU SOM Security Department's first and primary responsibility is to assess and stabilize (if possible) the incident and then initiate, as needed, contact with necessary emergency responders (fire department, police, etc.). The Security Department then ensures that the campus community is appropriately advised of the incident via the Campus Warning/Disaster/Emergency Information plan. In addition to these steps, the senior officer in the Security Department on duty at that time will make an initial determination regarding the Incident Type. Should the senior officer determine, or expect that, the Incident is anything other than a little-to-no threat situation (based on the incident type), the officer will notify the ED/CPSO or his alternate.

The ED/CPSO, or alternate, will consider and confirm the Incident Type. If the incident is of Type 4 or greater, the ED/CPSO will activate the All-Hazards Emergency Operations Plan and either immediately assume the role of Incident Commander or appoint an alternate until such time as ED/CPSO can arrive on campus and perform the role. Additionally, the ED/CPSO will contact the Dean and Provost of SIU SOM to advise her/him of the situation and to confirm the activation of the AHEOP.

The impact of the disaster and/or the recovery effort is likely to deplete existing resources on hand and necessitate an unexpected demand to acquire additional resources. Depleted resources may include but not be limited to such items as fuel, potable water, emergency equipment, generators, and shelter space.

In preparation for a disaster incident, the School has developed a Resource Directory. The directory lists resources that will be available for responding to a disaster incident and utilized by the School's ICO in addressing an incident. Equipment such as ladders, tarps,

vehicles, radios, telephones, and barricades are included in the Resource Directory. Additionally, it includes non-durable supplies that are kept on hand for the sole purposes of responding to an emergency. These include such items as over-the-counter medical supplies, construction/building material, etc.

a. The Resource Directory will be able to provide a listing of resources that are readily available and likely to be needed.

b. The School will have sufficient resources on hand to sustain itself for the first 24 hours following an emergency, given consideration of cost and safe storage.

c. Depending on the size of the incident and corresponding media coverage, a community response of donations may be expected. These donated resources may include financial donations, supplies, equipment, and volunteer labor.

d. In the event of a significant disaster, needed equipment, supplies, volunteers, and other resources may be available from the City of Springfield.

The ICO would contact the AV as needed during an incident. DLAM has its own disaster plan that outlines steps needed to ensure the safety and well-being of the animal population. The AV, in conjunction with the ADR, would make decisions in regards to the facility. Additional DLAM staff would be notified pending the disaster and scope of its effects on the animal facility.

II. Animal Environment, Housing and Management

Note: Complete each section including, where applicable, procedures performed in farm settings, field studies, aquatic environments, etc.

A. Animal Environment

Note: Facility-specific details regarding mechanical system construction and operation is requested in Section IV.B.5. and **Appendix 11**; current (measured ***within the last 12 months***), detailed (by room) performance data must also be provided as indicated in **Appendix 11.**

1. Temperature and Humidity [*Guide*, pp. 43-45]

a. Describe the methods and frequencies of assessing, monitoring, and documenting that animal room or housing area temperature and humidity is appropriate for each species.
Note: If preferred, this information may be provided in a Table or additional Appendix.

Animal room temperatures are controlled by adjusting the room supply air temperature into each room. The animal room temperatures in Building A (801 N. Rutledge) and in Building B (825 N. Rutledge) are set and controlled by the room thermostats. The animal cube room temperatures in Building B are set and controlled through the

Building Automation System (BAS) and sensors in the return/exhaust air ducts. The animal room temperatures in Building C (825 N. Rutledge Addition) are set and controlled through the BAS and sensors in the room exhaust ducts.

Animal room humidity is controlled by removing or adding humidity to the room supply air. Humidity is removed using the cooling coils in each building Air Handling Unit (AHU). In Buildings A and C, humidity is added into the supply air before the air enters into each animal room. In Buildings B and C, humidity is added into the supply air at the AHU.

The BAS monitors the temperature and humidity from animal holding rooms. The BAS records, trends and sends alarms to the building operator engineer (BOE) who is on-site if the temperature in these rooms goes beyond the limits established by the DLAM Director. These limits are described in the "Animal Facility Emergency Manual." The DLAM Director or on-call DLAM staff member is contacted if animal room temperatures reach above 80°F or below 64°F for longer than 15 minutes. However, the BOE Supervisor may contact the DLAM in light of immediate factors or concerns. The BAS is monitored by the BOEs 24 hours a day, 7 days a week. Each normal work day, room trends are sent by Facilities (i.e. the Temperature Control Specialist) to the DLAM Coordinator and Director. In addition to the BAS monitoring, a portable digital temperature/humidity Pocket Logger is used as necessary and a digital high/low instrument in each room monitors the temperature/humidity limits. The conditions are read, reset, and data results recorded daily by DLAM staff on the room sheet. Excursions are reported to the DLAM Coordinator.

b. List, by species, set-points and daily fluctuations considered acceptable for animal holding room temperature and relative humidity.
Note: If preferred, this information may be provided in a Table or additional Appendix. [*Guide*, pp. 44 and 139-140]

Rat and Mice – temperature set point is 72° F ± 4° and humidity is 30-70%. In the winter months, humidity may excursion below 30% however this has been reviewed and approved by the LACUC based upon a lack of clinical signs related to the low humidity levels.
Chinchilla – temperature set point is 68° F ± 4° and humidity is 30-70%.
Swine – temperature set point is 68° F ± 4° and humidity is 30-70%.

c. Temperature set-points in animal housing rooms and/or environmental conditions are often outside of the species-specific thermoneutral zone. Describe the process for enabling behavioral thermoregulation (e.g., nesting material, shelter, etc.) or other means used to ensure that animals can control their thermoregulatory environment. Include a description of IACUC/OB approved exceptions, if applicable. [*Guide*, p. 43]

There are 2 exceptions to the Guide for temperature or humidity outside the thermoneutral zone for animals. Other exceptions to the Guide are for enrichment and cage size:

1. The LACUC approved that DLAM be permitted, during the winter months, to operate within a humidity range of 15-85% in Building A as long as animals are closely monitored and animal health and research are not compromised by the occasional low (<30%) humidity level (February 6, 2009).

2. PI: Bartke
Protocol: 178-02-001 – Aging and Caloric Restriction of Long-Lived Mice
Species: Mice
Description: The LACUC approved this protocol to house mice individually in metabolic cubes or in static cages at a room temperature of 86 °F. The rooms are monitored by the Metasys system continually by the Building Operating Engineers and a digital high-low thermometer in the rooms once daily by the DLAM staff. The LACUC has also approved the housing of mice for very short periods of time at 4° C in static cages maintained within a temperature controlled chamber. These mice will be monitored by intra-abdominal transmitters.

2. Ventilation and Air Quality [*Guide*, pp. 45-47]

a. Describe the methods and frequencies of assessing, monitoring, and documenting the animal room ventilation rates and pressure gradients (with respect to adjacent areas).
Note: If preferred, this information may be provided in a Table or additional Appendix.

Building A has a return air system that can re-circulate from 0% to 73% of the air back into the supply air. The recirculated air must pass through four filters (30% prefilter, Purafil oxidizing pellet filter, Cosatron electronic filter, and a HEPA filter). The recirculated air combines with fresh air (outside air) and goes through 30% prefilters and 95% final filters before being distributed as supply air. The supply air passes through reheat coils that adjust the temperature and steam humidifiers before entering the animal rooms. Some animal rooms have their air exhausted and not recirculated.

Building B has a return air system that can re-circulate from 0% to 53% of the air back into the supply air. The recirculated air must pass through three filters (30% prefilter, Purafil filter and electronic filter). The recirculated air combines with 30% prefilter fresh air and goes though 30% filters, HEPA filters and steam humidifiers before dispersed as supply air. The supply air passes through reheat coils before entering animal rooms. Again, some animal rooms are exhausted rather than recirculated.

Building C has a one pass air system. There is no recirculated air. 100% fresh air goes through 30% prefilter and 95% final filter before being distributed as supply air. The supply air passes through a reheat coil and steam humidifier before entering the animal room.

Animal room ventilation rates and pressure gradients are evaluated and certified every three years by an outside contractor.

Continuous monitoring of temperature and humidity are as described above in section II.A.1.a.

b. Describe ventilation aspects of any special primary enclosures using forced ventilation.

DLAM currently operates one individually ventilated cage rack that is supplied and exhausted from room air (i.e. not connected to HVAC system). This is used for rodent pheromone and ABSL-2 studies.

c. If any supply air used in a room or primary enclosure is recycled, describe the percent and source of the air and how gaseous and particulate contaminants are removed.

Building A has a return air system that can re-circulate from 0% to 73% of the air back into the supply air. The recirculated air must pass through four filters (30% prefilter, Purafil oxidizing pellet filter, Cosatron electronic filter and a HEPA filter). The recirculated air combines with fresh air (outside air) and goes through 30% prefilters and 95% final filters before distributed as supply air.

Building B has a return air system that can re-circulate from 0% to 53% of the air back into the supply air. The recirculated air must pass through three filters (30% prefilter, Purafil filter and electronic filter). The recirculated air combines with 30% prefilter fresh air and goes though 30% filters, HEPA filters before distributed as supply air.

Building C has a one pass air system. There is no recirculated air.

3. Life Support Systems for Aquatic Species [*Guide*, pp. 84-87]

a. Provide a general description of institutional requirements for enclosures using water as the primary environmental medium for a species (e.g., aquatics).

SIU SOM does not house any aquatic species.

b. Provide a general description of overall system(s) design, housing densities, and water treatment, maintenance, and quality assurance that are used to ensure species appropriateness.

Note: Facility-specific tank design and parameter monitoring frequencies should be summarized in **Appendix 12** (Aquatic Systems Summary).

SIU SOM does not house any aquatic species.

4. **Noise and Vibration** [*Guide*, pp. 49-50]
Describe facility design features and other methods used to control, reduce, or prevent excessive noise and vibration in the animal facility.

Loud noise occurs in the wash rooms, but the area in 825 is not located in the general vicinity of animal holding rooms. The wash room in 801 is operated only with all the doors fully closed. Pressure sprayers also generate loud noise, but they are not taken into rooms that contain animals. Background or masking noise is not used. The facility is not located near any outside sources that may contribute vibration. Potential internal sources of vibration, such as the HVAC equipment (which is attached to the building but located outside the animal room area), are dampened through the use of isolation dampers mounted between the equipment and the building.

One individually vented cage rack is present in the facility.

B. Animal Housing (all terrestrial, flighted, and aquatic species)

1. **Primary Enclosures**
Note: A description of primary enclosures used (e.g., cages (conventional, individually-ventilated cage systems (IVCS), etc.), pens, stalls, pastures, aviaries, tanks) should be included in **Appendix 13**.

a. Describe considerations, performance criteria and guiding documents (e.g. *Guide*, *Ag Guide*, ETS 123 and/or other applicable standards) used by the IACUC/OB to verify adequacy of space provided for all research animals, including traditional laboratory animal species, agricultural animals, aquatic species, and wildlife when reviewing biomedical, field and agricultural research studies.

The LACUC uses the Guide, the AWA (when appropriate), and PHS Policy to review adequate housing conditions.

b. Describe space exceptions to the guiding documents (*Guide*, *Ag Guide*, ETS 123, and/or applicable standards), indicating the references, considerations and performance criteria used (e.g., by the IACUC/OB) to verify adequacy of space provided for all animal species covered by the program. [*Guide*, pp. 55-63]

The SIU SOM LACUC allows exceptions for space recommendations for breeding mice as described in the Eighth Edition of the Guide. These exceptions are made on a

case-by-case basis as protocols are reviewed annually or when newly submitted. Justifications for exceptions are judged on many factors, including litter size, whether multiple litters are present in the cage and the difference in the age of the pups of different litters, growth rate, and overall management and husbandry practices such as cage sanitation. Male mice may be housed alone to prevent fighting. Pregnant females are housed alone for the delivery and care of pups.

One exception to space is Tischkau 200-07-005 for housing animals on a breeding protocol.
PI: Tischkau
Protocol: 200-07-005 – Tischkau Mouse Breeding
Species: Mice
Description: House 2-3 females, 1 male and a litter per large cage.

These exceptions are/will be evaluated during each Semi-Annual Facility Inspection.

2. Environmental Enrichment, Social, and Behavioral Management [*Guide*, pp. 52-55; 63-65: *Ag Guide*, Chapter 4]

a. Environmental Enrichment

i. Describe the structural elements of the environment of primary enclosures that may enhance the well-being of animals housed (e.g., resting boards, privacy areas, shelves/perches, swings, hammocks).

Chinchillas are housed on grated metal flooring and are provided with empty mouse cages as resting areas.

ii. Describe nonstructural provisions to encourage animals to exhibit species typical activity patterns (e.g., exercise, gnawing, access to pens, opportunity for exploration, control over environment, foraging, denning, burrowing, nesting materials, toys/manipulanda, browsing, grazing, rooting, climbing).

Species	**Toys/ Manipulanda**	**Foraging Opportunities**	**Nesting Material**	**Other (Specify)**
Rodents	Aspen chew blocks, running wheels		Paper strips (Envirodri or - Bed-R Nest) Contact bedding	Hiding places (some)—PVC elbows
Rabbits	Pumice stones, toys	Alfalfa cubes and grass hay		Food treats

Guinea pigs		Alfalfa cubes, green peas, and grass hay	Contact bedding	PVC elbows; small stainless steel bowls
Chinchillas	Pumice stones	Alfalfa cubes, raisins, oat supplement, and grass hay		Dust bath; mouse cages as hiding places/ resting area
Pigs	Large rubber bowl, flexible chew toys			Roll bar in feeder

The environmental enrichment items listed in the previous table aid in promoting species-typical behavior. In addition, rodents are housed on hardwood chip contact bedding that allows some burrowing activity. PIs must specifically request and scientifically justify that animals do not receive enrichment (protocol question 7h).

b. Social Environment [*Guide*, p. 64]

i. Describe institutional expectations or strategies for social housing of animals.

Animals are held in compatible groups unless specifically requested otherwise. This is stated in the LACUC Policy #23. In addition, PIs must specifically request and scientifically justify that animals are not socially housed in compatible pairs or groups. (protocol questions 7g and 7h).

ii. Describe exceptions to these expectations (e.g., veterinary care, social incompatibility) and other typical justification approved by the IACUC/OB for housing animals individually.

The Animal Use Protocol requests that PIs provide an explanation and scientific justification if rodents are not group housed (questions 7g and 7h). Animals are held in compatible groups unless specifically requested otherwise as stated in the LACUC Policy #23. Reasons for individually housing rodents include surgical manipulation and food restriction monitoring. Chinchillas are not group-housed based upon the justification provided in the animal use protocol and approved by the LACUC. Both male and female chinchillas are used and are at least 3-years-old. The vendor indicates they have a very high likelihood of aggression if housed together. Chinchillas are able to readily visualize and hear other members in the room.

iii. Describe steps taken with isolated or individually housed animals to compensate for the absence of other animals (interaction with humans, environmental enrichment, etc.).

Pigs that have had surgery are usually held singly in runs that allow auditory, visual, and limited tactile contact with other animals. Pigs that are used in teaching labs are group housed. All pigs interact daily with caretakers. Several items designed for use as pig toys are placed in the runs with the animals. A large rubber bowl for water is also placed in the run, and is often used as a toy.

Chinchillas receive alfalfa blocks, pumice stones, food treats, and bi-weekly dust baths. Research and DLAM staff socialize frequently with the animals. Chinchillas are able to readily visualize and hear other members in the room.

Guinea pigs are group housed when possible in small, plastic swimming pools. Hiding structures (PVC elbows) are used in cages of singly housed guinea pigs and they receive food enrichment as well as socialization with research and DLAM staff.

Singly housed rodents are provided with nesting material or a shelter in the cage.

c. Enrichment, Social and Behavioral Management Program Review [*Guide*, pp. 58, 69]

Describe how enrichment programs and exceptions to social housing of social species are regularly reviewed to ensure that they are beneficial to animal well-being and consistent with the goals of animal use.

All social animals are provided with social housing or enrichment unless withholding is scientifically justified by the PI in the approved protocol. The LACUC reviews all new protocols and 3-year rewrites for appropriate animal care and use. The PI must justify all exceptions to the standard LACUC Policy of social housing and environmental enrichment (Policy 23). Five protocols are approved for enrichment exceptions:

PI: Bartke
Protocol: 178-02-001—Aging and Caloric Restriction of Long-Lived Mice
Species: Mice
Description: The laboratory performs low thermoneutral temperature studies related to aging/lifespan, and maintenance of the set-up temperature is one of the key factors for the experiments. Some enrichments like shredded paper will change animal housing temperature in the cages. The lab requested to withhold any enrichments that change the temperature of the animal housing conditions in the cages.

PI: Bauer
Protocol: 149-15-015—Tinnitus and Auditory Attention
Species: Rats
Description: Animals in ongoing experiments are typically required daily to perform behavioral tasks in a test environment other than their home cage. Diet restriction needs to be maintained per individual animal. Also, rats on restricted diet may gnaw on

objects placed in their home cage. Continuity with previous studies requires similar housing conditions.

PI: Caspary
Protocol: 41-15-011—Coding in Auditory Neuronal Temporal Processing and Attention
Species: Rats
Description: Baseline data in the field has been collected from single housed animals and group housing can alter a variety of measurements of neural function. Enrichment such as paper towels, PVC pipes, weigh boats, nestlets or any other alternate forms of social or environmental enrichment would risk the controlled nature of carefully designed experiments.

PI: Hascup
Protocol: 219-13-012 – Behavioral and Electrochemical Measures in Mice
Species: Mice
Description: These animals require single housing so that activity of each animal can be monitored. Animals will not receive enrichment because it is known to alter brain chemistry/neurotransmission.

d. Procedural Habituation and Training of Animals [*Guide*, pp. 64-65]
Describe how animals are habituated to routine husbandry or experimental procedures, when possible, to assist animals to better cope with their environment by reducing stress associated with novel procedures or people.

DLAM works to habituate animals to routine husbandry procedures through standard care routines followed by all staff.

The LACUC requests that PIs acclimate animals to restraint procedures such as jackets, E-collars, or restraint equipment as appropriate for the situation. Animals on behavioral testing protocols are also acclimated to the testing device gradually to reduce stress and increase accuracy in data recording.

e. Sheltered or Outdoor Housing [*Guide*, pp. 54-55]

i. Describe the environment (e.g., barn, corral, pasture, field enclosure, flight cage, pond, or island).

SIU SOM does not house any animals in outdoor housing.

ii. Describe methods used to protect animals from weather extremes, predators, and escape (windbreaks, shelters, shaded areas, areas with forced ventilation, heat radiating structures, access to conditioned spaces, etc.).

SIU SOM does not house any animals in outdoor housing.

iii. Describe protective or escape mechanisms for submissive animals, how access to food and water is assured, provisions for enrichment, and efforts to group compatible animals.

SIU SOM does not house any animals in outdoor housing.

f. Naturalistic Environments [*Guide*, p. 55]

i. Describe types of naturalistic environments (forests, islands) and how animals are monitored for animal well-being (e.g., overall health, protection from predation).

SIU SOM does not house any animals in naturalistic housing.

ii. Describe how food, water, and shelter are provided.

SIU SOM does not house any animals in naturalistic housing.

iii. Describe how animals are captured.

SIU SOM does not house any animals in naturalistic housing.

C. Animal Facility Management

1. Husbandry

a. Food [*Guide*, pp. 65-67]

i. List type and source of food stuffs.

Most food (rodent, chinchilla, rabbit, and guinea pig) is Purina brand and is purchased from Gateway LabSupply in St. Louis, Missouri. It is delivered by truck. Alfalfa cubes are produced by Moorman's Feed and purchased from Gateway LabSupply or Taylorville Feed and Seed located in Taylorville, Illinois. Western brand Timothy hay purchased from Dr.'s Foster & Smith is provided to chinchillas, guinea pigs and rabbits. Additionally, food may also be purchased from Teklad (Envigo, Indianapolis, IN) and be delivered directly from Envigo or through Gateway LabSupply. Swine feed is delivered with the animals from the vendor. Liquid diet for swine and supplemental food treats for rabbits, chinchillas, and guinea pigs, such as peas, raisins, carrots or oat supplement, are purchased from local grocery stores. When protocols require special diets, the individual labs purchase the food needed.

ii. Describe feed storage facilities, noting temperature, relative humidity, and vermin control measures, and container (e.g., bag) handling practices, for each of the following:

- vendors (if more than one source, describe each)
- centralized or bulk food storage facilities if applicable
- animal facility or vivarium feed storage rooms
- storage containers within animal holding rooms

Gateway LabSupply facilities consist of a metal building with a concrete floor. Bait traps are in place but have not appeared necessary. Between July and October, areas outside of the facility are sprayed weekly for insect control. Food is rotated on a first in - first out basis. Food that is over 60-days-old is not shipped.

Bulk food is stored in the walk-in cooler of the Building C at 40º F. Vermin monitoring and control are accomplished by an outside contractor (Sentinel) using roach sticky traps and rodent boxes. All hallways are mopped weekly with boric acid (Nibor-D) for insect control.

Food is stored in animal rooms in plastic, 30- and 55-gallon containers with secure lids. Containers are washed in the cage wash machine at least monthly or as they are emptied. Identification tags with milling dates are placed on the containers.

iii. Describe special food preparation areas, such as feed mills and locations where special diets are formulated, if applicable. Include in the description sanitation and personnel safety practices (noting that respiratory protection is described in Section 2.I.A.2.b. ii. Standard Working Conditions and Baseline Precautions above).

A dedicated food preparation area has never been needed.

iv. Describe how food is provided to various species (*ad libitum*, limited amounts, types of feeders).

Most rats and mice receive food ad libitum from wire cage tops. Some studies provide food on the cage floor to mice or rats for special situations, such as post-operatively or at weaning. Chinchillas, rabbits, and guinea pigs receive an ample but measured amount of food daily from J-feeders; providing food ad libitum results in excessive waste and weight gain. Some rats are on a restricted diet to maintain them at 80-85% of normal free feeding body weight for behavioral studies. The investigator feeds these animals at the time of behavioral testing. Some mice are on a caloric restriction study, and are fed a measured amount daily. Pigs are fed ad libitum from J-Type feeders. Some pigs are fed an all liquid diet

the day prior to surgery at the request of the PI and in accordance with an approved LACUC protocol.

v. Describe special food quality control procedures including procedures for rotating stock, monitoring milling dates, nutritional quality, bio load, chemical contaminants, etc.

Food bags are stored on pallets. Bags are marked on day of receipt with a dated card. Feed with the earliest milling dates is used first. Additional nutritional or contaminant monitoring is not performed. Technicians monitor milling dates and dispose of feed that is older than six months. Guinea pig diet is LabDiet 5025 with a shelf life of 180 days because of stabilized vitamin C.

b. Drinking Water [*Guide*, pp. 67-68]

i. Describe the water source, treatment or purification process, and how it is provided to the animals (e.g., bowls, bottles with sipper tubes, automatic watering, troughs, ponds, streams).

The water source is the Springfield, Illinois water supply. Water is sent for testing to the Illinois Public Health Department or a contract laboratory for coliform bacteria nitrates, and nitrites. Water is sent to Idexx Radil for pseudomonas testing. Records for water quality tests are maintained by the veterinary technician.

Water is provided to most animals by an automatic watering system, by bottles with sipper tubes, or by Hydropac water pouches. Water bottles are replaced as scheduled or as needed and are not refilled without sanitation. Pouches are replaced every 14 days or as needed. An Edstrom sequencer flushes automatic watering lines twice a day. Some pigs receive water in bowls.

The Hydropac water pouch system provides sterile filtered acidified water to most mice and rats in the facility. A specially formulated FDA grade Hydroseal™ film is fed through the machine to produce hermetically sealed, ready-to-use individual water pouches. The pH for water is maintained at 2.5-3.5. The Manifold Unit with Water Treatment Proportioner and Ultra Filtration Systems permits precise injection of hydrochloric acid. A 10-micron pre-filter, included with the Manifold Unit, conditions facility water as it flows into the unit. Three additional filters step down from 1.2-microns, to 0.2 microns, and finally to a 0.1 sub-micron ultra-filter, which removes virtually all microbes from facility water.

At least a two week supply of water pouches for all animals in the facility is stored for emergency use in the cold room in Building C.

ii. Describe methods of quality control, including monitoring for contaminants.

Water (from the tap) is sent for testing to the Illinois Public Health Department or a contract laboratory for coliform bacteria, nitrates, and nitrites. Water is sent to Idexx Radil for pseudomonas testing. The inside of an empty water pouch is tested by the Firefly Bioluminescence Hygiene system. Testing is performed every other month for water pouches, and on a semiannual basis for the rest of the facility house water supply. Records for water quality tests are maintained by the veterinary technician.

Water is not routinely monitored by DLAM for chemical contaminants. Water is provided by CWLP for the City of Springfield. Water quality reports are routinely available from CWLP. If a specific study requires monitoring for specific contaminants, a quality control program would be instituted.

iii. If automatic water delivery systems are used, describe how they are maintained and sanitized.

Some rat racks are equipped with automatic watering. An Edstrom sequencer flushes automatic watering lines twice a day. Racks are sanitized twice a month.

c. Bedding and Nesting Materials [*Guide*, pp. 68-69]

i. Describe type(s) and how used for various species.

Hardwood chips are used as direct contact bedding for rodents. Pelleted paper is used as indirect bedding for rabbits. As needed, cellulose paper bedding may be used for rodents. Guinea pigs are housed with direct contact on aspen shavings.

ii. Describe bulk bedding storage facilities, if applicable, including vermin control measures.

Bedding is stored at the lowest attainable room temperature in dedicated storage rooms in Building B. Vermin monitoring and control is contracted with an outside company (Sentinel) and is accomplished using roach sticky traps and rodent boxes.

iii. Describe quality control procedures, including monitoring for contaminants.

Bedding is stored at the lowest attainable room temperature in dedicated storage rooms in Building B. Vermin monitoring and control is contracted with an outside company (Sentinel) and is accomplished using roach sticky traps and rodent boxes.

d. Miscellaneous Animal Care and Use Equipment

i. Describe motorized vehicles and other equipment (e.g., trailers) used for transporting animals, noting the type and how the cargo compartment is

environmentally controlled, if applicable.

DLAM does not use motorized vehicles or other equipment.

ii. Describe other animal care related equipment used in the animal care program (specialized equipment for exercise or enrichment, high pressure sprayers, vacuum cleaners, tractors, trailers, spreaders, etc.).

DLAM uses the following equipment: 4 MondoVap steamers, 2 pressure sprayers, 2 vacuums, 4 floor buffers, 1 automatic floor scrubber. Hoods or transfer stations include: 3 Allentown Caging Equipment ATS5, 1 Allentown Phantom Transfer station, 2 Baker BioGard Class II Type A, 1 Labconco Class II, 1 Air Science Technologies, 1 NuAire Class II Type A/B3, and 4 NuAire Class II Type B1.

e. Sanitation [*Guide*, pp. 69-73]

i. Bedding/Substrate Change

1) Describe frequency of contact and non-contact bedding change for each species and enclosure type (solid-bottom or suspended) or pen.

Species	Cage Type	Frequency
Mice	Solid bottom	At least once a week
Rats	Solid bottom	At least once a week
Mice, rats	Wire bottom metabolic cages	Metabolic cages used to house animals for one to two days; cages are cleaned after use
Guinea pigs	Solid bottom	At least three times per week
Rabbits	Suspended caging	Pans containing non-contact bedding are changed at least twice a week
Chinchillas	Solid bottom	At least twice a week
Chinchillas	Suspended	At least twice a week
Pigs	Pens with slatted floors	Three times a day

2) Describe any IACUC/OB approved exceptions to frequencies recommended in the *Guide* or applicable regulations and the criteria used

to justify those exceptions.

There are no exceptions to the recommendations in the Guide.

3) Note the location where soiled bedding is removed from the cages/enclosures and where clean bedding is placed into the cages/enclosures.

Soiled bedding is dumped in the cage washrooms located in Buildings A and B in front of a BioBubble Bedding Disposal Unit to minimize damp airborne particulates. Contaminated cages (biohazardous material) are autoclaved before they go to the cage wash area for dumping. Cages containing bedding contaminated with chemical hazards are brought to the cage wash area in sealed biohazard bags that are labeled with the chemical contaminant. DLAM staff dump these cages wearing the appropriate PPE into biohazard bags that are immediately taken to the incinerator storage room. Rodent cages may also be dumped and scraped using the hood within the animal room as needed. Clean bedding is placed in clean cages in a dedicated room in Building B.

ii. Cleaning and Disinfection of the Micro- and Macro-Environments
Note: A description of the washing/sanitizing frequency, methods, and equipment used should be included in **Appendix 14** (Cleaning and Disinfection of the Micro- and Macro-Environment) and **Appendix 15** (Facilities and Equipment for Sanitizing Materials).

1) Describe any IACUC/OB approved exceptions to the *Guide* (or applicable regulations) recommended sanitation intervals.

There are no exceptions to the recommendations in the Guide.

2) Assessing the Effectiveness of Sanitation and Mechanical Washer Function

a) Describe how the effectiveness of sanitation procedures is monitored (e.g., water temperature monitoring, microbiological monitoring, visual inspections).

DLAM personnel are trained to visually inspect all caging and equipment after washing. Any dirty equipment is returned to be cleaned again. If a problem with the equipment is noted more than one time, the Facility Coordinator is notified to identify the source.

Temperature gauges in the rack washers are used to monitor water temperature in the unit. The wash cycle maintains water temperatures of

143-180° F. Washers will not operate unless the final rinse temperature reaches 180-185° F. Thermolabel temperature-sensitive tapes are used weekly to monitor water temperature. In addition, Firefly ATP detectors are used every month to verify the effectiveness of sanitation by comparing ATP monitoring of cages before and after washing.

Autoclaves are assessed monthly using Getinge Assure AccuFast Biological Indicators for Geobacillus stearothermophilis. In addition, autoclave temperature indicator tape is used on the exterior of each load, and Diack indicators are placed in every load of wrapped equipment to verify that the expected temperatures and exposure times are attained.

b) Describe preventive maintenance programs for mechanical washers.

Preventive maintenance is completed quarterly by a Johnson Control Technician.

f. Conventional Waste Disposal [*Guide*, pp. 73-74]
Describe the handling, storage, method and frequency of disposal, and final disposal location for each of the following:

i. Soiled bedding and refuse.

Non-hazardous soiled bedding is primarily disposed of into dumpsters provided by a commercial hauler. Some soiled bedding is incinerated on-site. Soiled bedding from containment or hazardous studies is incinerated on-site. Refuse from the surgery suite is disposed of in biohazard bins. Personnel from the Maintenance Department operate the incinerator. The incinerator is operated whenever enough waste accumulates to comprise a full load (at least once a week).

Infectious waste disposal is described above. There is one animal protocol involving radioactive waste. The process would be the same as for any radioactive waste generated at SIU SOM. Radioactive waste is incinerated.

Soiled bedding from animals treated with chemical hazards is sprayed with water to minimize aerosols then incinerated. If waste cannot be incinerated, the hazardous chemical wastes are collected and disposed of by the Environmental Health and Safety Office. Sharps containers are transported to SIU SOM centrally available biohazard bins by the Veterinary Technician for disposal.

ii. Animal carcasses.

Carcasses are bagged and placed in a large trashcan in a cooler adjacent to the incinerator. Carcasses are incinerated on site on the same days as the bedding in a load that also contains bedding waste to provide a more complete burn. Carcasses

from animals exposed to infectious agents are bagged in biohazard bags and incinerated on site. If the incinerator is not available, carcasses are boxed and hauled off site for incineration by a commercial vendor (i.e. Stericycle).

g. Pest Control [*Guide*, p. 74]

i. Describe the program for monitoring and controlling pests (insects, rodents, predators, etc.). Include a description of:

- monitoring devices and the frequency with which devices are checked
- control agent(s) used and where applied, and
- who oversees the program, monitors devices, and/or applies the agent(s).

Vermin are controlled by maintaining a high level of sanitation, sealing possible harborage areas, and applying a boric acid solution (Nibor-D) to all corridors once a week by DLAM personnel. Roach sticky traps are used to monitor vermin control. DLAM uses box traps to capture wild or escaped rodents whenever they are observed in laboratories or the animal facility. Pest control is provided by an outside company, Sentinel, on a monthly basis. The DLAM Coordinator and Attending Veterinarian are notified whenever a mouse is trapped. Mice are identified if possible and are immediately euthanized. If the mouse is alive when captured, blood is taken for serology.

ii. Describe the use of natural predators (e.g., barn cats) or guard animals (e.g., dogs, donkeys) used for pest and predator control, if applicable.

Not applicable

iii. Note how animal users are informed of pesticide use and how animal users may opt out of such use in specific areas.

DLAM does not use pesticide chemicals. The Illinois Environmental Protection Agency maintains a laboratory in the SCLF for testing of various chemical contaminants including insecticides. Use of insecticides anywhere in this facility could interfere with the test results.

h. Weekend and Holiday Animal Care [*Guide*, pp. 74-75]

i. Describe procedures for providing weekend and holiday care. Indicate who (regular animal care staff, students, part-time staff, etc.) provides and oversees care and what procedures are performed.

On weekends and holidays, an Animal Technician (regular DLAM staff member) performs essential care during a four-hour period (or more if needed) between

7:00am and noon. On weekends and holidays, animal care involves checking all feed and water, observing animals for health problems, taking animal census, monitoring environmental conditions, hosing pig runs (if pigs are currently being housed), and changing cages as needed.

ii. Indicate qualifications of weekend/holiday staff if not regular staff.

Individuals are primarily DLAM staff who work mandatory overtime. Other individuals who may work the weekend or on holidays are researchers from labs that perform significant animal work, were previously employed in DLAM or are students that are trained by the Facility Coordinator but also have animal experience based on lab studies.

iii. Describe procedures for contacting responsible animal care and/or veterinary personnel in case of an emergency.

Security maintains an on-call schedule for the DLAM Coordinator and DLAM Director. When the AV is not available, – the contract veterinarian is available to provide emergency veterinary instruction and care. On-call personnel can be contacted at any time by the animal care technicians or security personnel via telephone-. Facility users are instructed to contact the Security Office to reach on-call personnel.

Maintenance and security personnel are on duty around the clock. Computers monitor critical mechanical systems. Security personnel make rounds through the animal facility every 4 hours. If any of the following conditions exist, the security or maintenance personnel will notify DLAM on-call personnel:

- Power failure of one hour or more duration
- Fire
- Extreme temperature deviations (below 64° F or over 80° F)
- Animal in distress
- Failure of ventilation system longer than 60 minutes
- Escaped animal
- Interruption of water
- Breach of facility security

2. Population Management [*Guide*, pp. 75-77]

a. Identification

Describe animal identification methods for each species (e.g., microchips, cage/tank cards, collars, leg bands, tattoo, ear tags, brands).

Tattoos or ear tags are used to identify pigs. Tattoos, ear punches or ear tags are used to identify some rats and mice. Ear tags are used to identify some chinchillas. Rabbits

are sometimes tattooed. Cage cards are used for all animals as the normal method of identification and include the following information: date received, species, strain, age or weight, sex, source, investigator, protocol number, and initials of person receiving animal. Specialized breeder cage cards may be used in addition to the standard cage card.

b. Breeding, Genetics, and Nomenclature

i. Describe the program for advising investigators on the selection of animals based on genetic characteristics.

The veterinarian is available for consultation, to review all animal use protocols, and advises investigators directly or through protocol review on selection of animals based on genetic characteristics.

ii. Describe the program for advising investigators on using standardized nomenclature to ensure proper reporting of the identification of the research animals with regard to both the strain and substrain or the genetic background of all animals used in a study.

Investigators are informed about using standardized nomenclature during personal consultation, if requested, as well as during protocol review.

iii. Describe genetic management techniques used to assess and maintain genetic variability and authenticity of breeding colonies, including recordkeeping practices (*Guide*, pp. 75-76).

Individual PIs are responsible for genotyping their animals and maintaining their breeding colonies appropriately. DLAM will assist as needed.

iv. For newly generated genotypes, describe how animals are monitored to detect phenotypes that may negatively impact health and well-being. Note that the methods used to report unexpected phenotypes to the IACUC/OB should be described in section 2.1.B.1.c.ii, “Unexpected Outcomes that Affect Animal Well-Being.”

Animal husbandry personnel observe all animals daily for signs of illness or abnormal behavior. DLAM staff members are trained on-the-job and at weekly staff meetings. They also complete the Animal Handlers' Training course. The caretakers and technicians perform a daily check of each room based on a sequential entry order. All necessary work in that room is performed at the time of room entry. At that time, DLAM staff visually check each cage. Animals are observed for abnormal behavior and physical abnormalities. Normal animal behavior and physical attributes are discussed with each new employee during the orientation and training process.

If an animal shows physical or behavioral abnormalities, the caretakers and technicians place a colored sticker on the cage with the date, a brief description of the problem, and the initials of the caretaker. Bright orange stickers are used for husbandry problems, and yellow stickers are used for clinical/medical problems. The caretakers also submit a written note to the proper person (husbandry problem – DLAM Coordinator; clinical or medical problem – Attending Veterinarian or Veterinary Technician). If the problem is medical, the veterinary technician (or the AV in the absence of the VT) evaluates the animal, places an "Exam Requested" card on the cage, and notifies the veterinarian and the research team. The veterinarian then gives instructions concerning the evaluation and care of the animal. The veterinarian reviews all submitted health reports on a daily basis, even if the research team immediately euthanizes the reported animals. The veterinarian and/or veterinary technician conduct a complete rounds session at least once every two weeks for rodent species and weekly for non-rodent species to evaluate each sick animal and prepare an information sheet for the on-call person and weekend husbandry technician. The AV, VT, and/or the DLAM Coordinator discuss all health and well-being concerns with the PI to determine the appropriate resolution.

III. Veterinary Care [*Guide*, pp. 105-132]

Note: Complete each section, including, where applicable, procedures performed in farm settings, field studies, aquatic environments, etc.

A. Animal Procurement and Transportation [*Guide*, pp. 106-109; *Ag Guide*, pp. 8; 45; 50-57]

1. Animal Procurement

Describe the method for evaluating the quality of animals supplied to the institution (from commercial vendors, other institutions, etc.).

All animals used at SIU SOM are purpose-bred for research. Most animals are obtained from commercial vendors and arrive with health reports. Swine are obtained from Oak Hill Genetics. Chinchillas are obtained from Ryerson Chinchilla Ranch or Moulton Chinchilla Farm. Rabbits are obtained from Covance. Guinea pigs are obtained from Charles River Labs or Elm Hill. Rodents are usually procured from Charles River, Envigo, Taconic, or the Jackson Laboratory. Occasionally special strains of rodents must be obtained from non-commercial sources. In these cases, health reports are obtained from the source institution and are evaluated prior to scheduling shipping so that appropriate precautions can be taken upon receipt.

2. Transportation of Animals

Describe how animals are transported between outside sources and the institution and within the institution, including loading, unloading, level of biosecurity, immune status and specific pathogen status (consider all species, including aquatic and

semi-aquatic species).

Rabbits, chinchillas, pigs, and most rodents are transported from vendors in environmentally controlled vehicles. Some rodents are transported by a combination of air and environmentally controlled truck. Rat, mouse, and guinea pig shipping containers are sprayed with SporKlenz before entering the facility. Containers holding rabbits and chinchillas are not sprayed.

Within research areas of Buildings A, B, and C, rodents are transported to laboratories on carts in cages that are covered with a paper shroud. Rodents are transported to neighboring research buildings inside a secure carrying case. Other species do not leave the animal facility.

B. Preventive Medicine

1. Animal Biosecurity [*Guide*, pp. 109-110]

a. Describe methods used to monitor for known or unknown infectious agents. Note that if sentinel animals are used, specific information regarding that program is to be provided below.

DLAM maintains a rodent sentinel testing program. All PI rodent colonies are monitored with dirty bedding, non-contact sentinels. Sentinels in conventional housing are tested two or three times a year for pathogens. Mice housed in the barrier are tested three times a year. At the time of testing, the sentinel animal is euthanized. Blood is collected for testing, and exams are performed for external (fur mites) and internal (pinworms) parasites.

Clean conventional mice are tested for MHV, MVM, MPV 1-5, NS1, MNV, TMEV, and EDIM by an outside commercial diagnostic lab (IDEXX RADIL) two or three times a year. Barrier mice are tested for the above pathogens twice a year and once a year for the above plus Sendai virus, Mycoplasma pulmonis, PVM, REO3, LCMV, and Ectromelia virus. Mice with known pathogens (MPV) are tested once a year for the above pathogens and once a year for MPV, NS1, and MVM. Clean conventional rats are tested for RCV/SDAV, NS1, RPV, RMV, KRV, H-1, RTV, and Pneumocystis carinii three times a year.

Animals from non-vendor sources must go into a quarantine program. SIU SOM has received only mice, not other species, from non-vendor sources. Incoming mice are tested directly at four weeks by PCR (OptiXXPress Basic panel from IDEXX RADIL). The test includes *Pasteurella pneumotropica*, *Klebsiella* spp., *Staphylococcus aureus*, *Aspicularis tetraptera*, *Helicobacter* (6 spp.), MHV, MVM, MPV, MNV, TMEV, EDIM, pinworms, and fur mites. In addition, non-contact sentinels are used for a second testing at 8 weeks. Sentinel mice are housed in the dirty cages from the incoming animals, plus added dirty bedding from other cages if the sentinel is

monitoring 2 to 6 cages. At the time of testing, the sentinel animal is euthanized. Blood is collected for serology, and exams are performed for external (fur mites) and internal (pinworms) parasites in-house. Serum is tested for MHV, MVM, MPV , MNV, TMEV, EDIM, Sendai virus, *Mycoplasma pulmonis*, PVM, REO3, LCMV, and Ectromelia virus.

DLAM does not maintain a colony health monitoring program for other species, as animals are all-in-all-out, and are typically in the facility for less than 4 months. The exception to this is the testing of chinchillas for the presence of dermatophytes by visual inspection under a black light and intestinal giardia by a spot test.

b. Describe methods used to control, contain, or eliminate infectious agents.

Our facility currently houses mice positive for Mouse Parvovirus and fur mites. Animals infected with these pathogens are housed in a dedicated section of our facility, away from "cleaner" animals. Dedicated equipment (cages, wires, filters) is provided for these animals and is cleaned and sanitized in a separate wash room. Additional PPE is required for working in the room, and it is taken off before exiting the room. Sticky mats are placed in the doorway of these rooms to minimize spread of pathogens. A strict entry order for animal rooms is in place for all DLAM staff and research personnel to reduce the risk of contamination.

2. Quarantine and Stabilization [*Guide*, pp. 110-111]

a. Describe the initial animal evaluation procedures for each species.

Rodents are usually uncrated on the same day as received. Crates are sprayed with SporKlenz and then sit at least 10 minutes before being taken into the facility. Animal husbandry technicians closely observe rats and mice while placing them in cages and notify the veterinary technician of any problems. All other species are evaluated upon receipt by the veterinary technician or facility coordinator, who reports any problems to the veterinarian.

b. Describe quarantine facilities and procedures for each species. For each species, indicate whether these practices are used for purpose-bred animals, random-source animals, or both.

All animals in our facility are purpose bred. DLAM does not quarantine animals from approved vendors, only from non-approved vendors (e.g., other academic institutions). Animals received from approved vendors undergo an acclimation period, the length depending on the species. During this time, they are observed for overt health problems.

Non-vendor mice are housed in a dedicated room for the duration of quarantine. Static micro-isolator cages are used and changed under a hood. Entry to the room is limited

to DLAM staff. Shoe covers, face mask, hair bonnet, disposable gown, and disposable gloves are worn to enter the room. All caging is autoclaved in and out. Fenbendazole medicated feed is used as a precaution against endoparasites. Mice are provided with MiteArrest cotton balls (permethrin impregnated).

Animals from non-vendor sources must go into a quarantine program. SIU SOM has received only mice, not other species, from non-vendor sources. Incoming mice are tested directly at four weeks by PCR (OptiXXPress Basic panel from IDEXX RADIL). The test includes *Pasteurella pneumotropica, Klebsiella* spp., *Staphylococcus aureus, Aspicularis tetraptera, Mycoplasma, Salmonella, Helicobacter* (6 spp.), MHV, MVM, MPV, MNV, TMEV, EDIM, pinworms, and fur mites. In addition, non-contact sentinels are used for a second testing at 8 weeks. Sentinel mice are housed in the dirty cages from the incoming animals, plus added dirty bedding from other cages if the sentinel is monitoring 2 to 6 cages. At the time of testing, the sentinel animal is euthanized. Blood is collected for serology, and exams are performed for external (fur mites) and internal (pinworms) parasites in-house. Serum is tested for MHV, MVM, MPV, MNV, TMEV, EDIM, Sendai virus, *Mycoplasma pulmonis*, PVM, Reo3, LCMV, and Ectromelia virus.

Random source animals are not used.

c. Describe the required/recommended stabilization period for each species.

Vendor-acquired mice and rats are acclimated for at least 48 hours, chinchillas and guinea pigs for 5 days, rabbits for 7 days, and pigs for 2 to 5 days, depending on intended use (acute versus survival surgery).

3. Separation by Health Status and Species [*Guide*, pp. 111-112]

a. Describe the program for the separation of animals by species, source, and health status. If the animals in different status are not maintained separately, describe circumstances in which mixing occurs and explain the rationale for mixing.

All animals are separated by species. Multiple species are never housed in the same room or cubicle. Our facility maintains three separate levels of health status: barrier SPF, "clean" conventional, and "dirty" conventional. Each room houses animals of one health status only. However, multiple PIs may have animals in the same room.

Filter tops are used throughout the facility on rodent cages. Pigs, rabbits and rodents other than chinchillas are procured from specific pathogen free colonies. Chinchillas are procured from commercial vendors. Some mice and rats are maintained under barrier conditions because of their immune-impaired status; however, other colonies of irreplaceable or valuable rodents are also housed in the barrier. Animals from

approved vendors are placed directly in an animal housing room on arrival with an "acclimation period" tag stating the date at which these animals can be used.

b. Describe situations where multiple species may be housed in the same room, area, or enclosure.

Multiple species are never housed together.

c. Describe isolation procedures and related facilities for animals.

Specific isolation facilities are not available. However, if necessary, an empty animal room could be used for isolation.

C. Clinical Care and Management [*Guide*, pp. 112-115]

1. Surveillance, Diagnosis, Treatment and Control of Disease [*Guide*, pp. 112-113]

a. Describe the procedure(s) for daily observation of animals for illness or abnormal behavior, including:

- the observers' training for this responsibility
- method(s) for reporting observations (written or verbal)
- method(s) for ensuring that reported cases are appropriately managed in a timely manner.

- Animal husbandry personnel observe all animals daily for signs of illness or abnormal behavior. DLAM staff members are trained on-the-job and at weekly staff meetings. They also complete the Animal Handlers' Training course. The caretakers and technicians perform a daily check of each room based on a sequential entry order. All necessary work in that room is performed at the time of room entry. At that time, DLAM staff visually check each cage. Animals are observed for abnormal behavior and physical abnormalities. Normal animal behavior and physical attributes are discussed with each new employee during the orientation and training process.

- If an animal shows physical or behavioral abnormalities, the caretakers and technicians place a colored sticker on the cage with the date, a brief description of the problem, and the initials of the caretaker. Bright orange stickers are used for husbandry problems, and yellow stickers are used for clinical/medical problems. The caretakers also submit a written note to the proper person (husbandry problem – DLAM Coordinator; clinical or medical problem – Attending Veterinarian or Veterinary Technician). If the problem is medical, the veterinary technician (or the AV in the absence of the VT) evaluates the animal, places an "Exam Requested" card on the cage, and notifies the veterinarian and the research team. The veterinarian then gives instructions concerning the evaluation and care of the animal.

The veterinarian reviews all submitted health reports on a daily basis, even if the research team immediately euthanizes the reported animals. The veterinarian and/or veterinary technician conduct a complete rounds session at least once every two weeks for rodent species and weekly for non-rodent species to evaluate each sick animal and prepare an information sheet for the on-call person and weekend husbandry technician.

b. Describe methods of communication between the animal care staff and veterinary staff and the researcher(s) regarding ill animals.

The veterinary technician or veterinarian contacts the research personnel by phone, in person, or email. A current list of lab staff and animal users is maintained by DLAM with all contact information. Details of the communication are written on the health report or animal record.

c. Describe the preventive medicine and health management/monitoring programs (e.g., physical examination, TB testing, vaccination, hoof/nail trimming, teeth cleaning/floating, vendor surveillance, use of sentinel animals) for each species.

All animals are purpose-bred. Therefore, DLAM relies heavily on vendor information for initial health assessment. Pigs are treated for parasites by the vendors. Additional assessment occurs only when warranted by clinical problems. Rabbits are weighed periodically. Chinchillas are treated with Miconazole powder twice a week for three weeks in a dust bath starting on arrival or as needed for dermatomycosis, as there is clinical and diagnostic evidence that these animals are positive on arrival. In addition, chinchillas are assumed to be positive for giardia from past testing of the colony. The DLAM staff and research staff are notified to take precautions, but no treatment is initiated. Mouse and rat colonies are monitored as described above (Animal Biosecurity) for adventitious agents.

2. Emergency Care [*Guide*, p. 114]

a. Describe the procedures to ensure that emergency veterinary care is continuously available for animals during and outside of regular work hours, including access to drugs or other therapeutics and equipment.

On weekends and holidays, an animal technician performs essential care during a four-hour period between 7:00am and noon (or more time if needed). On weekends and holidays, animal care involves checking all feed and water, observing animals for health problems, taking animal census, monitoring environmental conditions, hosing pig runs and floors in all animal rooms, changing cages as needed and administering treatments, if necessary.

Security maintains an on-call schedule for the DLAM Coordinator and DLAM Director. When the AV is not available, a contract veterinarian is able to provide

emergency veterinary instruction and care. On-call personnel can be contacted at any time by the animal care technicians or security personnel via telephone or pager. A sign on the main doors of the animal facility indicates that facility users should contact security to reach on-call personnel.

b. Describe the authority of the Attending Veterinarian or his/her designee relative to the emergency treatment of animals in the program.

The Attending Veterinarian/DLAM Director has the authority to provide treatment (including euthanasia) to any animal in the facility in the event of an emergency. This authority transfers to the contract veterinarian in the absence of the AV.

3. Clinical Record Keeping [*Guide*, p. 115]

a. Describe the procedure for maintaining medical records and documenting treatment of ill animals including: clinical laboratory findings, diagnoses, treatments, medical progress records, etc. Identify the species for which individual records are maintained and where such records are kept.

Individual records are maintained for each USDA covered animal if they are reported for illness or undergo a surgical procedure. These records indicate all physical exams, laboratory tests, surgery, and treatments. All medical records are kept in the animal housing room with the animal on a clipboard. Individual animal records for USDA covered animals are filed after each case is resolved. These records are maintained for 6 years by the Veterinary Technician or Supervisor.

Continuing medical care or observation of an animal not covered under the USDA (e.g., mouse or rat) is usually documented on the "Exam Requested" card. Investigators maintain additional records on rodents that undergo surgery on a special cage card and in laboratory notebooks. Surgery records for rodents, including analgesics given and post-operative pain assessment, are kept on separate red cards hung with the cage cards. The supervisor, interim Director or AV collects the cards after the monitoring period is over and keeps them on file as records for proper pain management.

b. Identify individual(s) (titles, not necessarily names) responsible for maintaining such records and identify where the records are maintained and who, including the IACUC/OB has access to the records.

All medical records are kept in the animal housing room with the animal on a clipboard. Individual animal records for USDA covered animals are filed after each case is resolved. These records are maintained for 6 years by the Veterinary Technician or Supervisor.

Surgery records for rodents, including analgesics given and post-operative pain assessment, are kept on separate red cards hung with the cage cards. The Veterinary

Technician or Veterinarian collects the cards after the monitoring period is over and keeps them on file as records for proper pain management.

c. Describe the role of the Attending Veterinarian in recordkeeping.

The AV participates in completing records and reviews medical records.

4. Diagnostic Resources. Describe available diagnostic methods used in the program including:

a. In-house diagnostic laboratory capabilities.

The diagnostic laboratory contains equipment to perform hematology, parasite examinations, and basic microbiology, including a FireFly Bioluminescence ATP hygiene monitor and DuCheck plates to monitor cage washer efficiency, and Getinge Assure AccuFast Biological Indicators to monitor autoclave function. Firefly swabs are checked every month on cages, wire tops, and other husbandry equipment. DuCheck plates are used as needed. Getinge Assure AccuFast Biological Indicators for the autoclaves are run monthly. The Abaxis VetScan hematology machine is available for clinical and research use. Other diagnostic capabilities include simple Gram stain, light and dissecting microscopes, and incubators.

b. Commercially provided diagnostic laboratory services.

A blood spot on the OptiSpot card or serum samples are sent to a commercial laboratory (IDEXX RADIL or Charles River Labs) for rodent serological evaluation. All rodent cells lines and products, and human cell lines passed through rodents must be tested for adventitious rodent viruses before they are used in rats or mice by an IMPACT III test at IDEXX RADIL. On an annual basis, approximate numbers of samples submitted to the diagnostic labs include between 5-7 tissue samples for histology, 1-2 murine cell lines for PCR detection of possible pathogens, 5-7 other samples for microbiology and fungal culture, 4-5 fecal samples for MPV PCR analysis, 15-20 swabs for PCR analysis by the OptiXXPress testing and 75-150 serology samples.

c. Necropsy facilities and histopathology capabilities.

One room in Building A is the necropsy facility and contains a necropsy table, exam light, biosafety hood, sink, and ample storage space. Histopathology specimens are processed and read by a commercial diagnostic laboratory. On an annual basis, approximately 15-20 complete or partial necropsies are conducted in-house.

d. Radiology and other imaging capabilities.

The SIU School of Medicine has no machines for radiology. A bioluminescence imaging system maintained by the Research Core is located in a procedure room in Building C of the facility. A Piximus imager is located in Building A of the facility appropriately shielded from users. All users must be trained by Core staff prior to being granted access to the machine.

5. Drug Storage and Control

a. Describe the purchase and storage of controlled and non-controlled drugs.

Controlled and some non-controlled drugs used by individual laboratories are purchased by the PI using their individual state license and federal registration.

The Director of DLAM is responsible for purchasing all drugs for routine animal care, tracking the inventory, and maintaining all records. Controlled substances are stored in a dedicated, locked room in a secure safe in Building C. The room is only accessible to the DLAM Director by electronic key card. The room is secured by a keycard access panel and dead-bolt lock. Controlled substances used in the DLAM surgery suite are dispensed from the stock supply and stored in a locked cabinet in the prep room. Non-controlled drugs used by DLAM veterinary staff are stored in cabinets or drawers in the surgery preparation room and the diagnostic laboratory. These rooms are kept locked when not in use.

b. Describe record keeping procedures for controlled substances.

An inventory number is assigned to each vial or bottle and is recorded in a logbook, on the vial or bottle, and on the controlled substance receipt form. An inventory card is issued with each bottle or vial. The expiration date is recorded in the log book at that time. The veterinary technician also keeps a spreadsheet of expiration dates for controlled and non-controlled drugs. The person using the drug is instructed to accurately maintain the inventory card as the drug is used. When the vial or bottle is empty, it is placed in the secure room with the inventory card.

The Director regularly checks the dates on both controlled and non-controlled drugs in the DLAM area. The LACUC checks both controlled and non-controlled drugs in laboratories during semiannual inspections to ensure that they are not outdated and that controlled substances are properly logged and stored. A complete on-hand inventory is conducted every year. This inventory includes all stored and in-use controlled substances.

Some protocols are authorized to use expired supplies and substances. These supplies are kept in a separate area specifically labeled as “outdated supplies.”

D. Surgery [*Guide*, pp. 115-123]

1. **Pre-Surgical Planning** [*Guide*, p. 116]
Describe the process(es) used to ensure adequate pre-surgical planning, including: identifying personnel; locating equipment, supplies, veterinary involvement for selecting analgesic and anesthetic agents and facilities; planning; and pre- and post-operative care.

The investigator provides information in the protocol regarding personnel involved in surgery, surgical procedures, aseptic technique, equipment, facilities, pre- and post-operative care procedures, analgesia, and methods to identify and address complications of the surgery on normal physiological processes (protocol section 5). Laboratory personnel may consult with the veterinary technician or veterinarian to assure that all necessary planning is completed in advance of the procedure. Given the close relationship between PIs and the veterinary staff, all surgical methods are closely monitored. The small size of the program and limited number of surgical procedures allow for this familiarity.

2. **Surgical Facilities** [*Guide*, pp. 116-117, 144-145]
List building name(s) and room number(s) or other locations (coded, if confidential) where surgical procedures are performed. For each, describe:
   - the type of species (including rodents, fish, agricultural species, etc.)
   - nature of procedure(s) (major/minor/emergency, survival and non-survival, etc.)
   - the amount of use [heavy (daily), moderate (weekly), or light]
   - major surgical support equipment available (gas anesthesia machines, respirators, surgical lights, etc.)
   - facilities for aseptic surgery, surgical support, animal preparation, surgeon's scrub, operating room, and postoperative recovery
   - construction features of the operating room(s), including interior surfaces, ventilation, lighting, and fixed equipment used to support surgical procedures and other means of enhancing contamination control

Note: If preferred, the information requested in this section may be provided in Table.

All survival surgery performed on non-rodent mammalian species is conducted in the DLAM surgery suite (room 1655B Building C). Use of this room is light. On an annual basis, approximately 3 non-survival procedures are performed on pigs. Depending on which protocols are active, approx. 2 survival procedures may be performed on USDA-covered animals and up to 20 survival procedures may be performed on rodents in this room. Rodent surgery may also be conducted in room 1655D of Building C.

The surgery area is located near the back of Building C, which reduces traffic flow. The suite consists of one well-equipped room for performing sterile surgery, an animal preparation room, a recovery/housing room, a storage room, an instrument prep and autoclave room, a surgeon prep area, and a tank storage area. The animal preparation

room contains exam tables, a hydraulic portable table, clippers, vacuum, sink, sonicator, locked drug cabinet, and storage space. A large animal scale is located in the hallway outside the housing room.

Air is introduced into the surgery rooms by ceiling-mounted diffusers and is exhausted by low positioned, wall-mounted ducts. The surgery rooms are sanitized by hand washing with disinfectant solution (Roccal, Cavi Wipes, or Virex) or by steam cleaning.

Rooms in the aseptic surgery area have epoxy-painted concrete block walls and epoxy-painted plaster ceilings. The surgery suite has a coved base epoxy flooring. The surgery area is on the same HVAC system as the animal quarters with similar air changes and ventilation, but air pressure is positive to the corridor. The anesthesia machines are equipped with gas scavenging systems that connect directly to the building vacuum system. The surgery room has ceiling-mounted surgical lights. The scrub room and the animal preparation room have double stainless steel sinks. The autoclave is located in a separate room. Electrical outlets are moisture proof.

The surgical support areas (surgeon scrub room, animal preparation room, and animal recovery room) all have epoxy-painted concrete block walls, epoxy floors and epoxy-coated plaster ceilings. All surgical support rooms are located in the suite with the surgery room. The post-operative recovery room is adjacent to the animal preparation room and has epoxy-painted concrete block walls, epoxy floors and epoxy-coated plaster ceilings.

Rodent survival and non-survival surgery is mainly performed in research laboratory spaces in Buildings A, B, and C, although an animal procedure room within Building C also is available for investigator use. The LACUC recommends that the surgery area be a dedicated space within the lab (LACUC Policy #24).

- North American Drager Narkovet Deluxe anesthesia machine with ventilator (2)
- Electrosectilis electrosurgical unit
- Harvard respirator
- Valley Lab solid state electrosurgical unit (2)
- Amsco Automatic Autoclave
- Smiths Medical monitors (3)
- MDS Matrix isoflurane anesthesia machine (3)
- Matrix Spartan VMC isoflurane anesthesia machine
- Magnifying Lamp
- RC2 Rodent Circuit Controller
- Mobile Anesthesia Machine Model V-10 (2)
- DSx Vented warming table (2)
- Gaymar Warm Water pump
- Hot bead Sterilizers (2)
- Small animal (human neonatal) incubator
- Rodent surgery work station

- Recirculating warm water blanket (3)
- Ethylene oxide gas sterilizer

Rodent surgery may be performed in research lab space. The LACUC recommends that the surgery area be a dedicated space within the lab (LACUC Policy #24).

3. Surgical Procedures [*Guide*, pp. 117-118]

a. Describe the criteria used to differentiate major from minor survival surgery, including classification for certain procedures (e.g., laparoscopic technique).

Surgery is defined as a procedure that uses instruments to incise tissue and penetrate a body cavity or subcutaneous fascia. Surgical procedures include, but are not limited to, resection of a nerve or vessel, implantation of a catheter or biomaterial substance, or other modification of tissues. A major surgical procedure is defined as any procedure that penetrates a major body cavity with any opening that requires incision closure or with any device larger than a needle, or causes disability or impairment. Laparoscopic procedures are usually classified as major surgery.

b. How is non-survival surgery defined?

Surgery is classified as either survival or non-survival. Survival surgery is defined as surgery after which the animal recovers from anesthesia. In non-survival surgery, an animal is euthanized before recovery from anesthesia.

4. Aseptic Technique [*Guide*, pp. 118-119]

a. Describe procedures, equipment, and protective clothing used for aseptic surgery. Include patient and surgeon preparation.

All non-rodent survival surgery is conducted in the DLAM surgery suite. Full aseptic technique is used, including masks, hair coverings, sterile gloves and gowns, and the use of autoclaved instruments. Patient preparation includes clipping the hair and performing an aseptic scrub with Betadine or Nolvasan followed by an alcohol rinse and a final application of Betadine or Nolvasan. Surgeons scrub their hands and arms.

Rodent survival surgery is conducted in laboratories. Personnel wear masks, gowns or laboratory coats, and sterile gloves. Instruments may be sterilized either by autoclave, hot beads, or a chemical sterilant. Hair is clipped and the skin is prepared with a surgical scrub such as Betadine.

b. Describe methods used to sterilize instruments and protective clothing, including a description of approved liquid sterilants and instrument exposure time(s) required for each, if applicable.

For all non-rodent survival surgery, gowns and instruments are autoclaved. DLAM autoclaves are monitored with temperature tape and monthly with biological indicators. An ethylene oxide sterilizer, located in and operated by DLAM, is available for all research labs. Effectiveness of this equipment is monitored with the Anprolene Dosimeter. For rodent survival surgery, clean laboratory coats or gowns may be used, and instruments may either be autoclaved or chemically sterilized at the start of the day. A list of liquid or chemical sterilants is available on the "Surgery Skills Basics" document on the LACUC website on the SIU SOM intranet (http://intranet.siumed.edu/forms/lacuc/pdf/SurgerySkillsBasics.pdf). Sterile instruments must be used between animals when rodent surgeries are done in batches. For this purpose, fresh instruments may be used or instruments may be placed in a hot bead sterilizer for the required amount of time to sterilize the instruments.

c. Describe methods for instrument re-sterilization between serial surgeries.

Sterile instruments must be used between animals when rodent surgeries are done in batches. For this purpose, fresh instruments may be used or instruments may be placed in a hot bead sterilizer for the required amount of time to sterilize the instruments.

d. Indicate how effectiveness of sterilization is monitored.

Effectiveness of the ethylene oxide sterilizer is monitored with the Anprolene Dosimeter. DLAM autoclaves are monitored with temperature tape and monthly with biological indicators.

e. Describe surgical support functions provided by the program to investigators.

The Veterinary Technician or Attending Veterinarian is available for assistance in anesthesia administration and monitoring or surgery assistance.

The DLAM surgery suite is used for survival and non-survival surgery on rabbits and pigs, and for training courses that conduct non-survival procedures on pigs. Rodent survival and non-survival surgery is performed in laboratories. Rodent surgeries can also be performed in the surgery suite.

Surgeons who perform survival surgery on non-rodent species are mostly trained and experienced in the practice of human surgery. Surgeons for animal surgery who do not have an MD degree have either had extensive experience or receive training from the Attending Veterinarian. For survival surgery, full aseptic procedures are used, including wearing of mask, cap, sterile gloves, and sterile gowns and use of sterile drapes. Instruments are autoclaved.

Surgeons who perform surgery on rodent species wear masks, sterile gloves, and a clean lab coat. Instruments are autoclaved prior to surgery. Many laboratories use hot bead sterilizers to re-sterilize instrument tips between animals.

The Attending Veterinarian has overall responsibility for the surgery program. Day-to-day oversight is the responsibility of the Supervisor and Director. The Supervisor has worked in private practice, has taken the Animal Handlers' class, and attends continuing education meetings. The Director is also experienced researcher and assists in the surgery program as necessary.

When DLAM veterinary assistance is requested, the DLAM Coordinator uses the approved protocol to construct a checklist/flow chart for each non-rodent surgery protocol that is performed in the DLAM surgery suite. This flow chart lists the LACUC approved methods, techniques, and drugs given to animals during the surgical and post-surgical procedures. Using the flow chart avoids protocol drift and assures that all necessary care, as defined in the protocol, is administered.

5. Intraoperative Monitoring [*Guide*, p. 119]

Describe monitoring and recording requirements for each species, including the type of record(s) maintained. Also note monitoring of anesthesia during non-survival procedures.

USDA-covered animals are monitored continuously by the DLAM Director, Coordinator, veterinary technician or the Attending Veterinarian from time of induction to either recovery or euthanasia. Surgery records are maintained for each animal. The veterinary staff monitor anesthetic depth and other physiological parameters manually and by a monitor via the following: SpO2, heart rate, respiratory rate, palpebral reflex, mucus membrane refill rate and color, and jaw tone. DLAM has three monitors to use during surgery to track non-invasive and invasive blood pressure, and ECG.

The Attending Veterinarian reviews surgery, anesthesia, and animal monitoring in all protocols involving surgery. Rodents are monitored in the lab by the research staff during surgery typically for respiration rate and toe-pinch reflex.

6. Postoperative Care [*Guide*, pp. 119-120]

Describe the postoperative care program, including who is responsible for overseeing and providing the care, types of records maintained (e.g., perioperative), where the records are maintained, etc.

The research staff and the DLAM Coordinator work closely together to assure proper post-surgical care. The research personnel perform all routine post-operative care (e.g., administration of analgesics and antibiotics and daily evaluation) and maintain animal records of post-surgical care on all USDA-covered species. The Coordinator, veterinary technician and/or veterinarian also will monitor the animal and associated records to ensure humane animal care and accurate record keeping. The records are kept in the animal room on a clipboard. At the conclusion of the study, all animal surgery and health records are filed by the Veterinary Technician. These records are kept for 6 years.

The research staff usually performs post-surgical care of rodents, although animals are also evaluated by the veterinary technician or the AV and observed daily by the animal care staff after they are returned to the animal facility. Daily records of experimental use, post-procedural observations, and treatments or administration of substances must be documented on the cage cards. Surgery records for rodents including analgesics given and post-operative pain assessment are kept on separate cards hung with the cage cards. The veterinary technician collects the cards after the monitoring period is over and keeps them on file as records for proper post op assessment and pain management.

E. Pain and Distress [*Guide*, pp. 120-121]

1. Describe how and by whom pain and distress are assessed.

The LACUC reviews the Pain and Distress Category for all animals in the protocol, regardless of USDA status (section 8d). The pain category for USDA reporting and the choice of appropriate indices of pain or distress are discussed at LACUC meetings.
The principal investigator and the research staff are responsible for the assessment of pain and distress during animal studies. The level of anesthesia is monitored by methods such as toe pinch, eye blink, heart rate, respiratory rate, etc. Post-procedure, animals are monitored by observing them for signs of pain or distress such as peculiar posture, vocalization, lack of appetite, atypical behavior, etc. All animals are also observed daily by the animal care staff.

2. Describe training programs for personnel responsible for monitoring animal well-being, including species-specific behavioral manifestations as indicators of pain and distress.

The LACUC requires the investigators to describe the means used to evaluate pain, distress or altered body functions and the methods used to address those problems when they are encountered (Section 8). In this description, factors such as tumor burden or other adverse conditions (expected and unexpected) must be addressed. In addition, the protocol form requires that PIs describe the humane endpoints for animals on the proposed project (section 2b).

When applicable, the LACUC has requested that PIs perform a pilot study, then report back to the committee before additional experiments are performed.

Animals are monitored daily by the DLAM husbandry and veterinary staff. Husbandry staff members are trained regularly by the Attending Veterinarian on clinical signs of pain and distress.

F. Anesthesia and Analgesia [*Guide*, pp. 121-123]

1. List the agents used for each species.
Note: If preferred, this information may be provided in Table or additional Appendix.

Rodents are anesthetized with a variety of acceptable agents. Anesthesia machines with appropriate scavenger equipment are usually used for isoflurane, although bell jars may be used for brief periods in well-ventilated areas for gas anesthetic agents (isoflurane). Injectable agents used in rodents are mainly ketamine/xylazine. Rabbits are anesthetized with ketamine/xylazine followed by isoflurane inhalation. Pigs are pre-anesthetized with dexmedetomidine/ketamine/butorphanol, and maintained with isoflurane.

The analgesics used for all species are usually buprenorphine, ibuprofen, flunixin, ketoprofen, and acetaminophen. Post-operative care also includes the provision of a heat source or blanket to prevent hypothermia. Fluid supplementation is given as needed as well as additional nutritional support through the use of flavored water or gel-based food.

2. Describe how the veterinarian provides guidance and advice to researchers concerning choice and use of anesthetics, analgesics or other pain moderating methods.

The veterinarian recommends proper anesthesia and analgesia through the protocol review process and during consultation with the investigators. The DLAM Orientation Manual provides written guidelines, and anesthesia and analgesia is covered in the Animal Handlers' course.

3. Describe the monitoring of the effectiveness of analgesics, including who does the monitoring. Include in the description any non-pharmacologic means used to diminish pain and distress.

An orientation to the use of anesthetics and analgesics is provided in the Animal Handlers' Course. In addition, DLAM provides written guidelines for rodent survival surgery. DLAM personnel offer additional training and consultation when requested.

Investigator are required to provide information on experience and training of personnel involved with animal use, including surgery. Qualified investigators and technicians perform anesthesia in their own laboratories on rodent species.

All non-rodent survival surgery takes place in the surgery suite under direct supervision of DLAM personnel. The veterinary technician performs all anesthesia in the surgery suite. The DLAM Coordinator is also an experienced veterinary assistant and assists in the surgery program as necessary. Routine anesthesia monitoring for USDA covered animals is the responsibility of the Veterinary Technician and Attending Veterinarian. The veterinary technician monitors anesthetic and analgesic use with assistance from the veterinarian and other qualified personnel, as needed.

Following a procedure, animals are monitored continuously until they are fully awake and ambulatory. Analgesics and/or fluids may be administered during the perioperative period, as determined by the ACUC Protocol. Animals are monitored during the immediate post-procedural period and for several days thereafter for signs of pain and distress by research staff and the DLAM husbandry or veterinary staff. The duration of monitoring varies with the type of procedure or surgery performed. Signs of pain and/or distress may include decreased food and water intake, lethargy or agitation, abnormal posture (hunched back), dehydration, or hypothermia. An animal displaying any of these signs is assessed by the veterinary staff and actions are taken to alleviate the pain and/or distress.

Intervention strategies for the management of pain and distress may include: 1) non-pharmacological considerations, such as, modified housing, cage enrichment (e.g. nestlets), and nutritional support; 2) analgesic intervention; or 3) euthanasia. The approach used to alleviate pain and distress may vary depending on the animal species, the procedure being performed, duration of action needed, degree and type of analgesia required, and research being conducted.

4. Describe how the veterinarian(s) and the IACUC/OB evaluate the proposed use of neuromuscular blocking agent to ensure the well-being of the animal.

There are no current protocols in which neuromuscular blockade agents are used.

5. Describe policies and practices for maintaining and ensuring function of equipment used for anesthesia.

All anesthetic machines and components for DLAM machines are inspected by an outside service company (BioMedic) once a year. PIs are encouraged to send their machines for inspection at the same time. Machines are tested before each use by the veterinary technician.

G. Euthanasia [*Guide*, pp. 123-124]

1. Describe approved methods of euthanasia, including humane slaughter (for additional guidance, see pertinent AAALAC Reference Resources). Include:

- consideration of species, age, condition (e.g., gestational period, or neonatal) and
- location(s) for the conduct of the procedure.

Note: If preferred, this information may be provided in Table or additional Appendix.

Rodents are generally euthanized by injection of an anesthetic overdose or by inhalation of isoflurane or CO2. Rodent euthanasia can be performed by cervical dislocation (mice) or decapitation (rats, mice) without anesthesia if scientifically justified and approved in the protocol. Rodents are also exsanguinated or perfused under anesthesia. All larger animals are euthanized by injection of a commercial euthanasia solution.

Methods of euthanasia are discussed in the Animal Handlers' course. Experienced laboratory personnel also train new research technicians. Documentation of euthanasia training for USDA-covered species is maintained. The veterinarian consults with investigators and technicians regarding proper methods for euthanasia. Guidelines for use are posted near the CO2 euthanasia station. The LACUC policy on euthanasia is as follows:

EUTHANASIA
Background: Euthanasia is the procedure of humanely sacrificing animals by methods that induce rapid unconsciousness and death without pain or distress. Animals may be euthanized at the end of an experimental time point or when the animal experiences pain and distress that cannot be alleviated by analgesics, sedatives, or other treatments.

Several methods are acceptable for performing euthanasia on all species, as based on the recommendations of the AVMA Guidelines on Euthanasia (2013). The specific method must be described in the protocol and approved by the LACUC. Methods not described or approved in the AVMA Guidelines on Euthanasia will not be allowed unless justified to the satisfaction of the LACUC.

Several characteristics of rodent neonates (up to 10 days of age) and fetuses necessitate special guidelines for euthanasia. At approximately 60% of the gestation period, the neural tube has developed into a functional brain and the likelihood that a fetus may perceive pain should be considered. Maturation of nociceptors and the development of excitatory and inhibitory receptor systems occur during the period just prior to birth and into the second week of postnatal life. Resistance to hypoxia at this age results in a prolonged time to unconsciousness when CO2 is used as a euthanasia agent.

Policy: Methods for euthanizing animals should be consistent with the 2013 AVMA Guidelines on Euthanasia (available on the LACUC web page http://intranet.siumed.edu/forms/lacuc/). Protocols should include criteria for initiating euthanasia that will enable a prompt decision to be made by the veterinarian and the investigator to ensure that the endpoint is humane and the objective of the protocol is achieved (Guide p123). Efforts must be made to minimize pain and distress experienced by animals used in research (PHS IV C1). Only trained personnel may perform euthanasia. The PI must ensure that the laboratory personnel performing these duties use the proper procedures. Death must be confirmed by personnel trained to recognize cessation of vital signs in the species being euthanized (Guide p124).

For non-rodent species, carbon dioxide exposure is not an acceptable euthanasia technique. Anesthetic overdose is the most common method of euthanasia. The principal investigator must specify drug, route of administration, and dose in the protocol if drug overdose is method employed.

For rodent species, CO2 is a common method of euthanasia when used according to the guidelines explained here. However, there is ongoing controversy about its aversive

characteristics (Guide p124). We do not recommend prefilling (pre-charging) the euthanasia chamber with CO2, because high concentrations (>70%) cause nasal irritation and excitability. Previous studies have shown that inhalation of high concentrations of CO2 is painful in humans (Danneman PJ, Stein S, Walshaw SO. Humane and practical implications of using carbon dioxide mixed with oxygen for anesthesia or euthanasia of rats. Lab Anim Sci 1997; 47:376–385. Anton F, Euchner I, Handwerker HO. Psycophysical examination of pain induced by defined CO2 pulses applied to nasal mucosa. Pain 1992; 49:53–60). Animals should be placed into the air-filled chamber; then CO2 should be added at a low flow rate (20% of the chamber volume per minute) to complete the euthanasia process. Rapid gas flows should be avoided because excessive noise and "wind" can develop and induce excitement in the animals. As CO2 is heavier than air, complete filling of the chamber (or closed container) is the only assurance that animals would not avoid exposure to the higher (euthanatizing) concentrations by climbing or raising their heads. Gas flow should be maintained for at least 1 minute after apparent clinical death (approximately 5 minutes total). A timer should be used to ensure adequate length of exposure. Confirmation of death is essential after the animal is removed from the chamber. A thoracotomy (opening the chest cavity), cervical dislocation (mice only), or decapitation must be performed on each animal after removal from the chamber to ensure that the animal is dead. It is a serious violation of policies if any animals recover after removal from the CO2 chamber and it must be reported to OLAW.

According to the 2013 AVMA Guidelines on Euthanasia, "Compressed CO2 gas in cylinders is the only recommended source of carbon dioxide because the inflow to the chamber can be regulated precisely. CO2 generated by other methods such as from dry ice, fire extinguishers, or chemical means (e.g. antacids) is unacceptable." Only one species at a time may be placed into a chamber, and the chambers must not be overcrowded. The minimum space requirements listed in the Guide must be maintained until the time of euthanasia. When placed into the chamber, all animals must have adequate floor space and be able to make normal postural adjustments (Guide p57; PHS IV C1). Euthanasia should always be completed in cohorts of animals (i.e., live animals should not be place in a chamber that contains dead animals). Chambers must be cleaned before and after use or a clean cage used inside the chamber to minimize odors that might distress animals prior to euthanasia. Animals may not be euthanized in animal housing rooms, except under special circumstances such as during quarantine for infectious disease agents (AVMA).

For mouse and rat fetuses up to 15 days gestation, euthanasia of the mother or removal of the fetus should ensure rapid death. The neural development at 15 days gestation to birth supports the likelihood that pain may be perceived. These fetuses must be euthanized by either anesthetic overdose by injection or decapitation. Rapid freezing without prior anesthesia is not considered humane and is not permitted. Neonates up to 10 days old may be euthanized by anesthetic overdose by injection, decapitation, or cervical dislocation. CO2 is not acceptable for rodents under 10 days old, as the time period for euthanasia is substantially prolonged in neonatal rodents (up to 60 minutes) (Prichett KR et al. Comp Med. 2005. 55(3):275-281) due to their inherent resistance to hypoxia. CO2 may be used

for rodents older than 10 days; however exposure time may be longer than for adults and CO2 narcosis must be followed by decapitation after the animals lose consciousness.

Some methods of euthanasia require a greater degree of skill, including decapitation without anesthesia and cervical dislocation without anesthesia. These methods must be fully described, scientifically justified, and possibly demonstrated for approval from the LACUC.

2. Describe policies and practices for maintaining and ensuring function of equipment used for euthanasia.

CO2 chambers are maintained by DLAM. The Veterinary Technician is responsible for monitoring tank level and ordering new ones. Labs that use guillotines are responsible for maintaining them in good working order. The LACUC inspects each guillotine during the semi-annual lab inspection.

3. Describe the methods used to confirm death of an animal.

Animals euthanized by injectable euthanasia solution are monitored for heartbeat, respiration, and corneal reflex to confirm death. Confirmation of death is essential after an animal is removed from the CO2 chamber or after inhalation anesthetic overdose. The LACUC policies state that a thoracotomy (opening the chest cavity), cervical dislocation (mice only), or decapitation must be performed on each animal after removal from the chamber to ensure that the animal is dead.

IV. Physical Plant [*Guide*, pp. 133-155]

A. Facilities Overview

Provide a brief introduction to the animal housing and use facilities. Note that this overview should augment the information provided in **Appendix 2** (Summary of Animal Housing and Support Sites), which includes area, average daily census, and person responsible for each site. Please use consistent terminology for the buildings/areas/sites described in the Location section of the Appendix. Please do not repeat information, but supplement the descriptions provided elsewhere to assist the reviewers understanding of the interaction between facilities, special housing locations, and separate procedural areas.

The centralized animal care program at SIU School of Medicine is administered by the Division of Laboratory Animal Medicine. The Director serves as the Attending Veterinarian (AV) and has oversight for the husbandry and veterinary care for all animals housed in the facility. The Facility Coordinator and Veterinary Technician report to the Director. The animal husbandry staff members report to the Facility Coordinator.

The main doors of the animal facility are locked at all times. Key cards are issued to personnel who are authorized to enter. In addition, SIU SOM security patrols the facility during the night at four-hour intervals. Closed-circuit television cameras are located in the main corridors of the facility. These cameras are operational 24 hours a day and are monitored around the clock in the Security Office.

The animal facility comprises three contiguous buildings (Buildings A, B, and C). The animal facilities are located on the ground floor. Building A is contiguous with Building B by a common corridor. Building B is connected to the east side of Building C by a common corridor. Collectively, the animal housing and support areas in Buildings A, B, and C contain 12,493 sq. ft., with 5,399 sq. ft. used for animal housing.

Building A has 19 animal rooms and 4,475 sq. ft. of indoor animal housing and support space. Six rooms are dedicated to individual PIs. Each of these lab spaces is used by a single PI at a time. Room usage includes: 1) room # 1285, housing of mice in environmental chambers (with a support room); 2) room # 1305, intermittent use for housing mice or rats in metabolic cages, administered hazardous chemicals, and/or in quarantine; 3) room # 1330, housing of mice in metabolic chambers, some studies requiring room temperatures to be set at 86°F; 4) room # 1341: exposing animals to noise in a sound booth; 5) room # 1345, housing a Piximus Densitometer; and 3) room # 1349, housing mice at their thermos-neutral zone.

Building B has 6,717 sq. ft. of animal housing and support space. The facility contains three 7-ft-wide corridors. The main corridor of this building contains two rooms housing equipment for individual laboratories, one room used for bedding storage and filling of rodent boxes, three conventional animal housing rooms and four animal holding rooms comprised of individual cubicles. Within the cubicle rooms, there are 6 to 8 cubicles with each cubicle large enough to hold one single- or double-sided rack. The main section of Building B is a rodent barrier. Barrier entry is by key card access and all doors are interlocked. A floor-loading pass-through sterilizer services the barrier with a preparation and staging room on one side and entry into the barrier on the clean side. A locker room is present for personnel to gown and enter the barrier while non-autoclavable equipment is taken through two sets of automatic double doors. Inside the barrier, one room houses the RS2000 RadSource irradiator and a BSC. Four rooms house 4 cubicles each with each cubicle capable of holding a single- or double-sided rack. Each pair of cubicle rooms is separated by a small work room with a BSC for investigator use. A suite of four animal holding rooms with a central work room containing a BSC is located in the northwest corner of the barrier. This area is designed for a breeding colony area with no investigator access.

The Building C has 5,150 sq. ft. of animal housing and support space. The facility comprises three animal rooms, a surgery preparation room, and a surgery suite. Controlled substance stocks are kept in a safe in a small room in Building C. Smaller quantities used during surgery are stored in a locked cabinet in the surgery prep area. A chemical storage area is also located in Building C. This room maintains a flammable material storage cabinet and a chemical storage rack above a pit for accidental spills or leaks. Swine have been housed in a room in this building near the surgery suite. Pens with slatted floors are used for swine housing.

Research laboratories are also located in Buildings A, B, and C. In Building A, research laboratories are located on the 2nd, 3rd, and 4th floors. In Building B, research laboratories are located on the 2nd floor. In Building C, research laboratories are located on the 2nd and 3rd floors. Animals may be transported from the animal facility and housed temporarily in research laboratories of Buildings A, B, and C.

B. Centralized (Centrally-Managed) Animal Facility(ies)

In this section, describe each centralized or centrally-managed animal housing and use facility. Include in **Appendix 3** the floor plans of each on 8.5" x 11" or A4 paper. Ensure that the drawings are legible and the use of each room is indicated (animal housing, procedure room, clean cage storage, hazardous waste storage, etc.). Note that a separate section for describing "satellite housing areas" is included below.

Separately describe **each** Location or Animal Facility, addressing each of the features outlined below (1-8). A complete description of each must be provided; however, common features among locations or facilities may be indicated as such and do not need to be repeated.

1. General arrangement of the animal facilities (conventional, clean/dirty corridor, etc.).
2. Physical relationship of the animal facilities to the research laboratories where animals may be used.
3. Types of available animal housing spaces used, such as conventional, barrier, isolation/quarantine, hazard containment (infectious, radioactive, chemical), "animal cubicles" or facilities specifically designed for housing certain species such as ponds, pastures, feedlots, etc.
4. Finishes used throughout the animal facility for floors, walls, ceilings, doors, alleyways, gates, etc. (note any areas that are not easily sanitized and describe how these are maintained).
5. Engineering features (design, layout, special HVAC systems, noting exhaust air treatment, if applicable) used in hazardous agent containment.
6. Security features, such as control of entry, perimeter fences, gates, entryways, cameras, guards; identify and describe exceptions for individual facilities or areas incorporating fewer or additional security features than the general features described.
7. Consideration for facilities with exterior windows, if applicable, including management of environmental conditions (i.e., temperature and photoperiod control) and potential security risks.
8. Storage areas for flammable or hazardous agents and materials (e.g., disinfectants, cage-washing chemicals, pesticides, fuel).

Arrangement of Animal Facilities

Building A - The animal facility in Building A is located on the ground floor at the west side of the building. It is contiguous to the 825 (Building B) animal facility and 825 addition (Building C), which it joins by a common corridor. Building A has 19 animal rooms and 4,475 sq. ft. of indoor animal housing and support space. Six rooms are dedicated to individual PIs. Each of these lab spaces is used by a single PI at a time. Room usage includes: 1) room # 1285, housing of mice in environmental chambers (with a support room); 2) room # 1305, intermittent use for housing mice or rats in metabolic cages, administered hazardous chemicals, and/or in quarantine; 3) room # 1330, housing of mice in metabolic chambers, some studies requiring room temperatures to be set at 86°F; 4) room # 1341: exposing animals to noise in a sound booth; 5) room # 1345, housing a Piximus Densitometer; and 3) room # 1349, housing mice at their thermos-neutral zone. Several rooms in this building are designated as ABSL-2. These rooms have negative airflow and access is restricted.

Building B - The animal facility is located on the ground floor of Building B. The facility is connected to the north side of the Building A facility via a common corridor. Building B is also connected to the east side of Building C via a common corridor. There is 6717 net sq. ft. of space. The facility contains three 7-ft-wide corridors. The main corridor of this building contains two rooms housing equipment for individual laboratories, one room used for bedding storage and filling of rodent boxes, three conventional animal housing rooms and four animal holding rooms comprised of individual cubicles. Within the cubicle rooms, there are from 6-8 cubicles per room with each cubicle large enough to hold one single- or double-sided rack. The rodents housed in this corridor are ‘clean’ conventional. The rooms off the south corridor are multi-purpose animal housing rooms. Swine pens with slatted flooring is located in room 1526.

The main section of this building is a rodent barrier. Barrier entry is by key card access and all doors are interlocked. A floor-loading pass-through sterilizer services the barrier with a preparation and staging room on one side and entry into the barrier on the clean side. A locker room is present for personnel to gown and enter the barrier while non-autoclavable equipment is taken through two sets of automatic double doors. Inside the barrier, one room houses the RS2000 RadSource irradiator and a BSC. Four rooms house 4 cubicles each with each cubicle capable of holding a single- or double-sided rack. Each pair of cubicle rooms is separated by a small work room with a BSC for investigator use. A suite of four animal holding rooms with a central work room containing a BSC is located in the northwest corner of the barrier. This area is designed for a breeding colony area with no investigator access.

Building C - The Building C animal facility is located on the first floor at the west side of the building. It is contiguous to the Building B animal facility, which it joins by a common corridor. The facility comprises 3 animal rooms and the surgery suite. It is 5,150 net sq. ft. of indoor animal housing and support space, all of which is environmentally controlled.

Physical Relationship to Research Laboratories

Building A - Research laboratories are located on the 2nd, 3rd, and 4th floors of Building A. Animals are also brought to labs in Buildings B and C, and a separate building on campus (911 N. Rutledge).

Building B - Some SIU SOM research laboratories are located on the 2nd floor of Building B. The Illinois Department of Public Health and the Illinois Environmental Protection Agency also have laboratories on the 3rd and 4th floors, but they do not use animals or the animal facilities. Animals are taken to labs in Buildings A and C, and a separate, nearby building on campus (911 N. Rutledge).

Building C - Research laboratories are located on the 2nd and 3rd floors of Building C. Animals are also taken to labs in Buildings A and B, and a separate building on campus (911 N. Rutledge).

The Illinois Department of Public Health and the Illinois State Police also have laboratories on the 3rd, 4th and 5th floors, but they do not use animals or the animal facilities.

Types of Available Animal Facilities

Building A - The building is conventional and is arranged as a single, long corridor. Several rooms in this building are designated ABSL-2. These rooms have negative airflow and access is restricted.

Building B - This building of the animal facility has one corridor that is used for clean conventional housing while the other corridor is demarcated by an interlock door entrance and contains rodent barrier housing. Support areas include the incinerator and cold storage area, autoclave outside cage wash area, procedure areas in the barrier, 'dirty' side and staging for the floor loading sterilizer that services the barrier, and cage wash rooms. An outside loading platform and an indoor loading dock adjoin the Building B animal facilities. This area is for general receiving and is not dedicated to DLAM.

Building C - The facility is conventional in type and is arranged as a square with the surgery suite in the center and back with animal rooms and support areas on the periphery.

Finishes

Building A - Corridors are 6.5 feet wide and composed of glazed ceramic tile walls that are in good condition. Floors in corridors are a coved base epoxy-coated concrete and are in excellent condition. Walls in the animal holding rooms are also glazed ceramic tile. In the animal holding rooms, floors are coved base epoxy-coated concrete and ceilings are epoxy-coated plaster.

Building B - The corridors are 7-feet wide and composed of epoxy-coated concrete block with coved base floors of epoxy-coated concrete. Walls are protected by stainless steel guards. Animal room walls are constructed of concrete block with an epoxy finish. The walls of the cubicles in one room were resurfaced with Koroguard, with all seams caulked and sealed. In

the animal holding rooms, floors are coved based epoxy-coated concrete and ceilings are epoxy-coated plaster.

Building C - The corridors are 7-feet wide and composed of epoxy-coated concrete block, drop ceiling and coved base epoxy-coated concrete floors. Walls are protected by stainless steel guards. Walls are epoxy-painted concrete block and are in excellent condition. In the animal holding rooms, floors are coved based epoxy-coated concrete and ceilings are epoxy-coated plaster.

Engineering Features

Air Handling

Building A - A dedicated Air Handling Unit (AHU) sends supply air to the animal area. The animal area can re-circulate from 0% to 73% of the air from the animal area back to the AHU. The recirculated air must pass through a return fan and four filters (30% prefilter, Purafil oxidizing pellet filter, Cosatron electronic filter, and a HEPA filter) on its path back to the AHU. The recirculated air combines with fresh air (outside air) and goes through 30% prefilters and 95% final filters before distributed as 55° F supply air. The supply air passes through a reheat coil that adjusts the temperature and steam humidifier before entering the animal room. The air in some animal rooms is exhausted and not recirculated. Air changes and pressures of animal rooms are included in Appendix 10. The Building Automation System (BAS) monitors the mechanical system 24/7.

Building B - A dedicated Air Handling Unit (AHU) sends supply air to the animal area. The animal area can re-circulate up to 53% of the air from the animal area back to the AHU. The recirculated air must pass through a return fan and three filters (30% prefilter, Purafil filter and electronic filter) on its path back to the AHU. The recirculated air combines with fresh air (outside air) and goes through 30% prefilters , HEPA filters and a steam humidifier before distributed as 55° F supply air. The supply air passes through Phoenix VAV Valves that control air volume and reheat coils that adjust the temperature before entering the animal rooms. All room supply, return or exhaust air flow are controlled by Phoenix VAV Valves. Air change and pressures of animal rooms are included in Appendix 10. The Building Automation System (BAS) monitors the mechanical system 24/7.

The north corridor area of this building has been remodeled as a Rodent Barrier Area with a vestibule, a changing room, and positive pressure corridors.

Building C - The Air Handling Unit (AHU) sends 100% fresh air as supply air to the animal area. The building does not have recirculated air. 100% fresh air goes through 30% prefilter and 95% final filter before being distributed as 55° F supply air. The supply air passes through Phoenix VAV Valves, reheat coils and steam humidifiers before entering the animal rooms. All room supply and exhaust air flows are controlled by Phoenix VAV Valves. Air changes and pressures of animal rooms are included in Appendix 10. The Building Automation System (BAS) monitors the mechanical system 24/7.

Lighting

Lighting in animal rooms is supplied through recessed, ceiling-mounted fluorescent lighting fixtures. Animal cubicles each contain two fluorescent lighting fixtures that are mounted vertically in the back corners. Lighting is automatically controlled at 12:12 or 14:10 hour light/dark cycles. All electrical fixtures are waterproof. There are no exterior windows in the facility. Emergency power is supplied for some lights, some electrical outlets, and air handling units. A dual power supply prevents power failures of long duration.

Environmental Monitoring

The Building Automation System (BAS) monitors the critical pressures, fans, temperatures and humidity continually. The BAS is operational 24 hours a day and can be accessed by on-site building operating engineers at 8 locations campus wide on a 24/7 basis. The BAS will send an alarm to the BOE if parameters exceed the environmental limits established by the DLAM Director. High/low temperature limits are below 64° F or above 80° F for longer than 15 minutes. The BAS also tracks room temperature and humidity daily. Daily temperature and humidity trend reports are submitted to the DLAM Coordinator and Director. Each animal room also has temperature and humidity high/low limit instrumentation which is read and logged daily on the room sheet by DLAM personnel. **Furthermore, s**ecurity personnel make rounds through the animal facility at least once per shift (each shift is 8 hours). If any of the following conditions exist, the security or maintenance personnel will notify DLAM on-call personnel:

- Power failure of one hour or more duration
- Fire
- Extreme temperature deviations (below 64° F or over 80° F)
- Failure of ventilation system longer than 60 minutes
- Interruption of water

System and component failures are handled as emergencies as soon as they occur. To date, prolonged outages of the HVAC have not occurred.

Emergency HVAC Backup

Building A - The AHU is backed up with an emergency power source and a second AHU can be mechanically switched to supply air to the animal area. The AHU will shut down if the return fan fails in order to prevent animal rooms from being positively pressurized. There are safety devices that will shut down the AHU if the fresh (outside) air is too cold, supply air is too hot, or there is a fire. The BAS also monitors room temperatures and humidity and will send alarms to the BOE who is on site 24/7 if limits exceed those established by DLAM Director. These limits are described in the "Animal Facility Emergency Manual." The DLAM Director or on-call DLAM staff member is contacted if animal room temperatures reach above 80°F or below 64°F for longer than 15 minutes. However, the BOE Supervisor may contact the DLAM in light of immediate factors or concerns. Security personnel who are also here 24/7 make rounds daily.

Building B - The AHU is backed up with emergency power. The AHU will shut down if the return fan and/or exhaust fans fail in order to prevent animal rooms from going into positive

air pressure in relationship to the corridor. Some exhaust fans will also shut down if the AHU fails to prevent the Barrier Area corridors from going negative to areas outside the Barrier Area. There are safety devices that will shut down the AHU if the fresh (outside) air is too cold, supply air is too hot, or there is a fire. The BAS also monitors room temperatures and humidity and will send alarm to BOE who is here 24/7 if limits exceed those established by DLAM Director. These limits are described in the "Animal Facility Emergency Manual." The DLAM Director or on-call DLAM staff member is contacted if animal room temperatures reach above 80°F or below 64°F for longer than 15 minutes. However, the BOE Supervisor may contact the DLAM in light of immediate factors or concerns. Security personnel who are also here 24/7 make rounds daily.

Building C - Safety features will shut down the AHU if the fresh (outside) air is too cold, supply air is too hot, or there is a fire. The BAS also monitors room temperatures and humidity and will send an alarm to the BOE who is here 24/7 if limits exceed those established by the DLAM Director. These limits are described in the "Animal Facility Emergency Manual." The DLAM Director or on-call DLAM staff member is contacted if animal room temperatures reach above 80°F or below 64°F for longer than 15 minutes. However, the BOE Supervisor may contact the DLAM in light of immediate factors or concerns. Security personnel who are also here 24/7 make rounds daily.

Security Features

The main doors of the animal facility are locked at all times. Key cards are issued to personnel who are authorized to enter. In addition, SIU SOM security patrols the facility during the night at four-hour intervals. Closed-circuit television cameras are located in the main corridors of the facility. These cameras are operational 24 hours a day and are monitored around the clock in the Security Office.

Storage

Controlled substance stocks are kept in a safe in Building C (1627). Smaller quantities used during surgery are stored in a locked cabinet in separate room.

A chemical storage area is located in Building C (1607). This room maintains a flammable material storage cabinet and a chemical storage rack above a pit for accidental spills or leaks.

C. Satellite Animal Housing Facilities

In addition to the Appendices summarizing Heating, Ventilation, and Air-Conditioning (**Appendix 11**) and Lighting Systems (**Appendix 16**), summarize animal housing areas that are not centrally-managed or maintained in (**Appendix 17)**, "Satellite Animal Housing Areas."

1. Describe the criteria used to determine/define a "Satellite Animal Housing Area," which may include remote housing facilities or laboratories temporarily or consistently housing animals.

There are no Satellite Animal Housing Areas.

2. Describe the process used by the IACUC/OB to authorize, provide oversight of, and ensure compliance with *Guide* standards for the housing of animals outside of centrally-maintained facilities. Include a description of Attending Veterinarian access and physical security.

There are no Satellite Animal Housing Areas.

D. Emergency Power and Life Support Systems

Note: Complete a Heating, Ventilation, and Air-Conditioning (HVAC) Summary (**Appendix 11**) and Lighting Summary (**Appendix 16**) for each Location described in the Summary of Animal Housing and Support Sites (**Appendix 2**).

1. **Power** [*Guide*, p. 141]
   For each Location, Centralized Animal Facility, and Satellite Housing Facility, provide a brief description of the following:
   - Availability of emergency power and if so, what electrical services and equipment are maintained in the event the primary power source fails.
   - History of power failures, noting frequency, duration, and, if emergency power was not available, steps taken to ensure the comfort and well-being of the animals present and the temperature extremes reached in animal rooms during the failure.

Lighting and Electrical

Building A - Rooms have recessed, ceiling-mounted fluorescent lighting fixtures. Lighting is automatically controlled at 12:12 or 14:10 hour light/dark cycles. All electrical fixtures are waterproof. There are no windows in the facility. Emergency power is supplied for some lights, some electrical outlets, and air handling units. A dual power supply prevents power failures of long duration.

Building B - Emergency power is supplied for lights, some electrical outlets, and air handling units. A dual power supply prevents power failures of long duration.

Building C - Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are normally 12:12 hour light/dark. The facility has no windows. Electrical receptacles and switches are waterproof. The facility has two independent electrical feeds with an automatic transfer switch. The control box for lighting is located outside each room. An emergency generator provides power to operate lighting in hallways, some electrical outlets, boilers to supply heat, and fans for ventilation. It does not supply power to operate the chillers.

Emergency HVAC Backup

Building A - The AHU is backed up with an emergency power source and a second AHU can be mechanically switched to supply air to the animal area. The AHU will shut down if

the return fan fails in order to prevent animal rooms from being positively pressurized. There are safety devices that will shut down the AHU if the fresh (outside) air is too cold, supply air is too hot, or there is a fire. The BAS also monitors room temperatures and humidity and will send alarms to the BOE who is on site 24/7 if limits exceed those established by DLAM Director. These limits are described in the "Animal Facility Emergency Manual." The DLAM Director or on-call DLAM staff member is contacted if animal room temperatures reach above 80°F or below 64°F for longer than 15 minutes. However, the BOE Supervisor may contact the DLAM in light of immediate factors or concerns. Security personnel who are also here 24/7 make rounds daily.

Building B - The AHU is backed up with emergency power. The AHU will shut down if the return fan and/or exhaust fans fail in order to prevent animal rooms from going into positive air pressure in relationship to the corridor. Some exhaust fans will also shut down if the AHU fails to prevent the Barrier Area corridors from going negative to areas outside the Barrier Area. There are safety devices that will shut down the AHU if the fresh (outside) air is too cold, supply air is too hot, or there is a fire. The BAS also monitors room temperatures and humidity and will send alarm to BOE who is here 24/7 if limits exceed those established by DLAM Director. These limits are described in the "Animal Facility Emergency Manual." The DLAM Director or on-call DLAM staff member is contacted if animal room temperatures reach above 80°F or below 64°F for longer than 15 minutes. However, the BOE Supervisor may contact the DLAM in light of immediate factors or concerns. Security personnel who are also here 24/7 make rounds daily.

Building C - Safety features will shut down the AHU if the fresh (outside) air is too cold, supply air is too hot, or there is a fire. The BAS also monitors room temperatures and humidity and will send an alarm to the BOE who is here 24/7 if limits exceed those established by the DLAM Director. These limits are described in the "Animal Facility Emergency Manual." The DLAM Director or on-call DLAM staff member is contacted if animal room temperatures reach above 80°F or below 64°F for longer than 15 minutes. However, the BOE Supervisor may contact the DLAM in light of immediate factors or concerns. Security personnel who are also here 24/7 make rounds daily.

2. **Other System Malfunctions.** If not previously reported, describe animal losses or health problems resulting from power, HVAC, or other life support system (e.g., individually ventilated cages) failures, and mechanisms for reporting such incidences. AAALAC International Rules of Accreditation (Section 2.f).

Building A - A power failure occurred for over 8 hours in March 2006 after a tornado. No animal harm or loss resulted. No animal health problems or losses have occurred due to power, HVAC, or other system failures in this building. If such an event were to occur, we would follow the guidelines described by AAALAC, PHS, and USDA where applicable.

Building B - A power failure occurred for over 8 hours in March 2006 after a tornado. No animal harm or loss resulted. No animal health problems or losses have occurred due to power, HVAC, or other system in this building, other than the event described above. If

such an event were to occur, we would follow the guidelines described by AAALAC, PHS, and USDA where applicable.

Building C - Power outages in the past have been of minimal duration (15-60 minutes). Temperature extremes during recent failures have not exceeded acceptable animal safety limits. As a precaution, animal room doors may be opened and/or filter tops removed to provide additional ventilation if warranted. No animal health problems or losses have occurred due to power, HVAC, or other system in this building. If such an event were to occur, we would follow the guidelines described by AAALAC, PHS, and USDA where applicable.

E. Other Facilities [*Guide*, pp. 144, 150]

1. Other Animal Use Facilities [*Guide*, pp. 146-150]

Describe other facilities such as imaging, irradiation, and core/shared behavioral laboratories or rooms. Include a description of decontamination and methods for preventing cross-contamination in multi-species facilities.

Building B - There are two rooms dedicated to PI research use in the DLAM facility. One room (1532) contains environmentally controlled chambers (i.e. light), used by one PI. One room (1534) contains a mouse and rat behavioral study core, with a pool for Morris Water Maze use and associated data recording computer equipment. This equipment is used by more than one PI; however, one technician operates and cleans the equipment. All equipment is disinfected with a dilute bleach solution or SporKlenz solution between uses. DLAM monitors the effectiveness of the cleaning procedure twice a year using Firefly swabs. The irradiator is located in this building, room 1556, within the rodent barrier. The dead animal cooler and the incinerator are also located in this building just outside the DLAM facility in rooms 1405 and 1405A.

Building C - Two procedure rooms for investigator use are located in Building C (1660 and 1662). These rooms include CO2 euthanasia chambers and bench top space. One procedure room also houses a Xenogen Lumina bioluminescence machine. Investigators must disinfect the work space after use with SporKlenz provided by DLAM. Mice imaged in the Xenogen are typically from the barrier space. Research staff are required to place the cages in a Positive Pressure Transport cart from BioBubble located in this room when not in the imaging machine to protect the animals while outside the barrier.

2. Other Animal Program Support Facilities

Describe other facilities providing animal care and use support, such as feedmills, diagnostic laboratories, abattoirs, etc.

None.

According to the privacy principles on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, we wish to advise you that the personal data in the Program Description will become part a permanent file owned by AAALAC International, and that can be shared with AAALAC International offices and representatives in order to perform an evaluation of the institution´s animal care and use program and provide accreditation services. The institution has the option of exercising rights of data access, rectification, cancellation, and opposition at: accredit@aaalac.org

SIU MEDICINE

APPENDICES

Division of Laboratory Animal Medicine
Office of the Associate Dean for Research
School of Medicine
Southern Illinois University

Appendix 1: Glossary of Abbreviations and Acronyms

Please provide a Table defining abbreviations and acronyms used in this Program Description.

Abbreviation/Acronym	Definition
ADR	Associate Dean for Research
AV	Attending Veterinarian
SIU SOM	Southern Illinois University School of Medicine
LACUC	Laboratory Animal Care and Use Committee
ICSC	Infection Control and Safety Committee
RCC	Radiation Control Committee
EHSO	Environmental Health and Safety Office

Appendix 2: Summary of Animal Housing and Support Sites

Briefly summarize in the following Table the animal facility or facilities, noting the number of areas in which animals are housed (buildings, floors, farms, satellite housing facilities, etc.), the total square footage/metres (or acreage) for animal care and use, and the total square footage/metres (or acreage) for necessary support of the animal care and use program covered by this Description (water treatment plant/area if housing aquatic or amphibian species, cagewashing facilities, service corridors, etc. and additional areas to be considered are enumerated in the *Guide*). Detailed information for satellite housing facilities is requested in Appendix 17. Include only one line entry for satellite housing facilities in this table to provide the total square footage for all satellite housing areas listed in appendix 17. If more than one facility/site, note the approximate distance (yards/miles or meters/kilometers) to each facility from a reference point such as from the largest animal facility. A campus/site map (with a distance scale) may be included as an additional Appendix (Appendix 2.1) to provide this information. See Instructions, Addendum A - Animal Facility Square Footage/Meters Compilation Form for guidance in calculating the size of your animal care and use program.

Animal Housing and Support Sites						
Location (building, site, farm name, etc.[a])	**Distance from main facility[b]**	**Approx. ft^2, m^2, or acreage for animal housing**	**Approx. ft^2, m^2, or acreage for support or procedures**	**Species housed**	**Approx. Daily Animal Census by species**	**Person in charge of site**
Building A	N/A	1,799 sq. ft.	2,676 sq. ft.	Mice Rats Chinchillas	Mice: 1280 cages Rats: 163 Chinchillas: 25 Swine: 1 (Census is not separated by building, as all three buildings are contiguous)	Shirley Frost
Building B	N/A	2,591 sq. ft.	4,126 sq. ft.	Mice Rats		Shirley Frost
Building C	N/A	1,009 sq. ft.	4,141 sq. ft	Mice Rats Chinchillas Swine		Shirley Frost
327 Calhoun (Warehouse space)	Across the street	0	1,550 sq. ft.			

Totals:	**5,399**	**12,493**
Total animal housing and support space:	**17,892 square feet**	
	(please specify ft^2 or m^2)	

[a]Please state name and/or use acronyms described in **Appendix 1** for building names, if not coded for confidentiality.
[b]Campus or site map(s) may also be provided in lieu of this information.

Appendix 3: Floor Plan(s)

Provide floor plans of each centralized animal housing facility. Plans should be provided on 8.5” x 11” or A4 paper. Ensure that the drawings are legible, including room numbers if used, and the use of each room is indicated (animal housing, procedure room, clean cage storage, hazardous waste storage, etc.) either directly on the drawing or in a Key/Table.

Appendix 3: Floor Plan(s)

Provide floor plans of each centralized animal housing facility. Plans should be provided on 8.5” x 11” or A4 paper. Ensure that the drawings are legible, including room numbers if used, and the use of each room is indicated (animal housing, procedure room, clean cage storage, hazardous waste storage, etc.) either directly on the drawing or in a Key/Table.

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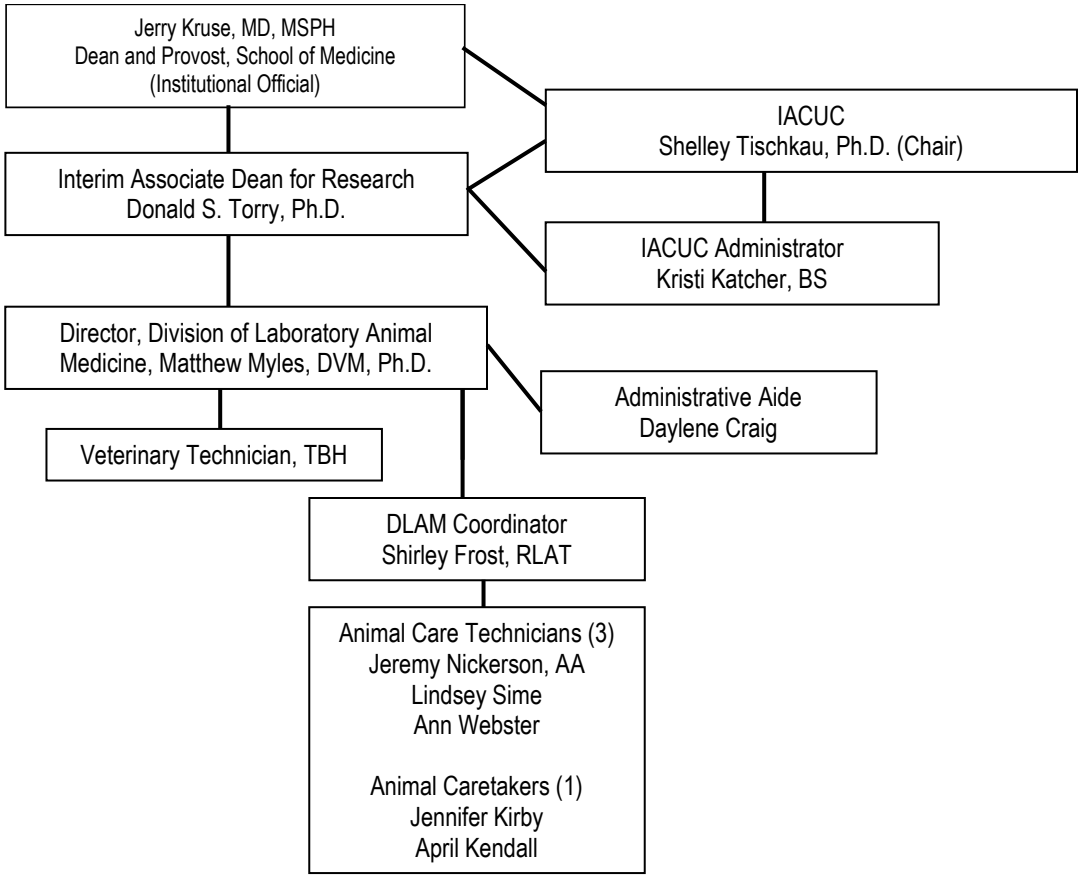
Appendix 4: Organizational Chart(s)

Provide an accurate, current, and detailed organization chart or charts that detail the lines of authority from the Institutional Official to the Attending Veterinarian, the IACUC/OB, and personnel providing animal care. If applicable, include personnel responsible for managing satellite housing areas/locations and depict the reporting relationship between the Attending Veterinarian and other(s) having a direct role in providing veterinary care.



Appendix 5: Animal Usage

(As of 7/5/18)

In order to assist the site visitors in their evaluation of the animal care and use program, please provide the information requested below. Information should be provided for all animals approved for use in research, teaching or testing, including those which may be used or housed in laboratories outside the animal care facility. Of particular interest is information on those animals which are used in research projects involving recovery surgical procedures, behavioral or other testing requiring chairing or other forms of restraint, or exposure to potentially hazardous materials. An alternate format is acceptable as long as the information requested is provided.

Project/Protocol Title	IACUC/OB Number	Principal Investigator	Species	Total Number of Animals Approved	Pain & Distress Category (1)	Special Considerations (use checkmark if applicable)					
						SS (2)	MSS (3)	FFR (4)	PR (5)	HAU (6)	NCA (7)
Glutamate Receptors And Brain Function	165-01-029	**Arai**	Rats	1040	C						
Aging, And Caloric Restriction Of Long Lived Mice	178-02-001	**Bartke**	Mice	17328	D,E			X		X	
The Role Of Visceral Fat On Insulin Signaling In Ames Dwarf And GHRKO Mice	178-10-028	**Bartke**	Mice	1975	D, E	X					
Developmental Control of Insulin Signaling and Aging	178-03-024	**Bartke**	Mice	3480	E	X		X			
Identification of Juvenile Protective Factors from Long-Lived Mice by Parabiosis	178-15-002	**Bartke**	Mice	884	C, D	X		X			
Tinnitus and Auditory Attention	149-15-015	**Bauer**	Rats	194	C			X		X	
D-Methionine Preloading Dosing and Time Point Optimization	93-16-013	**Campbell**	Chinchillas	352	E			X			
Spontaneous And Chemical-Induced Colitis And Colorectal Cancer In Aldo-Keto Reductase Family 1 B8 Knockout Mice	194-10-008	**Cao**	Mice	1276	E			X		X	
Aldo-Keto Reductase Family 1 B10 As A Novel Target For Breast Cancer Treatment	194-09-013	**Cao**	Mice	306	E					X	

Project/Protocol Title	IACUC/OB Number	Principal Investigator	Species	Total Number of Animals Approved	Pain & Distress Category (1)	Special Considerations (use checkmark if applicable)					
						SS (2)	MSS (3)	FFR (4)	PR (5)	HAU (6)	NCA (7)
Breeding Aldo-Keta Reductase Family 1 B8 Gene Knockout Mice	194-08-027	**Cao**	Mice	2824	B,C						
Coding in Auditory Neurons: Temporal Processing and Attention	41-15-011	**Caspary**	Rats	1188	C,D	X		X	X	X	
Investigation of Notch Signaling During Spontaneous Regeneration of Cochlear Hair Cells	218-15-010	**Cox**	Mice	722	C					X	
Mechanisms that Regulate Hair Cell Survival	218-15-009	**Cox**	Mice	1363	D					X	
Cell Source and Mechanism of Hair Cell Regeneration in the Neonatal Mouse Cochlea	218-13-003	**Cox**	Mice	266	C					X	
Using Mouse Genetic Models for Auditory and Vestibular Research	218-13-006	**Cox**	Mice	1918	C					X	
Breeding of Knockout and Transgenic Mice to Study Cancer Susceptibility	207-14-018	**Elble**	Mice	864	B						
Audiogenic Seizure Network Mechanisms	5-07-006	**Faingold**	Mice Rats	1517 2087	C, E	X			X	X	
Breeding AD Mouse Models	219-16-009	**Hascup**	Mice	160	B						
Behavioral and Electrochemical Measures in Mice	219-13-012	**Hascup**	Mice	968	C					X	
Polycystic Ovary Syndrome Pathogenesis: Epigenetic Antecedents and Novel Treatment	225-16-007	**Kurian**	Mice	488	B, C, D	X		X			
Generating 3-Dimensional Cartilage in Vivo Using Stem Cells	229-16-010	**Mailey**	Rats	103	C, D	X					

Project/Protocol Title	IACUC/OB Number	Principal Investigator	Species	Total Number of Animals Approved	Pain & Distress Category (1)	Special Considerations (use checkmark if applicable)					
						SS (2)	MSS (3)	FFR (4)	PR (5)	HAU (6)	NCA (7)
Adipose-Derived Stem Cells Differentiate into epithelial Stem Cells: A Possible Mechanism for Skin Improvement in Radiation and Burns	229-15-017	**Mailey**	Mice	212	D	X				X	
The Effects of Hyperbaric Oxygen Treatment on Autotransplantation	229-16-006	**Mailey**	Rats	66	D	X					
Assess Ability of Stem Cells to Differentiate in Chondrocytes and 3-Dimensional Cartilage	229-16-002	**Mailey**	Mice	33	D	X					
Description of Fluorescein within the Layers of Coronary and Femoral Arteries	231-16-001	**Matos**	Rats	12	C						
Protection Against Noise-Induced Ototoxicity	230-15-018	**Mukherjea**	Rats	402	D					X	
DLAM Rodent Sentinel Program, Animal Use, Teaching and Orphan Oversight	232-00-012	**Myles**	Mice Rats Chinchillas Guinea pigs Pigs Rabbits	3780 615 118 127 5 38	B, C, D						
Brain Bits	232-08-013	**Myles**	Rats Mice	36465 7245	D					X	
Antimicrobial Peptide Modulation in Wound Healing	158-16-005	**Neumeister**	Rats	633	D					X	
Green Fluorescent Protein Labeled Tissue for Research	158-16-008	**Neumeister**	Mice	519	B						
Minced Skin for Tissue Engineering in Human Hair Regeneration	158-15-008	**Neumeister**	Mice	20	D	X				X	

Project/Protocol Title	IACUC/OB Number	Principal Investigator	Species	Total Number of Animals Approved	Pain & Distress Category (1)	Special Considerations (use checkmark if applicable)					
						SS (2)	MSS (3)	FFR (4)	PR (5)	HAU (6)	NCA (7)
The Role of NOTCH Pathways in Heterotopic Ossification	158-16-004	**Neumeister**	Mice	44	D	X					
Bioengineered Skin: An Approach to Heal Full Thickness Skin Defects	158-14-019	**Neumeister**	Mice	72	D	X				X	
Microsurgical Teaching Of Surgery Residents And Medical Students	158-87-011	**Neumeister**	Rats	750	D	X					
Stem Cell Harvest for Research	158-14-015	**Neumeister**	Mice	720	C						
Human Hair Regeneration: A Cure for Male Pattern Baldness	158-13-026	**Neumeister**	Mice	118	D	X				X	
LGR6+ Epithelial Stem Cell Augmentation and Characterization in Normal and Non-Union Rat Fracture Healing Models	158-14-017 (currently expired, but renewal in process)	**Neumeister**	Rats	583	C, D	X				X	
Investigations of Fat Grafting as a Treatment Modality for Skin Fibrosis in Scleroderma	158-14-020	**Neumeister**	Mice	115	D	X				X	
15-Lipoxygenase-2 as a Suppressor of Tumor Progression and Metastasis	195-16-011	**Nie**	Mice	1542	E	X				X	
Breeding Of 8-Lipoxygenase Knockout Mice	195-10-014	**Nie**	Mice	3612	C						
Targeting Tumor Oct4 to Deplete Prostate Tumor and Metastasis Initiating Cells	195-13-002	**Nie**	Mice	1320	E	X				X	
Transplatin and STAT1 Inhibitors Protect Against Cisplatin Ototoxicity	129-15-012	**Ramkumar**	Rats Mice	785 185	D E					X	
Mouse Cochlear Explants for Cisplatin Studies	129-14-002	**Ramkumar**	Mice	671	C						

Project/Protocol Title	IACUC/OB Number	Principal Investigator	Species	Total Number of Animals Approved	Pain & Distress Category (1)	Special Considerations (use checkmark if applicable)					
						SS (2)	MSS (3)	FFR (4)	PR (5)	HAU (6)	NCA (7)
Role of TLR in Chemo-Resistance and Tumor Recurrence in Breast Cancer	187-10-019	**Ran**	Mice	3949	E					X	
Establishing a C.B-17 SCID Breeding Colony	187-16-012	**Ran**	Mice	475	B						
Establishment of a C57BL/6-Tg (UBC-GFP) 30Scha/J Breeding Colony	187-13-021	**Ran**	Mice	554	B						
Identification of the Source of Tumor-Recruited Macrophage-Derived Lymphatic Endothelial Cell Progenitors (M-LECPS)	187-14-007	**Ran**	Mice	1386	C, E					X	
Tracking Cell Lineage of Lymphatic Endothelial Cell Progenitors	187-13-020	**Ran**	Mice	1573	C,E					X	
Tumorigenicity After Rab8 Or Rab11 Silencing	186-10-016	**Rao**	Mice	110	E					X	
Tumorigenicity After R1n1 Silencing	186-10-015	**Rao**	Mice	44	E					X	
Rab25 Knockout Mice and MMTV ras Transgenic Mice	186-09-018	**Rao**	Mice	1361	C,E	X				X	
Tumorigenicity after Rab25 Silencing	186-09-028	**Rao**	Mice	230	E					X	
Capsaicin Protects Against Cisplatin Ototoxicity	23-15-014	**Rybak**	Rats Mice	297 132	D E					X	
Effects of Aryl Hydrocarbon Receptor on Diet-Induced Alterations Of Circadian Rhythm And Glucose Metabolism	200-11-001	**Tischkau**	Mice	2252	C			X			
Tischkau Mouse Breeding	200-07-005	**Tischkau**	Mice	2254	B,C						
Engraftment and Differentiation of Human Hematopoietic Stem	213-18-001	**Wilber**	Mice	132	C						

Project/Protocol Title	IACUC/OB Number	Principal Investigator	Species	Total Number of Animals Approved	Pain & Distress Category (1)	Special Considerations (use checkmark if applicable)					
						SS (2)	MSS (3)	FFR (4)	PR (5)	HAU (6)	NCA (7)
Cells in Immune Deficient Mice Following Lentiviral Transduction											
Identify Target Genes Linked to the Onset, Progression and Metastasis of Cancer	216-14-022	**Yuan**	Mice	6040	D, E					X	
Breeding of Knockout and Transgenic Mice for Diabetes, Metabolism, Aging, and Cancer Research	216-14-023	**Yuan**	Mice	30034	C, D,						
Underlying Genetic Mechanisms of Improved Metabolism in Aging	216-14-024	**Yuan**	Mice	15408	C, D			X		X	

* Currently, the use of any species of animal requires the investigator to list USDA pain categories for said animals. If an investigator has an older protocol and has not had to complete a 3-year rewrite, no pain categories are listed unless it is a USDA species animal.

(1) If applicable, please provide a description / definition of any pain/distress classification used within this Appendix in the space below. If pain/distress categories are not used, leave blank.
(2) Survival Surgery (SS)
(3) Multiple Survival Surgery (MSS)
(4) Food or Fluid Regulation (FFR)
(5) Prolonged Restraint (PR)
(7) Non-Centralized Housing and/or Procedural Areas (NCA), i.e., use of live animals in any facility, room, or area that is not directly maintained or managed by the animal resources program, such as investigator laboratories, department-managed areas, teaching laboratories, etc.

Pain/Distress Classification Description/Definition, if applicable:

In the Table below, provide an approximate annual usage for all species:

July 1, 2017 to June 30, 2018

Animal Type or Species	Approximate Annual Use
Mice	4956
Pigs	3

Animal Type or Species	Approximate Annual Use
Rats	1148
Chinchillas	268

Appendix 6: Personnel Medical Evaluation Form

Provide a ***blank*** copy of form(s) used by medically-trained personnel to review individual health assessment, individual risk assessment, health history evaluation, health questionnaire, periodic medical evaluation, etc. If form(s) are not used, include a description of how such evaluations are performed in the Program Description (Section 2.I.A.2.b.ii.1).d), Section 2 (Description). I (Animal Care and Use Program). A (Program Management). 2 (Personnel Management). b (Occupational Health and Safety or Personnel). ii (Standard Working Conditions and Baseline Precautions). 1) (Medical Evaluation and Preventive Medicine for Personnel). d).

Occupational Exposure to Animals or Hazardous Materials Used in Animals
Division of Laboratory Animal Medicine
Southern Illinois University School of Medicine

Please print:

_____ _____ _____

Name, degree(s) **Employee identification number** **Department**

_____

Position title Mail code E-mail address Phone number

Do you know the date of your last tetanus vaccination?

___ No ___ Yes If yes, what is the date of vaccination? _____

Do you have any medical conditions that may compromise your immune system (e.g. splenectomy, alcoholism, AIDS, chemotherapy, systemic steroid use, inherited immunodeficiency, malignancies, chronic liver disease, chronic kidney disease, tuberculosis, an organ transplant, pregnancy, heart disease, allergies)?

___ No ___ Yes

___ I decline to disclose any personal medical history/condition related to my health.

What species of animals will you be using (check all that apply)?

___ Mice ___ Rats ___ Rabbits

___ Guinea pigs ___ Chinchillas ___ Pigs

___ Other (specify: _____)

Appendix 6: Personnel Medical Evaluation Form

How frequently will you handle or use animal or animal tissue?

___ Occasional and unscheduled (less than two days per month)

___ Infrequent but expected (two days per month up to one day per week)

___ Regular (more than once a week)

Will you be using any hazardous substances in animals (e.g., drugs, chemical, radioactivity, infectious agents, radiation)?

___ No ___ Yes (specify: _____)

I have read pages 1 & 2, and understand the risks associated with working with research animals.

_____ _____

Signature Date

Return the completed page 1 to the Employee Health Nurse, Mail Code 9601, 545-8970.
Keep page 2 as a reference.

For use of the Infection Control Coordinator
Employee Health Nurse initials: Date:
Notification sent to employee: ___ No ___ Yes

Appendix 7: IACUC/OB Membership Roster

LABORATORY ANIMAL CARE AND USE COMMITTEE (as of 7-5-18)

QUORUM = 6

1. **SHELLEY TISCHKAU, Ph.D.** Chair, Associate. Professor, Pharmacology Alternate: Julio Copello MC 9629 Phone: 545-6524 Cell Phone: 840-6724	7. **STEVE MYERS** Community Member 1 W. Old State Capitol Pl. Springfield, IL 62701 Phone: 747-0019 (ofc.) 306-4137 (cell)	12. Ex-Officio (Non-Voting) 15. **LUKE CRATER** Legal Counsel MC 9619 Phone 545-3792 **DONALD TORRY, Ph.D.** Interim ADRFA, Prof. of MMICB MC 9626 Phone: 545-2220 **MICHAEL ZAGOTTA or KATHY BARDOEL** Environmental Health & Safety MC 9614 Phone: 545-8837 **JOEL REICHENSPERGER** Radiation Safety Officer MC 9614
2. **KATHY BOTTUM, MD, Ph.D.** Associate Professor, Internal Medicine **MC 9636** Alternate: Krishna Rao Phone: 545-4234 Text Page: 217/492-3584	8. **MATTHEW MYLES, DVM, Ph.D.** Attending Veterinarian DLAM **MC 9611** Phone: 545-2163	
3. **BRANDON COX, Ph.D.** Asst. Prof., Pharmacology MC 9629 Alternate: Vickram Ramkumar Phone: 545-7351	9. **DAOTAI NIE, Ph.D.** Assoc. Prof., MMICB Alternate: Sophia Ran **MC 9626** Phone: 545-9702	
4. **KRISTIN DELFINO, Ph.D.** Statistical Research Specialist **MC 9664** Alternate: Phone: 545-1498	10. **LEONARD RYBAK, MD, Ph.D., Vice Chair** Professor, Surgery Alternate: Brad Schwartz **MC 9662** Phone: 545-7052	
5. **ERIN HASCUP, Ph.D.** Center for Alzheimer Disease **MC 9628** Phone: 545-6988	11. **RONG YUAN, MD, Ph.D.** Asst. Professor, Medicine MC 9628 Phone: 545-7389	
6. **JOSEPH KURIAN, Ph.D.** Research Asst. Professor, OB/Gyn MC 9629 Phone: 545-2182		

Appendix 8: IACUC/OB Minutes

LABORATORY ANIMAL CARE AND USE COMMITTEE
March 19, 2018
MINUTES

Members Present:
Shelley Tischkau, Ph.D. (Chair)
Kathy Bottom, MD, Ph.D.
Brandon Cox, Ph.D.
Kristin Delfino, Ph.D.
Ashim Gupta, Ph.D.
Stephen Myers
Daotai Nie, Ph.D.
Leonard Rybak, MD, Ph.D.
Donald Torry, Ph.D. (alternate for Joe Kurian)
Helen Valentine, DVM
Rong Yuan, Ph.D.

Members Absent:
Erin Hascup, Ph.D.
Joe Kurian, Ph.D.
Mike Zagotta, ex-officio
Kathy Bardoel, ex-officio
Joel Reichenspurger, ex-officio

I. Call to Order--Dr. Shelley Tischkau called the meeting to order at 3:33 p.m.

II. Minutes--**Dr. Brandon Cox moved to approve the minutes with corrections. The motion was unanimously adopted**.

III. Adoption Policy—Dr. Tischkau stated that Dr. Valentine made some corrections/recommendations to the animal adoption policy. The policy has also gone to the Legal Department for review. There is some question regarding the need for the policy at this time, which Dr. Torry will discuss with legal before bringing the policy back to the LACUC

IV. DLAM Report—Dr. Tischkau stated that CVT Andrea Willis has left SIU. Dr. Tischkau and Shirley Frost have assumed her duties. The School has advertised to fill Ms. Willis' position. The announcement was reopened because there were no applicants to the original advertisement. Members discussed/suggested that HR send advertisements to community colleges and other schools in Illinois that may have a CVT program.

V. Discussion Items

A. New Veterinarian—Dr. Torry stated that they are still working on hiring Dr. Miles who is from Missouri. He would have a cross appointment in MMICB in addition to serving as Attending Veterinarian/Director of DLAM. His duties would include teaching (virology), research, and clinical.

VI. 3-Year Rewrites

A. The 3-year rewrite to the protocol (#158-14-017) of Dr. Michael Neumeister was reviewed by the Committee. **The Committee members present voted unanimously to require the following modifications and/or clarification. The modified protocol will be returned to the primary reviewers and if warranted, approval.**

Major Points:

1. 5b2—Isoflurane induction should be at 5% with maintenance at 1-3%. It is currently described as induction at 1/3% and maintenance at 0.5-2%. Please correct.
2. 5b2—Dosage for Baytril in rats should be every 12 hours. Buprenorphine should be every 6-12 hours, and rimadyl should every 12 hours. The current description includes each of these drugs given only once a day. Please correct to every 12 hours for each.
3. 5b2—The current description states returning animals to housing when responsive following surgery. Rats should fully recover from anesthesia before returning to housing, because they are unable to adequately thermoregulate their body temperature while still recovering from the effects of anesthesia. Please modify this statement.
4. 5b8, 6a—The dosage for Baytril in rats should be every 12 hours; Buprenorphine should be every 6-12 hours; and Rimadyl should be every 12 hours. The current description includes each of these drugs given only once a day. Please correct to 12 hours for each.
5. 5b9, 7k2—The protocol states that Batril and Ramydyl will be given “up to 5 days” post surgery. Since this is a major surgery, it is recommended that treatment be given for 5 days post-surgery and then assessment made as to whether or not to continue.
6. 5b9, 7k2—If prior surgical experience dictates when rats will need pain relief, please indicate what the lab’s experience has been.
7. 5b9—If weight loss in going to be a criteria for humane intervention, rats should be weighed daily for the first five days following surgery, not weekly. Please correct.
8. 5b9—The description states that animals will be returned to housing when responsive following surgery. Rats should fully recover from anesthesia before returning to housing, because they are unable to adequately thermoregulate their body temperature while still recovering from the effects of anesthesia. Please modify this statement.
9. 10c—Does anyone on the protocol have experience with the surgical procedure proposed?

Minor Points:

10. 2a, Specific Aim 3—The aim states adult male SD rats will be purchased, but later verbiage states male and female rats will be used. Please make the wording consistent.
11. 3b—Change mice to rats.
12. 3c2—In-vitro work does not need to be described, but it is OK to leave in.
13. 5b5—Monitoring anesthesia only every 15 minutes is not adequate. Please add that animals will be monitored continuously for movement or increased rate or effort of respiration.
14. 6d3—Are these cells coming from rodents in-house of similar health status? If so, no question/comment.
15. 7k2—The protocol mentions the use of opioids rather than an NSAID and you give justification for not using an NSAID. However, you are proposing to use Rimadyl up to 2 days prior through 5 days after surgery, which is an NSAID. Therefore, this statement is contradictory to the analgesic plan you proposed.

B. The 3-year rewrite to the protocol (#200-00-012) of Dr. Shelley Tischkau was reviewed by the Committee. **The Committee members present voted unanimously to require the**

following modifications and/or clarification. The modified protocol will be returned to the primary reviewers and if warranted, approval.

Minor Points:

1. 4a—Euthasol should be listed in section 4a, Methods of Euthanasia, and not in section 6a, Surgery and Analgesics.
2. 6—There is a lot of repetition in the table. Should some of them list anesthesia instead of euthanasia for the reason for use?
   a. Isoflurane is listed twice for mice for euthanasia.
   b. Ketamine/xylazine is listed 3 times for mice for euthanasia.
3. 6a—There is a lot of repetition in the table: Ketamine/xylazine is listed 4 times for mice and 4 times for rats for anesthesia.
4. 6b—Ketamine/xylazine is given IP to rodents, not IM. Please correct.
5. 7i2—Please answer.
6. 8b—Please re-answer question 8b. The answer provided doesn't answer the question.

VII. Amendments

A. The amendment to the protocol (#218-15-010, A9) of Dr. Brandon Cox was reviewed by the Committee. **The Committee members present voted unanimously to require the following modifications and/or clarification which can be administratively made and if warranted, approved.**

Minor Points:

1. Section 2, 2nd paragraph—Please reword "could also been" in the 2nd sentence.
2. Section 3—in the first table, control mice for each group should be listed separately.
3. Section 6—What is the number of mice per group based on? A power calculation should be included.

VIII. Continuing Annual Reviews

The following annual reviews were approved with personnel deletions.

A.	Kathleen Campbell, Ph.D.	D-Methionine Preloading Dosing and Time Point Optimization #93-16-013
B.	Brian Mailey, MD	Assess Ability of Stem Cells to Differentiate into Chondrocytes and 3-Dimensional Cartilage #229-16-002
C.	Michael Neumeister, MD	Human Hair Regeneration: A Cure for Male Pattern Baldness #158-13-026
D.	Michael Neumeister, MD	Minced Skin for Tissue Engineering in Human Hair Regeneration #158-15-008
E.	Shelley Tischkau, Ph.D.	Effects of Hydrocarbon Receptor on Diet-Induced Alterations of Circadian Rhythm and Glucose Metabolism #200-11-001
F.	Shelley Tischkau, Ph.D.	Mouse Breeding #200-07-005

Having no further business, the meeting adjourned at 4:30 p.m.

LABORATORY ANIMAL CARE AND USE COMMITTEE
February 19, 2018, 3:30 p.m.
MINUTES

Members Present:
Shelley Tischkau, Ph.D., Chair
Kathy Bardoel, BS, ex-officio
Kathy Bottum, MD, Ph.D.
Brandon Cox, Ph.D.
Kristin Delfino, Ph.D.
Lyndon Goodly, DVM
Erin Hascup, Ph.D.
Steve Myers
Joel Reichenspurger, ex-officio
Leonard Rybak, MD, Ph.D.
Donald Torry, Ph.D., ex-officio (alternate for Ashim Gupta)
Helen Valentine, DVM
Rong Yuan, MD, Ph.D.

Members Absent:
Luke Crater, ex-officio
Ashim Gupta, Ph.D.
Joseph Kurian, Ph.D.
Daotai Nie, Ph.D.
Mike Zagotta, ex-officio

I. **Call to Order—**Chair Shelley Tischkau called the LACUC meeting to order at 3:33 p.m. **Dr. Cox moved to approve the minutes of the January 22, 2018 as mailed. The motion was unanimously adopted.**

II. **DLAM Report—**Dr. Tischkau introduced Dr. Lyndon Goodly and Dr. Helen Valentine - the two "On-Call" veterinarians from University of Illinois. A new caretaker started in DLAM today. Our Vet tech is resigning and will leave on Wednesday, February 28. Her duties will be distributed amongst the DLAM staff until someone can be hired as a replacement. There was yet another chinchilla incident, which is likely related to the quality of animals we receive from the vendor. Dr. Goodly suggested checking the USDA website for reports regarding the vendor. Dr. Campbell and Dr. Tischkau have discussed potential solutions to the ongoing problems.

III. **Discussion Items**

A. Adoption Policy—Dr. Goodly said that you don't have to have an adoption policy in place unless you house cats and dogs. Dr. Torry suggested that the committee continue to work on one so that if and when it is required, we will have one available. **Dr. Brandon Cox moved to table the adoption policy at the present time. The committee will continue to finalize a policy at their convenience. The motion was unanimously approved.**

IV. **New Protocols**

A. The new protocol (#213-18-001) of Dr. Andrew Wilber was reviewed by the Committee. **The Committee members present voted unanimously to require the following modifications and/or clarification. The modified protocol will be returned to the primary reviewers and if warranted, approval.**
Minor Points:

1. Might want to address the specific experience that investigators have with tail vein injection

   This is only a suggestion, not a requirement: Suggest warming the tail in warm water bath (to dilate veins) before attempting tail vein injection with cells

2. Please remove CO2 has a method of anesthesia (q#6a), since no anesthesia is being utilized

V. Protocol Amendments

A. The protocol amendment (178-03-024, E7) of Dr. Andrzej Bartke was reviewed by the committee. **The Committee members present voted unanimously to require the following modifications and/or clarification. The modified protocol will be returned to the primary reviewers and if warranted, approval**.

Minor Points:

1. Check box to indicate the request to change #'s and experimental methods.
2. Section 2, How many mice will be used for metabolic characterization and at what age? How many will be used for longevity? Please indicate if all testing will be performed as previously approved on this protocol or if procedures will need to be added. Justification is needed on why is it expected that MSI 1436 will further improve the dwarf animal metabolic phenotype? Wouldn't the treatment be redundant?
3. Please Fix power analysis table (2 groups),(2 treatments)?
4. Section 6, it is unclear how many animals will be injected with water, vehicle, MSI 1436
5. Section 12. According to section 2, animals will receive injections for 4 weeks. In this section it states 3-7 injections at 3 day intervals. This only spans 3 weeks. Also, what is the justification of "3 to 7" injections? Which animals will be injected with what drug/vehicle, when and how often?
6. Please verify that adverse effects can be expected at this dosing and injection frequency. The referenced articles (in section 2) use significantly less drug. The only reference using the proposed dose (10mg/kg) is infused over 10 minutes in the tail vein one time. The other two articles use 5mg/kg (3 day intervals and a total of three injections) and 8 mg/kg (4 day intervals and a total of four injections).

B. The protocol amendment (178-03-024, E8) of Dr. Andrzej Bartke was reviewed by the committee. **The Committee members present voted unanimously to require the following modifications and/or clarification. The modified protocol will be returned to the primary reviewers and if warranted, approval**.

1. Section 2 -Please provide justification for evaluation of cell proliferation in the liver. Did data from experiments in the parent protocol justify addition of this measurement/technique.
2. How many animals will be used? Do these animals replace animals originally intended for another purpose or is this an additional procedure that will be performed on previously requested animals. At what age will the BrdU be injected? Is this for a longevity study?

3. Section 12-Please confirm the dose of Brdu. Reference 1 in section 2 indicates 100mg/kg, reference 2 indicates 50mg/kg. This protocol proposes 0.2 mg/kg. What is meant by 90 to 120 min hours? This is likely a typo, but is it minutes or hours?
4. Section 15 – BrdU is a hazardous substance that needs ICSC approval.

V. Continuing Annual Reviews

The following annual reviews were tabled until the next meeting because the information was not included in the committee's packets.

A.	Kathleen Campbell, Ph.D.	D-Methionine Preloading Dosing and Time Point Optimization #93-16-013
B.	Michael Neumeister, MD	Human Hair Regeneration: A Cure for Male Pattern Baldness #158-13-026
C.	Shelley Tischkau, Ph.D.	Effects of Hydrocarbon Receptor on Diet-Induced Alterations of Circadian Rhythm and Glucose Metabolism #200-11-001
D.	Shelley Tischkau, Ph.D.	Mouse Breeding #200-07-005

Having no further business, the meeting adjourned at 4:20 p.m.

Appendix 9: IACUC/OB Protocol Form

Please attach a ***blank*** copy of form(s) used by the IACUC/OB to review and approve studies. Include forms used for annual (or other periodic) renewal, modifications, amendments, etc., as applicable.

Appendix 10: IACUC/OB Periodic Report

Please attached a copy of the latest facilities (including laboratory inspections) and program assessment report conducted by the IACUC/OB.

LABORATORY ANIMAL CARE AND USE COMMITTEE

Inspection of Laboratory Animal Medicine Facility and Investigator Laboratories

May 8, 2018

Present: Shelley Tischkau, Ph.D., Chair
Brandon Cox, Ph.D.
Kristin Delfino, Ph.D.
Ashim Gupta, Ph.D.
Erin Hascup, Ph.D.
Stephen Myers
Rong Yuan, Ph.D.

Subcommittees of the Laboratory Animal Care and Use Committee (LACUC) met on Tuesday, May 8, 2018 to inspect the Division of Laboratory Animal Medicine (DLAM) facilities and laboratories of investigators with active animal protocols in Buildings A, B, C, and D of the Southern Illinois University School of Medicine in Springfield, IL.

Inspection of DLAM facilities included animal rooms, rooms used for miscellaneous purposes (e.g., storage, surgery, cage washing), corridors, floors, walls and ceilings. Laboratory inspections included surgery areas, animal use areas, and drug supplies. Committee members were given forms/checklists to guide the inspection process.

Most deficiencies and needed repairs noted below are minor unless stated otherwise. A corrective plan to address each deficiency will be requested and should be received by the LACUC within three weeks of notification.

The Research and Animal facilities at the SIU School of Medicine are comprised of three contiguous buildings (A, B, and C). A nearby, fourth building (D) is also used for research purposes.

Building A

Building A is one of the two main DLAM facilities. Committee members inspected animal rooms, storage rooms, and other areas.

- Room 1285—No deficiencies noted.
- Room 1305—Floor is chipped; needs to be painted and sealed.
- Room 1305A—Check ceiling height clearance.
  Dirty sink and debris on floor (Bartke).
- Room 1309—Fix lock on cabinet.
- Room 1321—Chips on ceiling and floor.
- Room 1325-- No deficiencies noted.
- Room 1326—Clean floor and light out.
- Room 1329—Light out, door frame needs repaired.
- Room 1330—List the precautions (PPE) on door.
  Clean bedding is in metabolic chamber (Bartke).
- Room 1333—Caulk around panel and sweep floor.
- Room 1337-- No deficiencies noted.
- Room 1338—New door closer needed (noted in 11/17). Corrosion on metal cabinet above sink.
- Room 1341—Exposed foam on booth (Campbell).
- Room 1342—No deficiencies noted.
- Room 1345—Remove items from floor (Yuan).
- Room 1346—Clean floor.
- Room 1349—No deficiencies noted.
- Room 1350—Broken electrical plate and caulk around panel on east wall needs repaired.
- Room 1354—Grout needs fixed on north wall and paint chipped below.
- Janitor's Closet--No deficiencies noted.
- Room 1361A—Loose panel.
- Room 1361B--No deficiencies noted.
- Room 1361C--No deficiencies noted.
- Room 1369—Paint chip on floor.
- Room 1373—Access panel needs paint
- Room 1377—Water leaking on floor, paint access panel.
- Room 1381 (not in use)—No deficiencies noted.
- Room 1385-- No deficiencies noted.
- Room 1389—Light out, floor peeling, loose grout, screw that holds clipboard loose and caulk above door needs repair.

Building B

- Room 1500—No deficiencies noted.
- Room 1504—Floor paint chips.
- Room 1505—Missing sign to wear hearing protection (Noted 11/17 also).
- Room 1509—Bedding on floor.

- Room 1514—No deficiencies noted.
- Room 1523—Cube B and D light out.
- Room 1524—No deficiencies noted.
- Room 1525—No deficiencies noted.
- Room 1526—Paint chips/damage near door and chips on floor near door.
- Room 1527—No deficiencies noted.
- Room 1528—No deficiencies noted.
- Room 1529—Some cage cards torn, wet and need to be replaced (Yuan).
- Room 1532—No deficiencies noted..
- Room 1533—Cube D–I lights out.
- Room 1534—No deficiencies noted.
- Room 1551—No deficiencies noted.
- Room 1553—No deficiencies noted.
- Room 1554—Paint chip/brown mark on wall near locker. (Noted 11/17 also.)
- Room 1555--No deficiencies noted.
- Room 1556—No inspection sticker/certification on irradiator.
- Room 1557— No deficiencies noted.
- Room 1558— No deficiencies noted.
- Room 1558A—No deficiencies noted.
- Room 1558B—No deficiencies noted.
- Room 1558C—No deficiencies noted.
- Room 1558D—No deficiencies noted.
- Room 1559—Cube D lights out and bulbs need to be changed.
- Room 1561— No deficiencies noted.
- Room 1563—No deficiencies noted.

Building C

- Room 1607—Light out and paint chips by outlet on west wall above the eyewash.
- Room 1619—Paint chips on south and north walls.
- Room 1623—Light out and humidity low, water stains on floor.
- Room 1625—Need 18 inches of ceiling clearance height.
- Room 1627—Paint chips on back wall.
- Room 1629—No deficiencies noted.
- Room 1653—No deficiencies noted.
- Room 1653A—No deficiencies noted.
- Room 1655—No deficiencies noted.
- Room 1655A—No deficiencies noted.
- Room 1655B—No deficiencies noted.
- Room 1655C—No deficiencies noted.
- Room 1655C.1—No deficiencies noted.
- Room 1655D— No deficiencies noted.
- Room 1660—Ceiling chip by access panel.

- Room 1662--No deficiencies noted.
- Room 1665—No deficiencies noted.
- Room 1666—No deficiencies noted.
- Room 1666A—No deficiencies noted.
- Room 1666B—No inspection stickers on sterilizers.
- Room 1666C—No deficiencies noted.
- Room 1667—Water stain on floor (noted 11/17, too).
- Room 1670--No deficiencies noted.
- Room 1675—No deficiencies noted.

INDIVIDUAL LABORATORIES

Building A

Arai: The laboratory of Dr. Amy Arai (Room 3275) was inspected with no deficiencies noted.

Bartke: The laboratory (Rooms 4389, 1338 and 1342) of Dr. Andrzej Bartke was inspected with the following deficiencies noted.
Room 1305A—Dirty sink and debris on floor.
Room 1330—Clean bedding is in metabolic chamber (Bartke).
Room 4389—Ketamine has expired and needs to be disposed of.

Bauer: The laboratory of Dr. Carol Bauer (Room 3205) was inspected with no deficiencies noted.

Campbell: The laboratory rooms of Dr. Kathleen Campbell (Rooms 1341, 3365) were inspected with the following deficiencies noted.
Room 1341—Exposed foam on booth

Caspary: The laboratory of Dr. Donald Caspary (Room 3234) was inspected with no deficiencies noted. However, 2 Vials and 1 mixing vial of controlled substances expired and needs to be disposed of.

Cox: The laboratory of Dr. Brandon Cox (Room 3219) was inspected with no deficiencies noted.

Faingold: The laboratory of Dr. Carl Faingold (Room 3246) was inspected with no deficiencies noted.

Hascup: The laboratory (Rooms 4337 and 1526) of Dr. Erin Hascup were inspected with no deficiencies noted.

Kurian: The laboratory (Room 3346) of Dr. Joe Kurian was inspected with the following reminder noted.
Be sure to use the hood when using isoflurane for decapitation.

Mailey: The laboratory of Dr. Brian Mailey (Room 3254) was inspected with no deficiencies noted.

Matos: The laboratory of Dr. Gabor Matos (Room 3254) was inspected with no deficiencies noted.

Mukherjea: The laboratory (Room 4353) of Dr. Debbie Mukherjea was inspected with no deficiencies noted.

Neumeister: The laboratory of Dr. Michael Neumeister (Room 3254) was inspected with no deficiencies noted.

Ramkumar: The laboratory of Dr. Vickram Ramkumar (Room 3350) was inspected with no deficiencies noted.

Rybak: The laboratory of Dr. Leonard Rybak (Room 4345) was inspected with no deficiencies noted.

Tischkau: The laboratory of Dr. Shelley Tischkau (Room 3354) was inspected with no deficiencies noted. However, inspectors noted that the expiration date on protocol #200-00-012 has not been updated due to a bug in the program.

Yuan: The facility room (Room 1529) of Dr. Rong Yuan was inspected with the following deficiencies noted.

- Room 1529--Some cage cards torn, wet and need to be replaced.

Building B

Mellinger: The laboratory (Rooms 1655) of Dr. John Mellinger was inspected with no deficiencies noted.

Schwartz: The laboratory (Rooms 1655) of Dr. Brad Schwartz was inspected with were inspected with no deficiencies noted.

Building C

Wilber: The laboratory (Room 2633) of Dr. Andy Wilber was inspected with no deficiencies noted.

Building D

Cao: The laboratory (Room 1330) of Dr. Deliang Cao was inspected with no deficiencies noted.

Elble: The laboratory (Room 330) of Dr. Randolph Elble was inspected with no deficiencies noted.

Nie: The laboratory (Room 1329) of Dr. Daotai Nie was inspected with no deficiencies noted.

Ran: The laboratories (Rooms 1331, 1310) of Dr. Sophia Ran were inspected with no deficiencies noted.

Rao: The laboratory (Room 1350) of Dr. Krishna Rao was inspected with no deficiencies noted.

Submitted by Kristi Katcher
Lab inspection—May 8, 2018
Approved by LACUC on May 21, 2018

Appendix 11: Heating, Ventilation and Air Conditioning (HVAC) SUMMARY

Summarize the heating, ventilation and air conditioning (HVAC) systems for each animal facility, ***including all satellite facilities***. Include ***all animal holding rooms*** (including satellite holding rooms), surgical facilities, procedure rooms, and support spaces integral to animal facilities (e.g., cage wash, cage and feed storage areas, necropsy, treatment).

In the text box below, provide a general description of the mechanical systems used to provide temperature, humidity and air pressure control. Include details such as:

- the source(s) of air and air recirculation rates if other than 100% fresh air
- treatment of air (filters, absorbers, *etc*.)
- design features such as centralized chilled water, re-heat coils (steam or hot water), individual room vs. zonal temperature and relative humidity control, the use of variable air volume (VAV) systems and other key features of HVAC systems affecting performance
- features that minimize the potential for adverse consequences to animal well-being (such as re-heat coils that fail closed or that are equipped with high-temperature cut-off systems), and
- how room temperature, ventilation, and critical air pressures are monitored and maintained in the event of a system or component failure, including notifying appropriate personnel in the event of a significant failure that occurs outside of regular working hours and/or other management systems used to respond to alerts or failures.

Location/Building/Facility:	**801 N. Rutledge, Building A**
A dedicated Air Handling Unit (AHU) sends supply air to the animal area. The animal area can re-circulate from 0% to 73% of the air from the animal back to the AHU. The recirculated air must pass through a return fan and four filters (30% pre-filter, Purafil oxidizing pellet filter, Cosatron electronic filter and a HEPA filter) on its path back to the AHU. The recirculated air combines with fresh air (outside air) and goes through 30% pre-filters and 95% final filters before distributed as 55°F supply air. The supply air passes through a reheat coil that adjusts the temperature and steam humidifier before entering the animal room. The air in some animal rooms is exhausted and not recirculated. Air changes and pressures of animal rooms are included in Appendix 11. The Building Automation System (BAS) monitors the mechanical system 24/7. The AHU is backed up with an emergency power source and a second AHU can be mechanically switched to supply air to the animal area. The AHU will shut down if the return fan fails in order to prevent animal rooms from being positively	

pressurized. There are safety devices that will shut down the AHU if the fresh (outside) air is too cold, supply air is too hot, or there is a fire. The BAS also monitors room temperatures and humidity and will send alarms to the BOE who is here 24/7 if limits exceed those established by DLAM Director. These limits are described in the “Animal Facility Emergency Manual.” The DLAM Director or on-call DLAM staff member is contacted if animal room temperatures reach above 80°F or below 64°F for longer than 15 minutes. However, the BOE Supervisor may contact the DLAM in light of immediate factors or concerns. Security personnel who are also here 24/7 make rounds daily.

Emergency power is supplied for lights, some electrical outlets, and air handling units. A dual power supply prevents power failures of long duration. Maintenance and security personnel are on duty around the clock. Computers monitor critical mechanical systems. Security personnel make rounds through the animal facility at least once per 8 hour shift (a shift is 8 hours). If any of the following conditions exist, the security or maintenance personnel will notify DLAM on-call personnel:

- Power failure of one hour or more duration
- Fire
- Extreme temperature deviations (below 64°F or over 80°F)
- Failure of ventilation system longer than 60 minutes
- Interruption of water

The BAS monitors the critical pressures, fans, temperatures and humidity continually and will send an alarm to the BOW if limits exceed those established by DLAM Director. High/low temperature limits are below 64°F or above 80°F for longer than 15 minutes. However, the BOE Supervisor may contact the DLAM in light of immediate factors or concerns. The BAS also trends each animal room temperature and humidity daily and the Building Automation technician e-mails those trends to the DLAM Coordinator and Director daily. Each animal room also has temperature and humidity high/low limit instrumentation which is read and logged daily on the room sheet by DLAM personnel.

System and component failures are handled as emergencies as soon as they occur. To date, prolonged outages of the HVAC have not occurred.

The BAS is operation 24 hours a day and can be accessed by on-site building operatin engineers at 8 locations campus wide on a 24/7 basis. Security personnel make rounds through the animal facility at least once per shift (each shit is 8 hours). If any of the following conditions exist, the security or maintenance personnel will notify DLAM on-call personnel:

- Power failure of one hour or more duration
- Fire
- Extreme temperature deviations (below 64°F or over 80°F)

- Failure of ventilation system longer than 60 minutes
- Interruption of water

Location/Building/Facility:	**825 N. Rutledge, Building B**

A dedicated Air Handling Unit (AHU) sends supply air to the animal area. The animal area can re-circulate up to 53% of the air from the animal area back to the AHU. The recirculated air must pass through a return fan and three filters (30% prefilter, Purafil filter and electronic filter) on its path back to the AHU. The recirculated air combines with fresh air (outside air) and goes through 30% prefilters , HEPA filters and a steam humidifier before distributed as 55° F supply air. The supply air passes through Phoenix VAV Valves that control air volume and reheat coils that adjust the temperature before entering the animal rooms. The air in some animal rooms is exhausted and not recirculated. All room supply, return or exhaust air flow are controlled by Phoenix

System and component failures are handled as emergencies as soon as they occur. To date, prolonged outages of the HVAC have not occurred.

The BAS is operational 24 hours a day and can be accessed by building operating engineers on-site at 8 locations campus wide on a 24/7 basis. Security personnel make rounds through the animal facility at least once per shift (a shift is 8 hours). If any of the following conditions exist, the security or maintenance personnel will notify DLAM on-call personnel:

- Power failure of one hour or more duration
- Fire
- Extreme temperature deviations (below 64° F or over 80° F)
- Failure of ventilation system longer than 60 minutes
- Interruption of water

A dedicated Air Handling Unit (AHU) sends supply air to the animal area. The animal area can re-circulate up to 53% of the air from the animal area back to the AHU. The recirculated air must pass through a return fan and three filters (30% prefilter, Purafil filter and electronic filter) on its path back to the AHU. The recirculated air combines with fresh air (outside air) and goes through 30% prefilters , HEPA filters and a steam humidifier before distributed as 55° F supply air. The supply air passes through Phoenix VAV Valves that control air volume and reheat coils that adjust the temperature before entering the animal rooms. The air in some animal rooms is exhausted and not recirculated. All room supply, return or exhaust air flow are controlled by Phoenix VAV Valves. Air change and pressures of animal rooms are included in Appendix 10. The Building Automation System (BAS) monitors the mechanical system 24/7.

Part of this building has been remodeled as a Rodent Barrier Area with a vestibule, a changing room, and positive pressure corridors. The work in this area has been completed, but construction work on the floor above has prevented the release of these rooms for commissioning and animal use.

The AHU is backed up with emergency power. The AHU will shut down if the return fan and/or exhaust fans fail in order to prevent animal rooms from going into positive air pressure in relationship to the corridor. Some exhaust fans will also shut down if the AHU fails to prevent the Barrier Area corridors from going negative to areas outside the Barrier Area. There are safety devices that will shut down the AHU if the fresh (outside) air is too cold, supply air is too hot, or there is a fire. The BAS also monitors room temperatures and humidity and will send alarm to BOE who is here 24/7 if limits exceed those established by DLAM Director. These limits are described in the “Animal Facility Emergency Manual.” The DLAM Director or on-call DLAM staff member is

contacted if animal room temperatures reach above 80°F or below 64°F for longer than 15 minutes. However, the BOE Supervisor may contact the DLAM in light of immediate factors or concerns. Security personnel who are also here 24/7 make rounds daily.

The BAS monitors the critical pressures, fans, temperatures and humidity continually and will send an alarm to the BOE if limits exceed those established by the DLAM Director. High/low temperature limits are below 64° F or above 80° F for longer than 15 minutes. However, the BOE Supervisor may contact the DLAM in light of immediate factors or concerns. The BAS also trends each occupied animal room temperature daily and the Building Automation Technician e-mails those trends to

the DLAM Coordinator and Director daily. Each animal room also has temperature and humidity high/low limit instrumentation which is read and logged daily on the room sheet by DLAM personnel.

System and component failures are handled as emergencies as soon as they occur. To date, prolonged outages of the HVAC have not occurred.

The BAS is operational 24 hours a day and can be accessed by building operating engineers on-site at 8 locations campus wide on a 24/7 basis. Security personnel make rounds through the animal facility at least once per shift (a shift is 8 hours). If any of the following conditions exist, the security or maintenance personnel will notify DLAM on-call personnel:

• Power failure of one hour or more duration

• Fire

• Extreme temperature deviations (below 64° F or over 80° F)

• Failure of ventilation system longer than 60 minutes

• Interruption of water

Room No.	Specific Use	Temperature Set-Point (define units)	Electronic / Emergency Monitoring of Temperatures (Y/N)	Alert/Alarm Temperature Ranges (if applicable; define units)	Humidity Control (Y/N)	Relative Pressure	Air Exchange Rate (per hour)	Date Verified / Measured
		(settings to be verified)					(values to be measured)	
1285*	Lab – Animal Housing	62°F	Y-	NA	Y	-	21	3/2015
1305*	Laboratory BSL-2	72°F	Y	68-76°F (critical alarm)	Y	-	21	3/2015
1309*	Necropsy	72°F	Y	68-76°F (critical alarm)	Y	-	19	3/2015
1321	Animal Housing – Chinchilla	68°F	Y	64-72°F (critical alarm)	Y	-	21	3/2015
1325	Animal Housing – Chinchilla	68°F	Y	64-72°F (critical alarm)	Y	-	16	3/2015
1326	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	13	3/2015
1329	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	14	3/2015
1330	Lab – Animal Housing – Metabolic chambers	72°F	Y	68-76°F (critical alarm)	Y	-	25	3/2015
1333	Store Room	72°F	Y	68-76°F (critical alarm)	Y	-	14	3/2015
1337	Store Room	72°F	Y	68-76°F (critical alarm)	Y	-	14	3/2015
1338	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	19	3/2015
1341	Laboratory	72°F	Y	68-76°F (critical alarm)	Y	-	21	3/2015
1342	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	18	3/2015
1345	Laboratory	72°F	Y	68-76°F (critical alarm)	Y	-	21	3/2015
1346	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	25	3/2015

Room No.	Specific Use	Temperature Set-Point (define units)	Electronic / Emergency Monitoring of Temperatures (Y/N)	Alert/Alarm Temperature Ranges (if applicable; define units)	Humidity Control (Y/N)	Relative Pressure	Air Exchange Rate (per hour)	Date Verified / Measured
		(settings to be verified)					(values to be measured)	
1349	Animal Housing – Mice	86°F (Thermo neutral)	Y	68-76°F (critical alarm)	Y	-	22	3/2015
1350*	Clean Cage Wash		Y		Y	+	27	3/2015
1354*	Dirty Cage Wash		Y		Y	-	12	3/2015
1361C*	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	13	3/2015
1361A*	Store	72°F	Y	68-76°F (critical alarm)	Y	-	20	3/2015
1361B	Animal Housing – Rats	72°F	Y	68-76°F (critical alarm)	Y	-	17	3/2015
1369	Animal Housing – Rats	72°F	Y	68-76°F (critical alarm)	Y	-	22	3/2015
1373	Animal Housing – Rats	72°F	Y	68-76°F (critical alarm)	Y	-	21	3/2015
1377	Animal Housing – Rats	72°F	Y	68-76°F (critical alarm)	Y	-	20	3/2015
1381	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	22	3/2015
1385	Animal Housing – Rats	72°F	Y	68-76°F (critical alarm)	Y	-	22	3/2015
1388	Office	72°F	Y	68-76°F (critical alarm)	Y	+	15	3/2015
1389	Animal Housing – Rats	72°F	Y	68-76°F (critical alarm)	Y	-	21	3/2015
1505*	Cage Wash		Y		N	-	24	3/2015
1509*	Autoclave		Y		N	+	20	3/2015
1514*	Autoclave (Dirty)		Y		N	-	7	3/2015

Room No.	Specific Use	Temperature Set-Point (define units)	Electronic / Emergency Monitoring of Temperatures (Y/N)	Alert/Alarm Temperature Ranges (if applicable; define units)	Humidity Control (Y/N)	Relative Pressure	Air Exchange Rate (per hour)	Date Verified / Measured
		(settings to be verified)					(values to be measured)	
1551	Autoclave (Clean)		Y		N	-	13	3/2015
1522	Bedding	65°F	Y	62-69°F (critical alarm)	Y	+	25	3/2015
1523A	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	26	3/2015
1523B	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	26	3/2015
1523C	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	26	302015
1523F	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	26	3/2015
1523G	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	26	3/2015
1523H	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	26	3/2015
1524	Animal Housing – Rats	72°F	Y	68-76°F (critical alarm)	Y	-	24	3/2015
1526	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	24	3/2015
1527A	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	23	3/2015
1527B	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	23	3/2015
1527C	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	23	3/2015
1527D	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	23	3/2015
1527G	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	23	3/2015
1527H	Animal Housing – Mice	72°F	Y	68-76°F	Y	-	23	3/2015

Room No.	Specific Use	Temperature Set-Point (define units)	Electronic / Emergency Monitoring of Temperatures (Y/N)	Alert/Alarm Temperature Ranges (if applicable; define units)	Humidity Control (Y/N)	Relative Pressure	Air Exchange Rate (per hour)	Date Verified / Measured
		(settings to be verified)					(values to be measured)	
				(critical alarm)				
1528	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	24	3/2015
1529A	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	23	3/2015
1529B	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	23	3/2015
1529C	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	23	3/2015
1529D	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	23	3/2015
1529E	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	23	3/2015
1529F	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	23	3/2015
1529G	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	23	3/2015
1529H	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	23	3/2015
1532	Laboratory – Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	24	3/2015
1533A	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	24	3/2015
1533B	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	24	3/2015
1533D	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	24	3/2015
1533E	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	24	3/2015
1533F	Animal Housing – Mice	72°F	Y	68-76°F	Y	-	24	3/2015

Room No.	Specific Use	Temperature Set-Point (define units)	Electronic / Emergency Monitoring of Temperatures (Y/N)	Alert/Alarm Temperature Ranges (if applicable; define units)	Humidity Control (Y/N)	Relative Pressure	Air Exchange Rate (per hour)	Date Verified / Measured
		(settings to be verified)					(values to be measured)	
				(critical alarm)				
1533G	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	24	3/2015
1533H	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	24	3/2015
1534	Laboratory	72°F	Y	68-76°F (critical alarm)	Y	-	25	3/2015
1501	Air Lock	72°F	Y	68-76°F (critical alarm)	N	+	38	3/2015
1553A	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	23	3/2015
1553B	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	23	3/2015
1553C	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	23	3/2015
1553D	Animal Housing – Mice	72°F	Y	68-76°F (critical alarm)	Y	-	23	3/2015
1554	Locker Room/Change Room	72°F	Y	68-76°F (critical alarm)	Y	+	9	3/2015
1555	Work Room	72°F	Y	68-76°F (critical alarm)	Y	+	12	3/2015
1556	Procedure	72°F	Y	68-76°F (critical alarm)	Y	+	13	3/2015
1557B	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	19	3/2015
1557C	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	19	3/2015
1557D	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	19	3/2015
1558	Work Room	72°F	Y	68-76°F	Y	+	15	3/2015

Room No.	Specific Use	Temperature Set-Point (define units)	Electronic / Emergency Monitoring of Temperatures (Y/N)	Alert/Alarm Temperature Ranges (if applicable; define units)	Humidity Control (Y/N)	Relative Pressure	Air Exchange Rate (per hour)	Date Verified / Measured
		(settings to be verified)					(values to be measured)	
				(critical alarm)				
1558A	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	27	3/2015
1558B	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	27	3/2015
1558C	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	27	3/2015
1558D	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	25	3/2015
1559A	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	19	3/2015
1559B	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	19	3/2015
1559C	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	19	3/2015
1559D	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	19	3/2015
1561	Work Room	72°F	Y	68-76°F (critical alarm)	Y	-	16	3/2015
1563A	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	19	3/2015
1563C	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	19	3/2015
1563D	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	19	3/2015
1607	Chemical Storage	72°F	Y	68-76°F (critical alarm)	Y	-	8	3/2015
1619	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	16	3/2015
1623	Animal Housing	72°F	Y	68-76°F	Y	-	17	3/2015

Room No.	Specific Use	Temperature Set-Point (define units)	Electronic / Emergency Monitoring of Temperatures (Y/N)	Alert/Alarm Temperature Ranges (if applicable; define units)	Humidity Control (Y/N)	Relative Pressure	Air Exchange Rate (per hour)	Date Verified / Measured
		(settings to be verified)					(values to be measured)	
				(critical alarm)				
1627	Drug Room	72°F	Y	68-76°F (critical alarm)	Y	-	16	3/2015
1629	Animal Housing	72°F	Y	68-76°F (critical alarm)	Y	-	17	3/2015
1655	Surgery Prep	72°F	Y	68-76°F (critical alarm)	Y	+	11	3/2015
1655A	Recovery Room	72°F	Y	68-76°F (critical alarm)	Y	+	9	3/2015
1655B	Surgery Suite	72°F	Y	68-76°F (critical alarm)	Y	+	19	3/2015
1655C	Scrub Room	72°F	Y	68-76°F (critical alarm)	Y	Positive to 1666	8	3/2015
1655C.1	Locker Room	72°F	Y	68-76°F (critical alarm)	Y	Positive to 1655C	11	3/2015
1655D	Rodent Surgery	72°F	Y	68-76°F (critical alarm)	Y	Positive to 1666	18	3/2015
1660	Procedure Room	72°F	Y	68-76°F (critical alarm)	Y	-	18	3/2015
1662	Procedure Room	72°F	Y	68-76°F (critical alarm)	Y	-	13	3/2015
1665	Vestibule	72°F	Y	68-76°F (critical alarm)	Y	-	0	3/2015
1666	Ante Room	72°F	Y	68-76°F (critical alarm)	Y	Negative to surgery	7	3/2015
1666A	Surgical Storage	72°F	Y	68-76°F (critical alarm)	Y	+	5	3/2015
1666B	Autoclave	72°F	Y	68-76°F (critical alarm)	Y	-	9	3/2015
1666C	Laundry Room	72°F	Y	68-76°F	Y	-	13	3/2015

Room No.	Specific Use	Temperature Set-Point (define units)	Electronic / Emergency Monitoring of Temperatures (Y/N)	Alert/Alarm Temperature Ranges (if applicable; define units)	Humidity Control (Y/N)	Relative Pressure	Air Exchange Rate (per hour)	Date Verified / Measured
		(settings to be verified)					(values to be measured)	
				(critical alarm)				
1667	Store Room	72°F	Y	68-76°F (critical alarm)	Y	+	9	3/2015
1668	Restroom	72°F	Y	68-76°F (critical alarm)	Y	-	15	3/2015
1670	Refrigerated Store Room		Y		Y	Neutral	0	3/2015
1675	Store Room	72°F	Y	68-76°F (critical alarm)	Y	Neutral	8	3/2015

Note: Recirculated air is filtered through a Purafill (Potassium Permanganate on Aluminum Oxide Pellet) filter and a Cosatron Electric Filter. Supply air comprised of a minimum of 25% fresh (outside) air to a maximum of 100% fresh air depending on temperature and humidity of the outside airplus recirculated air. The return air is then HEPA filtered before entering rooms?

*Designates rooms that are totally exhausted.

Appendix 12: Aquatic Systems Summary – Part I

Please summarize water management and monitoring information programs for each animal facility, including all satellite facilities, rooms, enclosures. The following key will assist you in completing the form:

(1) List location of aquaria, including outdoor enclosures (ponds or outdoor tanks). If indoors, list building and room number. Note that all species housed at the same location and maintained via the same design and monitoring may be listed in the same row.
(2) Please indicate if embryonic (E), larval (L), juvenile (J) or Adult (A)
(3) Group tanks (ponds, outdoor tanks, multiple aquaria) are arranged as arrays with shared water supply; individual aquaria have exclusive water handling systems.
(4) Indicate water type*,* e.g.*,* fresh, brackish, or marine.
(5) Indicate water pre-treatment, e.g.*,* dechlorination, rough filters.
(6) Indicate water circulation, e.g.*,* static, re-circulated, constant flow, or some combination of these. If applicable, indicate water exchange frequency and amount (percentage).
(7) Provide a key word for filtration employed, e.g.*,* biological, chemical, mechanical, and type (e.g.*,* mechanical-bead filter). A diagram may be provided showing the flow of water, filtration, source of "make-up" water and amount replaced daily.

Part I

Location (1)	**Species (2)**	**System Design**					
		Group / Individual (3)	**Water Type (4)**	**Pre-treatment (5)**	**Circulation (6)**	**Filtration (7)**	**Disinfection (e.g., UV, ozone)**
No aquatic species are housed at SIU SOM							

Note: Records of equipment maintenance (filter changes, UV bulb changes, probe changes, calibrations, *etc*.) should be available for review.

[Create additional rows by pressing TAB in the bottom-right box.]

Appendix 12: Aquatic Systems Summary – Part II

The following key will assist you in completing this form:

(1) In these columns, please indicate monitoring frequency, e.g. daily, weekly, monthly or other point sampling frequency; continuous/real time, or none, if applicable. Also indicate method of control (heaters versus room HVAC, hand versus auto dosing, etc.).

(2) Indicate other parameters and their monitoring frequency, e.g., alkalinity, total hardness, conductivity, chlorine/chloramine.

Part II

Monitoring ***Indicate in the boxes below the frequency of monitoring and method of control for the following parameters. (1)***									
Location (from Part I)	**Temperature**	**Salinity**	**pH**	**NH_4**	**NO_2**	**NO_3**	**Dissolved O_2**	**Total Dissolved Gases**	**Other. Please List (2):**
No aquatic species are housed at SIU SOM									

Note: This information may be provided in another format, provided that all requested data is included.

[Create additional rows by pressing TAB in the bottom-right box.]

Appendix 13: Primary Enclosures and Animal Space Provisions

Please complete the Table below considering performance criteria and guiding documents (e.g., Guide, Ag Guide, ETS 123 and/or other applicable standards) used by the IACUC/OB to establish adequacy of space provided for all research animals including traditional laboratory species, agricultural animals, aquatic species, and wildlife when reviewing biomedical, field, and agricultural research studies.

Species	Dimensions of Enclosure (cage, pen, tank*, corral, paddock, etc.)	Maximum Number Animals / Enclosure	Guiding Document Used to determine the Institution's Space Standards (Guide, Ag Guide, ETS 123, Other)	Enclosure Composition & Description**
Mice	7" x 11" x 5" 10" x 18" x 5"	5 10	Guide	Polycarbonate microisolator cages on rack, water bottles or water pouches
Rats	10" x 19" x 8"	10 rats ≤ 300g; 4 rats = 300-400g; 2 rats > 400g 1 rat per metabolic cage	Guide	Polycarbonate microisolator cages on racks, some with automatic water; metal metabolism rack with water bottles
Pigs	24 sq. ft.	1	Guide, AWA	Runs with plastic covered expanded removable metal grid floors
Rabbits	24" x 24" x 16" 30" x 24" x 16" 27" x 28" x 18"	1 1 1	Guide, AWA	Stainless steel with metal grid floors Suspended polypropylene cages with filter top
Chinchillas	23" x 22" x 10" 20" x 16" x 8"	1 1	Guide, AWA	Stainless steel with metal grid floors Suspended polypropylene cages with filter top
Guinea Pigs	10" x 19" x 8" 16" x 19" x 8" 9" x 41" round	2 up to 350g 3 up to 350g 10 up to 350g	Guide, AWA	Polycarbonate cages with stainless steel wire grids, racks, water bottles; plastic "kiddie" swimmingpools

*For aquatic species, provide tank volume.
**Include descriptors such as open-topped, static microisolator, individually-ventilated cage systems (IVCS).

Appendix 14: Cleaning and Disinfection of the Micro- and Macro-Environment

Please describe the cleaning and disinfection methods in the Table below. Note the washing/sanitizing frequency and method for each of the following:

Area	Washing/Sanitizing Method (mechanical washer, hand washing, high-pressure sprayers, etc.)	Washing/ Sanitizing Frequency	Chemical(s) Used*	Other Comments (e.g., autoclaved)
Micro-environment				
Solid-bottom cages (static)	Mechanical washer	Once a week	Cleaning agent used is Cage-Klenz 280 in mechanical washers	
Solid-bottom cages (IVC)	Mechanical washer	Once a week	Cleaning agent used is Cage-Klenz 280 in mechanical washers	
Suspended wire-bottom or slotted floor cages	Mechanical washer	At least once a week	Cleaning agent used is Cage-Klenz 280 in mechanical washers	
Cage lids	Mechanical washer	Twice a month	Cleaning agent used is Cage-Klenz 280 in mechanical washers	
Filter tops	Mechanical washer	At least once a month	Cleaning agent used is Cage-Klenz 280 in mechanical washers	
Cage racks and shelves	Mechanical washer	Rats: at least monthly Mice: at least monthly Rabbits, chinchillas, guinea pigs: weekly	Cleaning agent used is Cage-Klenz 280 in mechanical washers	
Cage pans under suspended cages	Mechanical washer	At least twice a week	Cleaning agent used is Cage-Klenz 280 in mechanical washers	
Play pens, floor pens, stalls, etc.	Hosed with soapy water	Three times a day	Stride	
Corrals for primates or outdoor paddocks for livestock	N/A			
Aquatic, amphibian, and reptile tanks and enclosures	N/A			

Area	Washing/Sanitizing Method (mechanical washer, hand washing, high-pressure sprayers, etc.)	Washing/ Sanitizing Frequency	Chemical(s) Used*	Other Comments (e.g., autoclaved)
Feeders	Mechanical washer	Rodents: twice a month Rabbits and chinchillas: weekly Pigs: twice a week or as needed		
Watering devices—sipper tube	Mechanical washer, then autoclaved	At least weekly	Cleaning agent used is Cage-Klenz 280 in mechanical washers	Sipper tubes are cleaned and autoclaved whenever bottles are changed.
Watering devices—bottles	Mechanical washer	At least weekly	Cleaning agent used is Cage-Klenz 280 in mechanical washers	Bottles are not refilled without sanitation and are replaced as needed
Watering devices—bowls	Mechanical washer	Daily	Cleaning agent used is Cage-Klenz 280 in mechanical washers	
Watering devices—automatic watering system on racks	Mechanical washer	Rats: at least monthly Rabbits, chinchillas, guinea pigs: weekly		Cage mounted automatic manifolds are flushed when racks are sanitized; the wall-mounted automatic watering system is flushed twice a week for all racks in use
Exercise devices and manipulanda used in environmental enrichment programs, etc.	Mechanical washer	As needed	Cleaning agent used is Cage-Klenz 280 in mechanical washers	Devices are transferred with the animal to the clean cage and are sanitized as needed or between animals
Transport cages	Mechanical washer	After each use	Cleaning agent used is Cage-Klenz 280 in mechanical washers	
Operant conditioning & recording chambers, mechanical restraint devices (chairs, slings, etc.)	Hand wash	As needed		Labs are instructed to use cleaning agents with labeled parvocidal capabilities (e.g., 10% bleach, SporKlenz)
Euthanasia chambers	Hand wash	As needed	SporKlenz and alcohol, Roccal	

Macro-Environment				
Animal Housing Rooms:				
Floors	Hand washed, steamed	Daily rinse with Virex, monthly steam	Water, Virex 10 minute disinfection	
Walls	Steamed or hose down	Monthly		
Ceilings	Steamed or hose down	Monthly		
Ducts/Pipes	Air filters replaced	As needed		Rodent rooms monthly, Chinchilla, rabbit, and guinea pig rooms weekly
Fixtures	Hand washed	Weekly	Virex and/or stainless steel cleaner	
Corridors:				
Floors	Floor scrubber	Daily	Stride	
Walls	Steamed	Quarterly		
Ceilings	Not accessible			
Ducts/Pipes	Hand washed	Quarterly	Virex	
Fixtures	Hand washed	Quarterly	Virex	
Support Areas (e.g., surgery, procedure rooms, etc.); complete for each area:				
Floors	Steam, mop	After each use	Steam	
Walls	Steam	Quarterly	Steam	
Ceilings	Steam	Quarterly	Steam	
Ducts/Pipes	Air filters replaced	Quarterly		

Fixtures	Hand washed	Quarterly	Cavi-Wipes	
Implements (note whether or not shared):				
Mops	Clothes washer	Daily	Phosphate-free detergent and bleach; not used in animal rooms	
Mop buckets	Mechanical washer	Weekly	Cage-Klenz 280; not shared; acid base cleaner	
Aquaria nets	N/A			
Other	N/A			
Other:				
Vehicle(s)	N/A			
Other transport equipment (list)	N/A			

*Please provide chemical, not trade name.

Appendix 15: Facilities and Equipment for Sanitizing Materials

In the Tables below, summarize the facilities and equipment used to sanitize animal related equipment (tunnel washer, bottle washer, rack washer, bulk autoclave, hand-washing area, bedding dispensing unit, *etc*.). Note that some descriptions may be combined if all share identical features (e.g., all rack washers).

Building	Room No.	Equipment Type	Safety Feature(s)	Methods of Monitoring Effectiveness
A	1354/ 1350	Rack washer	Emergency “off” button; labeled exit door, de-energizing cord on both sides, instructional signage	Guarantee 180-degree hot water rinse; temperature-sensitive tape used weekly; Firefly tested monthly
B	1505	Tunnel washer	Emergency “off” button; instructional signage	Guarantee 180-degree hot water rinse; temperature-sensitive tape used weekly; Firefly tested monthly
B	1505	Rack washer	Emergency “off” button; lock-out key; labeled exit door, de-energizing cord on both sides, instructional signage	Guarantee 180-degree hot water rinse; temperature-sensitive tape used weekly; Firefly tested monthly
B	1505	Bottle washer	Emergency “off” button	Guarantee 180-degree hot water rinse; temperature-sensitive tape used weekly; Firefly tested monthly
A	1354/ 1350	Autoclave	Emergency “off” button	Steam sterilization; Integrator, monthly
B	1509	Autoclave	Emergency “off” button	Steam sterilization; Integrator, monthly
B	1514	Autoclave	Emergency “off” button	Steam sterilization; Integrator, monthly

[Create additional rows by pressing TAB in the bottom-right box.]

Appendix 16: Lighting Summary

Using the Table below, summarize the lighting system(s) for the animal housing facility(ies). For each species or holding room type, list light intensity (range), construction features (e.g., water resistance), photoperiod (light:dark) and control (e.g., automatic versus manual, phasing). For systems automatically controlling photoperiod, describe override mechanisms (including alarms, if applicable).

Location: **Building A**					
Room Type[a]	**Light Intensity Range**	**Lighting Fixture Construction Features**[b]	**Photo-period** (hrs)[c]	**Photoperiod and Lighting Control**	**Override Mechanisms** (if applicable)
Rats	Top of rack: 21 → 13 Bottom of rack 10 → 3	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12 or 14:10		
Mice	Top of rack: 33 → 26 Bottom of rack: 17 → 5	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12 or 14:10		
Rabbits	Top of rack: 60 → 24 Bottom of rack: 3 → 12	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12		
Chinchillas	Top of rack: 50 → 20 Bottom of rack: 24 → 4	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12		
Pigs	Top of rack: 75.8 Bottom of rack: 75.8	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12		
Guinea pigs	Top of rack: 9 Bottom of rack: 6 → 4	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12		
Location: Building B					
Rats	Top of rack: 21 → 13 Bottom of rack: 10 → 3	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12 or 14:10		
Mice	Top of rack: 33 → 26 Bottom of rack: 17 → 5	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12 or 14:10		
Rabbits	Top of rack: 60 → 24 Bottom of rack: 3 → 12	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12		
Chinchillas	Top of rack: 50 → 20 Bottom of rack 24 → 4	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12		
Pigs	Top of rack: 75.8 Bottom of rack: 75.8	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12		

Guinea pigs	Top of rack: 9 Bottom of rack: 6 → 4	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12		
Location: Building C					
Rats	Top of rack: 21 → 13 Bottom of rack: 10 → 3	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12		
Mice	Top of rack: 33 → 26 Bottom of rack: 17 → 5	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12		
Rabbits	Top of rack: 60 → 24 Bottom of rack: 3 → 12	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12		
Chinchillas	Top of rack: 50 → 20 Bottom of rack: 24 → 4	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12		
Pigs	Top of rack: 75.8 Bottom of rack: 75.8	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12		
Guinea Pigs	Top of rack: 9 Bottom of rack 6 → 4	Ceiling-mounted, sealed fluorescent fixtures controlled by automatic timers provide lighting. All fixtures are waterproof. Light cycles are 12:12 hour light:dark	12:12		

[(a)] A list of each room is not needed; group or cluster rooms by species or function
[(b)] Include such features as water resistance, red lighting, *etc*.
[(c)] Note if light cycle inverted/reversed.

Repeat Location and Table as necessary for each location, including satellite housing locations.

Appendix 17: Satellite Housing Facilities

Note: In the Program Description Section 2. IV. (Physical Plant), item C., describe the criteria used to determine a "Satellite Animal Holding Area." In the Table below, summarize these animal housing areas. Note that the total square footage for all each of these must also be included in the Summary of Animal Housing and Support Sites **(Appendix 2)**, and applicable information regarding these areas included in the Heating, Ventilation, and Air Conditioning (HVAC) Summary (**Appendix 11**) and Lighting Systems Summary (**Appendix 16**).

Building	Room(s)	Person Responsible	Species Used	Approximate Area (ft^2 or m^2) Devoted to Housing	Maximum Period of Stay	Purpose / Rationale / Justification	Construction Features and Finishes
THERE ARE NO SATELLITE HOUSING FACILITIES AT THE SIU SOM							

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Appendix 18: Biological Hazards

(Used in active LACUC protocols as of 7/5/18)

Hazard	PI Name	LACUC Protocol Number	ICSC Approval Agency Protocol Number
17b-estradiol	Cao	194-09-013	09-174
231TLR4-	Ran	187-14-007	03-086
231TLR4+	Ran	187-17-007	03-086
AAV	Caspary	41-15-011	16-307
AAV . . . mCherry	Caspary	41-15-011	16-307
AAVCaMKIIaChR2 (H134R) eYFP	Caspary	41-15-011	16-307
Acinetobacter baumannii (ATCC BAA-1795)	Neumeister	158-16-005	17-309
Cell Lines: RAO-3 rab8 shRNA-1 RAO-3 rab8 shRNA-2 RAO-3 rab11 shRNA-1 RAO-3 rab11 shRNA-2 RAO-3 pMSCV PIG RAO-4 rab8 shRNA-1 RAO-4 rab8 shRNA=2 RAO-4 rab11 shRNA-1 RAO-4-pMSCV PIG MDA-MB-231 rab8 MDA-MB-231 rab11 MDA-MB-231 pMSCV PIG MDA-MB-468 rab8 MDA-MB-468 rab11 MDA-MB-468 pMSCV PIG	Rao	186-10-016	10-204

Hazard	PI Name	LACUC Protocol Number	ICSC Approval Agency Protocol Number
Cell Lines: HMEC-2.6 (parent line) HMEC-2.6 iLentiGFP HMEC-2.6 rab25 shRNA HMEC-2.6 rab25 shRNA/ras 61L HMEC-2.6 rab 25 shRNA/pCTV3 HMEC-2.6 iLentiGFP/pCTV3 HMEC-5.6 (parent line) HMEC-5.6 iLentiGFP HMEC-5.6 rab25 shRNA HMEC-5.6 rab25 shRNA/ras 71L HMEC-5.6 rab25 shRNA/ pCTV3 HMEC-5.6 iLentiGFP/pCTV3 HMEC-2.6 rab25 shRNA/ras HMEC-2.6 rab25 shRNA/ras V12G HMEC-2.6 rab25 shRNA/pBAB hygro HMEC-2.6 rab25 shRNA/pLXSH HMEC-5.6 rab25 shRNA/ras HMEC-5.6 rab25 shRNA/ras V12G HMEC-5.6 rab 25 shRNA/erbB2 HMEC-5.6 rab25 shRNA/pBAB hygro HMEC-5.6 rab25 shRNA/pLXSH HMEC-5.6 iLentiGFP/pBABE hygro HMEC-5.6 iLentiGFP/pLXSH HMEC-5.6 rab25 shRNA/PWZL HMEC-5.6 rab25 shRNA/IGF1R HMEC-2.6 rab25 shRNA/PWZL HMEC-2.6 rab25 shRNA/IGF1R	Rao	186-09-028	03-084
Cop GFP control (h) Lentiviral Particles	Yuan	216-14-022	15-283

Hazard	PI Name	LACUC Protocol Number	ICSC Approval Agency Protocol Number
Diphtheria Toxin	Cox	218-13-006 218-15-009	15-292
DU145-shCon-Luc	Yuan	216-14-022	15-283
DU145-shNRIP1-Luc	Yuan	216-14-022	15-283
DU145-shPCSK9-Luc	Yuan	216-14-022	15-283
Escherichia coli (ATCC BAA-2523)	Neumeister	158-16-005	17-309
HCC1806TLR4-	Ran	187-14-007	03-086
HCC1806TLR4- cells	Ran	187-10-019	03-086
HCC1806TLR4+	Ran	187-10-019	03-086
HCC1806TLR4+ cells	Ran	187-10-019	03-086
Human Cell Lines: Human ADSC Human SVF	Mailey	229-15-017	16-297
Human Cell Lines: Human LGR5+ stem cells Human LGR6+ stem cells	Neumeister	158-14-019	12-231
Human Cell Lines: MDA-MB-231 LXSP Rab25/pENTR-H1-T0 MDA-MB-231 LXSP Rab25/ pENTR-H1-T0 R1N1 MDA-MB-231 LXSP/ pENTR-H1-T0 MDA-MB-231 LXSP/ pENTR-H1-T0 R1N1	Rao	186-10-015	03-084
Human LGR 5 cells	Neumeister	158-13-026	12-231
Human LGR5, Human LGR6, and Adipose Derived Stem Cells (human skin)	Neumeister	158-13-026	12-232
Human LGR6 cells	Neumeister	158-13-026	12-231
Human M-LECP	Ran	187-14-007	13-254
Human Skin	Neumeister	158-15-008	12-232
Human Tumor Cell Lines	Nie	195-13-002, 195-16-011	16-306
LNCaP/lncRNA6083	Cao	194-09-013	16-303

Hazard	PI Name	LACUC Protocol Number	ICSC Approval Agency Protocol Number
LNCaP/Vector	Cao	194-09-013	16-303
LNCaP-shCon-Luc	Yuan	216-14-022	15-283
LNCaP/PCSK9-Luc	Yuan	216-14-0922	15-283
MCF-7/AKR1B10	Cao	194-09-013	09-174
MCF-7/IncRNA6083	Cao	194-09-013	16-303
MCF-7/Vector	Cao	194-09-013	09-174
MCF7-shCon-Luc	Yuan	216-14-022	15-283
MCF7-shNRIP1-Luc	Yuan	216-14-022	15-283
MCF7-shPCSK9-Luc	Yuan	216-14-022	15-283
MDA-MB-231/AKR1B10	Cao	194-09-013	09-174
MDA-MB-231/PIMART1	Cao	194-09-013	16-303
MDA-MB-231/Vector	Cao	194-09-013	09-174
MDA-MB-231-shCon-Luc	Yuan	216-14-022	15-283
MDA-MB-231-shNRIP1-Luc	Yuan	216-14-022	15-283
MDA-MB-231-shPCSK9-Luc	Yuan	216-14-022	15-283
MDA-MB231TLR4- cells	Ran	187-10-019	03-086
MDA-MB-231TLR4+ cells	Ran	187-10-019	03-086
MDA-MB-231, UMSCC 10b, UMSCC15s, OVCAR-3	Ramkumar	129-15-012	04-094
Methicillin Resistant Staphyloccoccus Aureus (ATCC BAA-1696)	Neumeister	158-16-005	17-309
Mouse fecal bacteria	Cao	194-10-008	16-305
Pseudomonas aeruginosa (ATCC BAA-2108)	Neumeister	158-16-005	17-309
shNRIP1 Lentiviral Particles	Yuan	216-14-022	15-283
shPCSK9 Lentiviral Particles Active	Yuan	216-14-022	15-283
UMSCC 10b, UMSCC 15s, OVCAR-3	Rybak	23-15-014	15-293
Vancomycin Resistant Enterococci (ATCC 700221)	Neumeister	158-16-005	17-309
ZR-75-RLuc	Ran	187-14-007	03-086

Appendix 19: Chemical Hazards

(Used in active LACUC protocols as of 7/5/18)

Hazard	PI Name	LACUC Protocol Number	ICSC Approval Agency Protocol Number
12-O-tetradecanoylphorbol 13-acetate	Yuan	216-14-022	15-288
17-PA	Faingold	5-07-006	14-279
2-methl-5-HT	Faingold	5-07-006	10-204.5
5-bromo-2-deoxyuridine (BrdU)	Bartke Cox Cox Cox Cao	178-03-024 218-15-009 218-13-003 218-13-006 194-10-008	18-321 15-292 15-292 15-292 11-208
5-iodotubericidin (ITU)	Faingold	5-07-006	12-236
7, 12-Dimethylbenz(a)anthracen	Yuan	216-14-022	13-250
8-OH-DPAT	Faingold	5-07-006	10-204.5
Ampicillin	Cao	194-10-008	16-305
AS-19	Faingold	5-07-006	10-204.5
B11	Cao	194-09-013	11-213
B7	Cao	194-09-013	11-213
B8	Cao	194-09-013	11-213
Bicuculline Methiodide	Faingold	5-07-006	14-279
Bleomycin	Neumeister	158-14-020	15-285
Buspirone	Faingold	5-07-006	10-204.5
BW723C86	Faingold	5-07-006	10-204.5
Caffeine	Faingold Ramkumar	5-07-006 129-15-012	13-258 02-048

Hazard	PI Name	LACUC Protocol Number	ICSC Approval Agency Protocol Number
Capsaicin	Mukherjea Ramkumar Rybak	230-15-018 129-15-012 23-15-014	15-293 02-048 15-293
Cisplatin	Ramkumar Rybak	129-15-012 23-15-014	02-048 15-293
CP-93,129	Faingold	5-07-006	13-258
CP-93,129	Faingold	5-07-006	10-204.5
CX929	Faingold	5-07-006	13-258
Cyproheptadine	Faingold	5-07-006	13-258
Dextran sulfate sodium (DSS)	Cao	194-10-008	10-192
Doxycycline	Cox Cox Nie Nie Rao Yuan	218-15-010 218-13-006 195-16-011 195-13-002 186-09-018 216-14-024	18-292 15-292 10-193 10-193 12-234 13-259
Fenfluramine HCL	Faingold	5-07-006	13-258
Finasteride	Faingold	5-07-006	14-2709
Formaldehyde	Cox Faingold	218-13-006 5-07-006	15-292 05-106
Istradefylline	Faingold	5-07-006	14-279
Ketanserin	Faingold	5-07-006	12-236
Mecamylamine	Caspary	41-15-011	14-274
Methylsergide Maleate	Faingold	5-07-006	13-258
MnCl2	Bauer	149-15-015	03-077
mPD	Hascup	219-13-012	14-264
nab-paclitaxel	Ran	187-10-019 187-14-007	14-266
Neomycin	Cao	194-10-008	16-305

Hazard	PI Name	LACUC Protocol Number	ICSC Approval Agency Protocol Number
Ondansetron	Faingold	5-07-006	10-204.5
Paraformaldehyde	Caspary	41-15-011	02-056
Paroxetine	Faingold	5-07-006	10-204.5
Physostigmine	Bauer Caspary	149-15-015 41-15-011	14-274 14-274
Pilocarpine	Faingold	5-07-006	16-300
Progresterone	Faingold	5-07-006	14-279
Riluzole	Hascup	219-13-012	16-298
RITA	Cao	194-09-013	13-257
RO 60-0175	Faingold	5-07-006	10-204.5
Sarpogrelate	Faingold	5-07-006	10-204.5
SB 204070	Faingold	5-07-006	10-204.5
SB 206553	Faingold	5-07-006	10-204.5
SB 224289	Faingold	5-07-006	10-204.5
Scopolamine	Caspary	41-15-011	14-274
SPM-0010	Bauer	149-15-015	16-301
SPM-0014	Bauer	149-15-015	16-301
SPM-0028	Bauer	149-15-015	16-301
SPM-0029	Bauer	149-15-015	16-301
SPM—0030	Bauer	149-15-015	16-301
SR 57227	Faingold	5-07-006	14-279
STZ	Cao	194-10-008	16-305
Tamoxifen	Cox Cox Cox Cox Tischkau Yuan	218-13-003 218-13-006 218-15-009 218-15-010 200-11-001 216-14-024	15-292 15-292 15-292 18-292 17-310 13-250

Hazard	PI Name	LACUC Protocol Number	ICSC Approval Agency Protocol Number
Theophylline	Faingold	5-07-006	13-258
Transplatin	Mukherjea Ramkumar	230-15-018 129-15-012	15-293 02-048
Urethane	Caspary Hascup	41-15-011 219-13-012	02-056 13-252
Venlafaxine	Faingold	5-07-006	10-204.5
WAY 100635	Faingold	5-07-006	10-204.5
Zacopride	Faingold	5-07-006	10-204.5

Appendix 20: Physical Hazards

(Used in active LACUC protocols as of 7/5/18)

Hazard	PI Name	LACUC Protocol Number	RCC Approval Agency Protocol Number
Ionizing Radiation—PIXImus (X-ray radiation)	Yuan	216-14-024	052115RY-008X
Ionizing Radiation—Radiation	Mailey Ran Ran Rao Rao Rao	2129-15-017 187-13-020 187-14-007 186-10-015 186-10-016 186-09-028	101515 BM-011X 071912SR-001 071912SR-001 011713KR-004X 011713KR-004X 01173KR-004X
Radioactive Isotope—14C-Acetic acid	Cao	194-10-008	09-19-11DC-081
Radioactive Isotope—14C-Butyric acid	Cao	194-10-008	09-19-11DC-081
Radioactive Isotope—14C-Oleic acid	Cao	194-10-008	09-19-11DC-081