



Laboratory Animal Medical Services
University of Cincinnati



November 26, 2018

Gary L. Borkowski, DVM, MS
Global Director
AAALAC International
5205 Chairman's Court, Suite 300
Frederick, MD 21703

Subject: File Number [REDACTED] Program Description Submission

Dear Dr. Borkowski,

On behalf of the University of Cincinnati's Animal Care and Use Program, please accept this application for continued accreditation which includes the program description and associated appendices. We request, if possible, that your site visit team not enter rodent facilities 48 hours prior to visiting our facility. Regarding inconvenient dates, the University is closed January 1 and January 21, 2019. Additionally, our Institutional Official will be unavailable March 18, 2019 through March 22, 2019. We look forward to hearing from you regarding our upcoming site visit.

Sincerely,



Joanne Tetens-Woodring, DVM, MS, PhD, DACVS, DACLAM
Director of LAMS and Attending Veterinarian



cc: Jane Strasser, PhD (Institutional Official)
George Babcock, PhD (IACUC Chair)
David Custer, AAS (Interim Director, Animal Regulatory Compliance)

**Program Description
Animal Care and Use Program**

**Program Unit Name – University of Cincinnati
Unit # [REDACTED]**

**University of Cincinnati
[REDACTED]
Cincinnati, OH 45221-0572**

November 26, 2018

**For
AAALAC International**

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Program Description

Instructions for Completing and Submitting the Program Description for the Institutional Animal Care and Use Program

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.

[Redacted text area for Section A]

- 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.

UC Mission Statement: “The University of Cincinnati serves the people of Ohio, the nation, and the world as a premier, public, urban research university dedicated to undergraduate, graduate, and professional education, experience-based learning, and research. We are committed to excellence and diversity in our students, faculty, staff, and all of our activities. We provide an inclusive environment where innovation and freedom of intellectual inquiry flourish. Through scholarship, service, partnerships, and leadership, we create opportunity, develop educated and engaged citizens, enhance the economy, and enrich our University, city, state and global community.”

The UC, Ohio’s premier urban research university, traces its origins to 1819. In that year both Cincinnati College and the Medical College of Ohio were chartered. Since that time, UC has been the source of many discoveries creating positive change for society, including many firsts: program of cooperative education, electronic organ, heart-lung machine, medical laser lab, oral polio vaccine, and antihistamine (Benadryl®). UC is classified as a Research University (Very High Research Activity) by the Carnegie Commission, and is ranked as one of America’s top 25 public research universities by the National Science Foundation. UC has a total enrollment of more than 44,000 students and has been named “Among the top tier of the Best National Universities” according to US News & World Report. UC has an economic impact of more than \$4 billion. The animal care and use program is an integral part of UC’s research and teaching goals.

- 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.

Primary Standard: *Guide for the Care and Use of Laboratory Animals*, 8th Ed. (NRC, 2011)
Other Regulations and Guidelines: PHS Policy and the Animal Welfare Act (AWA) and Animal Welfare Regulations (AWR).

- 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.

Appendix 4 contains the organizational chart for the overall UC Animal Care and Use Program (ACUP). The IACUC, Laboratory Animal Medical Services (LAMS), IACUC Office, and Safety Committees and Offices (excluding Chemical Hygiene and Occupational Health and Safety [OHS]) are within the Office of Research and report to the Associate Vice President for Research who is the appointed Institutional Official (IO). The Chemical Hygiene Program operates under the auspices of Environmental Health and Safety (EH&S) and report to the Senior Vice President for Administration and Finance. The Occupational Health and Safety Program (OHSP) is administered by University Health Services (UHS) and is part of the Department of Family and Community Medicine within the College of Medicine (COM).

- 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.

- Jane E. Strasser, PhD: IO, Associate Vice President (Office of Research)
- George F. Babcock, PhD: IACUC Chair, Professor Emeritus (Surgery)
- Joanne Tetens-Woodring, DVM, MS, PhD, DACVS, DACLAM: Attending Veterinarian (AV) & Director (LAMS)
- Umamaheswararao Jonnalagadda, DVM, MS, PhD, DACLAM: Assistant Director, Veterinary Services (LAMS)
- Michele Boerkoel, BS, Laboratory Animal Technologist (LATG), Institute for Laboratory Animal Management (ILAM) Graduate: Assistant Director, Vivarium Operations (LAMS)
- Charles Jeff Williams, MS, Certified Manager of Animal Resources (CMAR): Vivarium Operations Manager (LAMS)
- Timothy Baechle, Laboratory Animal Technician (LAT): Manager, Laboratory Facility II (LAMS)
- Michael Brandon Lay, BS, LATG: Manager, Laboratory Facility I (LAMS)
- Kimberly Richardson, BS, LATG: Vivarium Coordinator (LAMS)
- Holly Stallkamp, Registered Veterinary Technician (RVT), LATG, Surgical Research Technician (SRT), Veterinary Technician Specialist (VTS), Veterinary Nurse Specialist Laboratory Animal Medicine (VNS-LAM): Laboratory Animal Supervisor II (LAMS)
- David A. Custer, AAS, Certified Professional in IACUC Administration (CPIA), LATG: Interim Director (Animal Regulatory Compliance)
- Nathalie Conway-James, BS, LATG, CPIA: Assistant Director, Animal Regulatory Compliance (Animal Regulatory Compliance)
- Ken L. Bloomer, BSMET, Certified Energy Manager (CEM): Executive Director (Facilities Management)
- Victoria W Wulsin, MD: Adjunct Professor (UHS)
- Jan-Arthur Utrecht, MS, Certified Industrial Hygienist (CIH): Director (EH&S)
- Theodore Hunt, BS: Animal Program Chemical Safety Officer (LAMS)
- Marcia Espinola, DVM, MS, Certified Biological Safety Professional (CBSP): Director, Biosafety Office (BSOf)
- Gary E. Dean, PhD: Institutional Biosafety Committee (IBC) Chair, Associate Professor Emeritus (Molecular Genetics)
- Terry Lindley, MS: Director, Radiation Safety Office (RSOf)
- Lisa C. Lemen, PhD: Radiation Safety Committee Chair
- Richard A. Puff, BS: Assistant Vice President (Public Relations)
- Kyle E. Hern, JD: Associate General Counsel

- 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. Please complete **Appendix 5** (Animal Usage) or provide the information requested in a similar format as an Appendix.

UC supports a diverse spectrum of research involving animals covered in 172 IACUC protocols under 143 Principal Investigators (PIs). Areas of study include biomedical research (e.g., cancer, diabetes, infectious disease, obesity, sepsis/trauma, stress), basic sciences (e.g., auditory function, locomotion, speciation), biomedical engineering (e.g., cardiovascular repair, nanostructures), and environmental health issues (e.g., environmental toxins). In addition, UC supports teaching endeavors through the American Veterinary Medical Association (AVMA)-accredited [REDACTED] Veterinary Technology Program (VTP). See **Appendix 5** for more information.

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

UC receives external funds from a variety of federal and private agencies including: National Institutes of Health, National Institute for Occupational Safety and Health, Department of Defense, American Heart Association, American Cancer Society, American Diabetes Association, and the National Science Foundation. Other agencies include: Burroughs Wellcome Fund, Department of the Air Force, Air Force Research Laboratory, Department of Army United States Medical Research Acquisition Activity, Department of the Army, Food and Drug Administration, Shriner's Hospitals for Children Cincinnati, and the Department of Veterans Affairs.

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.

None.

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.

None.

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

The Veterans Affairs Medical Center, Environmental Protection Agency, and Cincinnati's Children's Hospital Medical Center are in close proximity to the UC but are separate institutions with their own AAALAC accreditations and ACUPs.

UC has a collaborative agreement with a local humane society in which shelter animals are provided clinical care including spays, neuters, and vaccinations [REDACTED]. The humane society maintains ownership of the animals at all times as described in an official memorandum of understanding (MOU).

An on-campus Audiology Clinic in the Facility for Education and Testing of Canine Hearing and Laboratory for Animal Bioacoustics [REDACTED] provides hearing assessments to client-owned animals. Owners are advised of potential risks associated with this service.

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 meets with the AV independently and the AV and IACUC Chair monthly. In addition, the IO meets informally with LAMS, IACUC Office, and/or IACUC Chair as needed. The IO attends monthly IACUC meetings whenever possible and receives copies of all IACUC meeting minutes. The IO is electronically copied on all approval letters and has access to all IACUC protocols. The IACUC report of semiannual inspection and program review is submitted to the IO on behalf of the IACUC along with inspection documents identifying minor and major deficiencies and corrective actions taken. In addition, letters to researchers regarding significant non-compliance issues are submitted to the IO.

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.

- (1) Dr. Joanne Tetens-Woodring, AV – Full time; 100% effort supporting the ACUP of UC.
- (2) Dr. Umamaheswararao Jonnalagadda, Assistant Director, Veterinary Services – Full time; 100% effort supporting the ACUP of UC.

The veterinarians have access to all vivaria and satellite facilities that house vertebrate animals. Daily monitoring of animals housed in dedicated vivaria is performed by the LAMS animal care staff and reported to the veterinary staff (RVTs and veterinarians). Daily monitoring of animals housed in satellite facilities is conducted by research personnel with weekly (mammals) or bi-weekly (ectotherms) monitoring provided by LAMS. Incidents such as problems with animal health are promptly reported to the LAMS veterinarians. Responsibilities of the full-time veterinarians include (but are not limited to):

1. Disease detection and surveillance, prevention, diagnosis, treatment, and resolution.
2. Overseeing handling and restraint; administration of anesthetics, sedatives/tranquilizers and analgesics; and methods of euthanasia.
3. Planning and overseeing surgical and postsurgical care.
4. Promoting and monitoring animal's physical and psychological well-being.
5. Overseeing the husbandry program.
6. Reviewing and approving animal care and use.
7. Overseeing training of institutional staff in the care and use of laboratory animals.
8. Monitoring for zoonotic diseases.
9. Advising safety offices on monitoring of biological and chemical hazards related to animal care and use.
10. Assisting EH&S/UHS in establishing and/or monitoring the OHSP relevant to animal care and use.

- 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.

LAMS STAFF

Holly Stallkamp, RVT, LATG, SRT: Veterinary Technician Supervisor/Training Coordinator: Coordinate, oversee, and perform duties as assigned by LAMS veterinarians including but not limited to: (1) animal care - rodent health monitoring/treatment/euthanasia, large animal anesthesia/surgical support/post-operative monitoring/euthanasia, researcher training, documentation, post-approval monitoring; (2) training - LAMS employees and research personnel; and (3) quality assurance - provides backup assistance for rodent import/export/quarantine and health surveillance program.

Steve Ribar, BS, LATG: Import/Export Coordinator & Quality Assurance (QA) Technician Specialist: (1) manage rodent import/export/quarantine and health surveillance program and (2) other duties as assigned by LAMS veterinarians.

Katherine Haskell, RVT, LAT; **Carissa Lester**, RVT, LATG; **Liz Roselle**, RVT, LATG; **Shandra Wombles**, RVT, LAT: Perform and oversee duties as assigned by the LAMS Veterinary Technician Supervisor and veterinarians including but not limited to: (1) animal care - rodent health monitoring/treatment/euthanasia, large animal anesthesia/surgical support/post-operative monitoring/treatment/euthanasia; (2) training - LAMS employees and research personnel; (3) documentation; and (4) post-approval monitoring.

CENTER FOR SURGICAL INNOVATION (████ STAFF

Judy Heyl, BA, RVT, Senior Research Assistant: Oversee and coordinate activities for UC's █████ including but not limited to: large animal anesthesia/surgical support/euthanasia, researcher training, and documentation.

████ VTP STAFF

Jennifer Wells, DVM, Department Chair and PI: Serves as PI and is a member of the UC IACUC. Organize and oversee all animal-related activities in the █████ VTP - schedule and monitor animal use; oversee and participate in health care of animals including but not limited to the following: physical exam, disease diagnosis and treatment, weekend veterinary care; participates in animal teaching labs including restraint, venipuncture, anesthesia, surgery, and dentistry techniques.

Stacey Benton, DVM, Assistant Professor: Participate in health care of animals including but not limited to the following: physical exam, disease diagnosis and treatment; participates in animal teaching labs including restraint, venipuncture, anesthesia, surgery, and dentistry techniques.

Lois Abbott, RVT, LATG, College Laboratory Manager of Veterinary Technology; **Kimberly Myers**, BS, RVT, Professor; **Kelly Vearil**, RVT, VTS (Dentistry), Sr. Lab Associate; **Sarah Charles**, RVT, Lab Associate: Participate in health care of animals including but not limited to the following: medication administration, disease treatment, weekend veterinary care; participates in animal teaching labs including restraint, venipuncture, anesthesia, and dentistry techniques.

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.

Collaborations with institutions having PHS assurance: For collaborations involving institutions that have their own PHS assurance, UC's IACUC defers review to the site where the work is performed. UC Sponsored Research Services and the IACUC Office verify that the collaborating institution has a federal-wide assurance

and that the relevant research is approved by the collaborating institution's IACUC. Ownership of the animals falls to the institution where the work is performed.

Collaborations involving institutions without a PHS assurance: For collaborations involving institutions lacking PHS assurance, a contract or MOU is established detailing regulatory oversight, responsibility, and mitigation of issues. Regulatory and/or veterinary site visits may be performed at the discretion of UC's IACUC and/or veterinary staff. Ownership of the animals falls to the institution where the work is performed.

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 IACUC's mandatory training program (in-person regulatory, online modules, in-person vivarium orientation and animal hands-on skills assessment) provides instruction to research team members and animal care personnel whose job responsibilities require handling animals. The training program is updated as necessary to reflect current regulatory and best practice standards. Effectiveness of training and knowledge retention is evaluated using proficiency examinations. Each individual's training history and qualifications are documented in an online database.

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.

LAMS STAFF

Joanne Tetens-Woodring, DVM, MS, PhD, DACVS, DACLAM. AV and Director: 26 years' experience in veterinary medicine; 13 years' experience in laboratory animal medicine; 10 years' experience serving as AV and Director; USDA-accredited; AAALAC ad hoc Specialist. Continuing education – 2018 Public Responsibility in Medicine & Research (PRIM&R) IACUC Conference; 2017 PRIM&R IACUC Conference; 2017 Communicating for Leadership Success UC; 2016 Labor Management Committee Training; 2016 District 5 AALAS; 2016 Charles River Lecture at UC; 2015 Situational Leadership Training UC; 2015 Scientists Center for Animal Welfare (SCAW); Journal review (e.g., Comparative Medicine, JAALAS); Web-based/online trainings (e.g., National Association for

Biomedical Research [NABR]); LAMS continuing education (CE) classes and wet labs; and UC EH&S/IACUC/OHS online trainings.

Umamaheswararao Jonnalagadda, DVM, MS, PhD, DACLAM. Assistant Director, Veterinary Services: 17 years' experience in veterinary medicine; 13 years' experience in laboratory animal medicine with 3 years' serving as Assistant University Veterinarian and 1.5 year serving as AV (Cincinnati VA Medical Center). Continuing education – 2018 and 2016 National AALAS; 2016 District 5 AALAS; 2017 and 2016 Charles River Lecture at UC; 2015 and 2014 ACLAM forum; 2013-2015 Frontiers in Veterinary Medicine Seminar Series (College of Veterinary Medicine, University of Calgary); CALAS Bow River Chapter Seminars; Journal review (e.g., Comparative Medicine, JAALAS); Web-based/online trainings (e.g., BioConference Laboratory Animal Sciences 2014 and 2015, JAX labs); LAMS CE classes and wet labs; and UC EH&S/IACUC/OHS online trainings.

Holly Stallkamp, AAS in Veterinary Technology, RVT, LATG, SRT, VTS/VNS-LAM. Veterinary Technician Supervisor/Training Coordinator: 23 years' experience in veterinary medicine with 14 years' experience in laboratory animal medicine/surgery. Continuing education – 2017 and 2016 District 5 AALAS; 2017 and 2016 Charles River Lecture at UC; 2017 and 2015 Situational Leadership Training UC; 2015 National AALAS; local AALAS meetings and lectures; Web-based/online trainings (e.g., LabRoots, Vet Med); LAMS CE classes and wet labs; and UC EH&S/IACUC/OHS online trainings.

Steve Ribar, BS, LATG. Import/Export Coordinator & Quality Assurance Specialist: 20 years' experience in laboratory animal medicine; oversees rodent import/export/quarantine. Continuing education – 2017 National AALAS; 2016 District 5 AALAS; 2017 and 2016 Charles River Lecture at UC; 2013 National AALAS; local AALAS meetings and lectures; Web-based/online trainings (e.g., PRIM&R); LAMS CE classes and wet labs; and UC EH&S/IACUC/OHS online trainings.

Katherine Haskell, AAS in Veterinary Technology, RVT, LAT: 9 years' animal experience with 4.5 years' experience in laboratory animal medicine/surgery (3.5 years in a surgical research setting). Continuing education – 2015-2017 Kentucky Veterinary Technician Association Spring Conference; 2016 Kentucky Veterinary Medical Association Conference; LAMS CE classes and wet labs; and UC EH&S/IACUC/OHS online trainings.

Carissa Lester, AAS in Veterinary Technology, RVT, LATG: 17 years' animal experience with 9 years focusing on laboratory animal medicine/surgery. Continuing education – 2017 National AALAS; 2016 District 5 AALAS; 2017 and 2016 Charles River Lecture at UC; 2015 SCAW; LAMS CE classes & wetlabs; local AALAS meetings and lectures; Web-based/Online training (e.g., VetBioTech, Veterinary Bioscience Institute, LabCat demo, LabRoots); UC EH&S/IACUC/OHS online trainings.

Liz Roselle, AAS in Veterinary Technology, RVT, LATG: 12 years' experience in veterinary medicine with 10 years' experience in laboratory animal medicine/surgery. Continuing education – 2017 Charles River Short Course; 2017 and 2016 Charles River Lecture at UC; 2016, 2015, and 2013 District 5 AALAS; local AALAS meetings and lectures; Web-based/online trainings (PRIM&R, Veterinary Bioscience Institute, LabRoots, AALAS); Ethicon Endosurgery

lectures; Ohio Veterinary Medical Association lectures; LAMS CE classes and wet labs; and UC EH&S/IACUC/OHS online trainings.

Shandra Wombles, AAS in Veterinary Technology, RVT: 8 years' experience in veterinary medicine with over 2 years' experience in laboratory animal medicine/surgery. Continuing education – 2017 & 2016 District 5 AALAS; 2017 and 2016 Charles River Lecture at UC; Web-based/online trainings (e.g., LabRoots); LAMS CE classes and wet labs; and UC EH&S/IACUC/OHS online trainings.

STAFF

Judy Heyl, BA, RVT. Senior Research Assistant: 13 years' experience in veterinary private practice and over 20 years' experience as a veterinary technician in a large animal surgical research and teaching setting. Continuing education: attends local and regional training; UC EH&S/IACUC/OHS online trainings.

VTP STAFF

Jennifer Wells, DVM. Department Chair: Over 25 years' veterinary experience in small animal, large animal and laboratory animal medicine; serves as PI; member of UC's IACUC. Continuing education – 2015 SCAW; Sophia Yin Behavior Seminar; Midwest Veterinary Conference; Association of Veterinary Technician Educators (AVTE) Symposium; Cincinnati Veterinary Medical Association (CVMA) Scientific meetings; UC EH&S/IACUC/OHS online trainings.

Stacey Benton, DVM. Assistant Professor, Assistant Program Director: Over 27 years' experience working with animals including reptiles (zoo) and songbirds (research); 16 years' experience as a practicing veterinarian (small animal general); 8 years' experience in traditional Chinese veterinary medicine (TCVM) for small animals (including acupuncture, Chinese herbs, Tui-Na, and food therapy). Continuing education: AVTE Symposium; Tui-Na Chinese Medical Manipulation certification course; TCVM Food Therapy certification course; Sophia Yin Behavior Seminar; Midwest Veterinary Conference; MedVet (Veterinary Specialty Hospital) CE events; IDEXX online CE courses; teaching workshops; UC EH&S/IACUC/OHS online training.

Lois Abbott, RVT, LATG. College Laboratory Manager of Veterinary Technology: Over 35 years' experience in veterinary medicine with 9 years' full-time and 20 years' part-time experience in laboratory animal medicine. 19 years' experience in veterinary education. 25 years' experience in veterinary internal medicine and oncology. Continuing education – Cincinnati Veterinary Technician Association (CVTA); 2017, 2015, 2013 and 2011 AVTE Bi-Annual Symposium; 2014 Sophia Yin Behavior Seminar; Midwest Veterinary Conference; UC EH&S/IACUC/OHS online trainings; Care Center (Veterinary Specialty Hospital) Lunch and Learns; pursuing Bachelors and Technical degree in Applied Administration at UCBA; enrolled in UC's Management Academy.

Sarah Charles, RVT: Over 20 years' experience in veterinary medicine with 13 years' experience in small animal general practice, 3 years' experience as a surgical technician, and 6 years' experience in veterinary education. Continuing education – 2014 Sophia Yin Behavior Seminar; Care Center CE meetings; Web

based/online training; 2013 Biennial AVTE Symposium; UC EH&S/IACUC/OHS online training; pursuing Bachelors and Technical degree in Applied Administration at UCBA.

Kimberly Myers, BS, RVT. Professor: Over 35 years' experience working with a variety of species including dogs, cats, mice, rats, horses, goats, sheep, and cattle. Continuing education - Midwest Veterinary Conference, Discovery Veterinary Conference, CVTA Meetings, UC EH&S/IACUC/OHS online trainings.

Kelly Vearil, AAS in Veterinary Technology, RVT, VTS (Dentistry): Over 20 years' experience with dogs and cats, 13 years' experience with rabbits/exotics/pocket pets, over 10 years' experience with rodents in an academic setting, and 5 years' experience with pigs in a research setting. Continuing education – Veterinary Dental Forum; Midwest Veterinary Conference; UC EH&S/IACUC/OHS online trainings; pursuing Bachelors and Technical degree in Applied Administration at UCBA.

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

1) Indicate the number of animal care personnel.

5 – Lab Animal Aides (LAA)

6 – Lab Animal Technician (LAT) 1

6 – LAT 2

5 – LAT 3

3 – LAT 4

1 – Team Leader Cage Sanitation

Note: LAAs perform cage wash and sanitation duties; LATs perform primarily husbandry duties.

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.

3 LATs have advanced degrees (1-AS, 2-BS), 5 LATs have AALAS certification (4-ALAT, 1-LAT). Greater than half of the animal care personnel have been working in LAMS for over 10 years. Continuing education opportunities: AALAS certification support (LAMS provides testing material, pays for examination fees, and provides a one-time bonus per certification level); local AALAS; Attendance at Local Branch, District and/or National AALAS meetings (typically two LAA or LATs attend District 5 AALAS and one attends National AALAS annually); LAMS CE classes and wet labs; and UC EH&S/IACUC/OHS online trainings.

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.

Initial training: All research personnel and UCBA students enrolled in the VTP that will handle animals in any capacity must attend one of the regularly scheduled IACUC Orientations. The orientation presentation is weighted toward legislative/regulatory and institutional policy content and includes completion of an examination. Additionally, individuals must complete an OHS online module requiring electronic submission of a health assessment form to UHS to receive credit. The health assessment form ensures enrollment in the OHSP. Finally, all research personnel must attend an in-person facility orientation and complete a rodent skills assessment (if experienced) or rodent wet lab (if minimal/no experience).

Triennial retraining: Every three years following the initial in person training, three online training modules must be completed to maintain approval to work with animals. These modules include: Review of IACUC policies, IACUC semiannual inspection process, and OHS which requires electronic submission of a health assessment form to UHS to receive credit.

Assessment of training needs: Registration is required for IACUC Orientation which allows the IACUC Office to assess training needs and assign appropriate online training modules that expand IACUC Orientation. When a researcher is being added to a protocol after completing IACUC Orientation, the IACUC Office assesses the individual's qualifications based on prior experience with the species to be used, procedures to be performed, and any training the person has received (including review of training documents). If the protocol specifies use of a species the individual is not familiar with, the person will not be added to the protocol until the appropriate species-specific training has been completed. A researcher that has completed the rodent species (mouse and rat) online module is deemed qualified to work with rodents. Use of any species other than non-USDA covered rodents requires the researcher to receive hands-on species-specific training from LAMS veterinary staff or their designee.

In addition to the IACUC Office's assessment, the veterinary staff discusses training needs of research staff during the IACUC protocol pre-review process, and may recommend/require additional hands-on training.

Species-specific training: LAMS veterinary staff provides species-specific training for USDA covered species prior to commencement of work when animals are in-house.

Training verification: After the IACUC Office reviews the addition of personnel form and verifies all assigned training requirements have been met, the individual is added to the protocol.

Visitors: Visitors (e.g., visiting scientists, individuals attending one day short courses) are excluded from the training requirements listed above. These individuals must be directly supervised by an IACUC-approved researcher on the protocol.

a) Briefly describe the content of any required training.

IACUC Orientation (in person):

- Regulations, Federal Agencies, and Regulatory Resources
- The Guide for the Care and Use of Laboratory Animals
- AAALAC
- American Veterinary Medical Association (AVMA) Guidelines for Euthanasia
- Veterinary Care (animal welfare and humane practice)
- The 3R's (reduction, refinement, replacement) and literature search requirements
- IACUC Policies
- Roles and responsibilities of the IACUC
- Introduction to LAMS
- Reporting federal regulatory & UC Policy non-compliance

Online training modules: One to four training modules may be assigned depending on the associated animal species and protocol specifications.

Working with Rodents in Research: Introduction: Individuals working with purpose-bred mice and/or rats must complete this module.

- Housing
- Anatomic and physiologic features
- Sex identification
- Handling and restraint techniques
- Common research techniques
 - Routes of administration (e.g. injected, oral)
 - Blood collection
 - Recommended injection and bleeding volumes
- Anesthesia
- Animal health observation and reporting
- Euthanasia

Training in Rodent Survival Surgery: Individuals performing minor or major survival surgery on mice and/or rats must complete this module.

- Regulatory principles
- Recommendations for dedicated surgical space
- Required surgical attire
- Use of aseptic technique
- Sterilization of instruments
- Pre-, intra-, and post-operative procedures
- Maintenance of anesthesia
- Post-operative monitoring and administration of pain relieving drugs
- Surgical records keeping

Review of IACUC Policies:

- IACUC policies related to handling animals

Occupational Health and Safety Program for Animal Handlers:

All individuals (excluding visitors) with animal exposure must complete this module, which requires electronic submission of a confidential health assessment form to UHS to receive credit. This ensures enrollment and proper monitoring of the individual in the OHSP.

- Program overview
- Animal-associated exposure hazards
 - Allergens
 - Bite and scratch prevention
 - Safe handling of sharps and hypodermic needles
- Hazardous exposures
 - Biohazardous materials
 - Chemical agents
 - Environmental/physical hazards
 - Radioactive materials
- Zoonotic diseases
- Protective clothing and equipment
- Controlling anesthetic waste gas exposure
- Reporting illness or injuries

IACUC Semiannual Inspection Process:

- Federal regulatory requirements as basis for IACUC inspections
- IACUC expectations of the research lab
 - Safety in the lab and when handling animals
 - 3-R's, literature search, minimal use of animals
 - Minimizing animal pain and/or distress
 - Reporting non-compliance
 - Anesthesia, surgery, post-surgical care, recordkeeping
 - Controlled substance use (storage, expiration, tracking)
 - Euthanasia
- What to do before an IACUC visit
 - Knowledge of federal regulations and IACUC policies
 - Knowledge of animal best practices (*Guide* & AVMA Guidelines for Euthanasia)
- What to do during an IACUC visit
 - Knowledge of animal use protocol(s) and procedures
 - Communicate with inspectors
- What happens after an IACUC visit
 - Respond as required to any deficiencies
- Deficiency prevention

Rodent Skills Assessment/Wetlab (Mouse/Rat)

- Handling and restraint
- Sex determination
- Teeth trimming (malocclusion)
- Injection techniques (subcutaneous, intraperitoneal)
- Euthanasia techniques and secondary physical method

LAMS Facility Orientation (Mouse/Rat)

- Access and facility/room entry order
- OHS and personal protective equipment (PPE)
- Working in the animal housing room
- Barrier technique (mouse)
- Service requests and room reservations
- Documentation (e.g., cage cards/census management, health reporting, PI-delegated activities)
- LAMS policies/guidelines/procedures (e.g., weaning/separating, overcrowded, transportation)
- Hazardous agents (additional training required)
- Contact information

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

Research personnel must successfully complete all requisite training before they are permitted to work with animals. Visitors are excluded from the training requirements listed above and must be under the direct supervision of an IACUC-approved research team member.

- c) Describe continuing education opportunities offered.**

Continuing education opportunities offered to research personnel include: IACUC required retraining as part of the IACUC protocol triennial review, LAMS-hosted CE classes, local AALAS monthly seminars, online modules and webinars, LAMS hands-on training (upon request), and Foundation for Biomedical Research (FBR) electronic newsletter (upon request). In addition, research personnel review literature and attend meetings/conferences/study sections relevant to their field of interest.

- 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]

When a request is received to add a researcher to a protocol that describes surgical procedures, the IACUC Office assesses the individual's qualifications based on prior experience with the species to be used, surgical procedures to be performed, and any surgical training the person has received (including review of training documents). Individuals performing survival surgery on rodents must complete the online module entitled Training in Rodent Survival Surgery. The PI or a research team member with significant experience in the

surgical technique(s) to be performed may provide training and oversight of research personnel.

If deemed necessary by the IACUC Office or LAMS veterinary staff or the researcher specifically requests training, LAMS veterinary staff (which is overseen by the AV) will provide surgical training and support prior to commencement of work and thereafter as appropriate. Individuals performing survival surgery on USDA covered species are assessed by LAMS veterinary staff to ensure proficiency. In addition, LAMS veterinary staff is present during survival surgical procedures.

All non-survival surgeries conducted at the [REDACTED] are overseen by the [REDACTED] veterinary technician. If any survival surgeries are performed, oversight is provided by both the [REDACTED] and LAMS veterinary technicians. All surgeries conducted under the [REDACTED] VTP are performed by [REDACTED] faculty veterinarians.

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

USDA covered and non-USDA covered rodents: The IACUC Office assesses the individual's qualifications based on prior experience with the species to be used, procedures to be performed, and any anesthesia training the person has received (including review of training documents). Individuals performing anesthesia on rodents must complete the online modules entitled Training in Rodent Survival Surgery and Working with Rodents in Research: Introduction, which contain information on anesthesia. The PI or a research team member with significant experience in anesthesia may provide training and oversight of research personnel to ensure each person performing anesthesia is appropriately trained. LAMS veterinary staff provides anesthesia training and support if deemed necessary by the IACUC Office or the LAMS veterinary staff or the researcher specifically requests it.

Non-rodent, USDA covered species: LAMS veterinary staff administers and monitors anesthesia for all non-rodent USDA covered survival surgeries. For non-survival surgeries, LAMS veterinary staff and/or [REDACTED] RVT performs anesthesia. The IACUC Office assesses the individual's qualifications as described above for rodents. Researchers who have been trained in anesthesia by LAMS veterinary staff and/or [REDACTED] RVT may perform anesthesia for non-survival surgeries while under direct or indirect supervision of LAMS veterinary staff and/or [REDACTED] RVT.

[REDACTED] VTP: All anesthesia training and oversight of students enrolled in the program is directly overseen by [REDACTED] RVTs and/or veterinarians.

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

IACUC Orientation covers the AVMA Guidelines for Euthanasia and institutional policy on euthanasia.

During the preliminary IACUC protocol review process, experience with euthanasia methods to be performed is discussed with the PI or PI designee. LAMS veterinary staff provides euthanasia training to all researchers being added as personnel to an IACUC protocol (component of the rodent skills assessment or rodent wet lab). In addition, LAMS veterinary staff provides supplemental training based upon additional IACUC requirements, researcher request, or if there are concerns regarding an individual's proficiency. In addition, qualified LAMS staff will provide direct assistance when needed to ensure proficiency of personnel conducting euthanasia.

Physical methods online module: The IACUC has an online module entitled Physical Euthanasia Methods Awareness for Rodents that is required for any researcher performing euthanasia via a physical method on a conscious rodent. The PI has the primary responsibility for providing hands-on training and ensuring proficiency for their researchers performing physical methods of euthanasia. Either the PI or a researcher with demonstrable experience in physical methods of euthanasia conducted on conscious animals (endorsed trainer) may provide training and oversight of research personnel within their laboratory to ensure each person performing the physical method of euthanasia is appropriately trained. The IACUC Office maintains a spreadsheet of IACUC-approved protocols containing physical methods of euthanasia, endorsed trainers, and documentation of completion of the online module. In addition, LAMS veterinary staff provides training/retraining upon researcher request, IACUC requirements, or if concerns are expressed regarding an individual's proficiency with the technique.

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).

EH&S reports to the Senior Vice President for Administration and Finance. EH&S (Industrial Hygienist II) conducts respirator fit testing following respiratory clearance from UHS physicians. UHS reports through the Department of Family and Community Medicine (COM). UHS physicians review OHS questionnaires submitted by personnel being added to IACUC protocols. The BSO, IBC, RSO, Radiation Safety Committee (RSC), chemical/physical safety for animal studies, LAMS, IACUC, and IACUC Office fall under the auspices of the Associate Vice President for Research. All IACUC protocols that utilize hazardous materials (biological, chemical, physical, radiological) are reviewed by the safety officers and associated safety committees.

- 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.].

Occupational-related hazards: UHS provides clinical oversight for all employees, students, and visitors engaged in research or education at the university. EH&S is charged with overseeing and promoting workplace safety (e.g. ergonomics, industrial hygiene, Occupational Safety and Health Administration [OSHA] compliance, etc.). LAMS facilities and procedures have been developed in collaboration with EH&S and other safety offices (e.g., Biosafety and Radiation Safety) to maximize safety, including the use of engineering controls and PPE. Allergen exposure and associated risks are discussed during employees' initial training and a pre-placement medical evaluation is performed. Thereafter, a medical evaluation is performed at least every three years. Personnel using respiratory protection must undergo medical clearance and respiratory fit testing annually. For any workplace injury or illness, first aid is provided and personnel are referred to UHS for treatment and follow-up. Retraining may be mandated based on the circumstances surrounding the incident.

Protocol-related hazards: The applicable safety office(s) review(s) IACUC protocols that contain potential hazard(s). The safety offices develop safety plans and work with the PI to ensure a safe work environment. The IACUC does not grant approval of any protocol until the reviewing safety office(s) have indicated approval. Prior to commencing work with hazards used in animals, LAMS staff and researchers meet to review hazards and appropriate procedures to be followed as it relates to personnel safety and waste management. In addition, LAMS staff provides training on husbandry practices related to working with animals treated with biological and/or

chemical hazards. The RSO provides training related to handling of all radiation hazards, including caging and animals.

Hazards training: Based on a risk identification and exposure (e.g., compressed gas cylinders, human materials [e.g., blood, tissue], noise exposure, volatile anesthetic gases), EH&S will assign mandatory training and proficiency assessment. A Certificate of Completion is generated and all training is documented and tracked by EH&S. For individual's working with biohazardous materials (e.g., bacteria, fungi, viruses, viral vectors), training may be mandated by the IBC (e.g., viral vectors). For individuals working with radiation hazards (e.g., computerized tomography [CT], fluoroscopy, radioisotopes, x-rays), the RSO provides an appropriate level of training and radiation safety exposure monitoring if deemed necessary. Individuals who may be exposed to radioactive sources but not directly handle radioactive material (RAM) are deemed ancillary RAM workers. After completing the initial ancillary RAM worker training (online video), refresher training is provided on a triennial basis.

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

Hazards (biological, chemical, physical, radiological) are assessed during the IACUC protocol review process. When a hazardous material is utilized in LAMS, the researchers complete and submit a Hazard Notification form. Agent-specific training is provided to ensure safe handling. Retraining is provided upon request or if deficiencies are identified. For LAMS employees, annual participation in the respiratory protection program is required and includes completion of a respiratory clearance form followed by respirator fit testing. Hearing assessment is conducted annually for cage wash personnel and triennially for all other LAMS staff. Additional testing (respiratory and/or hearing) is conducted if medically warranted. For researchers, reassessment by UHS through submission of a health questionnaire is conducted on either an annual or triennial basis (depending on risk group [RG]). If there is a work-related injury, a work injury report is completed, which routes to EH&S for review. Based on the injury, additional training may be required. EH&S tracks incidence and will follow up with the unit regarding suggestions, mandates, or training required. EH&S will do on onsite assessment of the area if the hazard is related to the working environment.

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 must promptly inform their supervisors of exposures and on-the-job injuries/illnesses and complete an initial Work-Related Injury or Illness report within 24 hours of the initial injury/illness. In the event of a medical emergency, medical care can be summoned externally by calling 911 or internally by calling 81111 or 61111. For non-emergency health concerns,

personnel report to UHS for medical evaluation, treatment, and/or referral. Individuals may elect to be evaluated and treated by their primary care physician. All work-related injuries or illnesses are investigated by EH&S. Exposures to hazards are evaluated by the appropriate safety office (e.g., BSO or RSO). In addition, any exposure to a hazard involving animals or the animal facilities will prompt a review of work practices, which may include retraining of personnel if deemed necessary.

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.

UHS categorizes an individual based on potential risk. The RGs generally fall into two broad categories: potential for significant animal contact and incidental animal exposure. Medical monitoring is based on type/frequency of animal exposure, and may consist of a baseline health assessment, follow-up health assessment, diagnostic tests, and immunizations.

Personnel with potential significant animal contact:

- Research personnel working on an IACUC protocol, LAMS staff, and UC Facilities Maintenance personnel complete the OHSP online module, which requires electronic submission of a confidential health assessment form to UHS to receive credit. This ensures enrollment and proper monitoring of the individual in the OHSP.
- [REDACTED] Veterinary Technology students receive a 1 hour presentation on zoonoses, PPE, and preventive measures by LAMS veterinary staff. Students must complete the OHSP online module, which requires electronic submission of a confidential health assessment form to UHS to receive credit. This ensures enrollment and proper monitoring of the individual in the OHSP. Risks of working with animals including allergies, zoonoses, and injury are reviewed and students are required to sign an acknowledgment of the risks. At the beginning of the school year, students must have a current physical examination and documentation from their physician with evidence of current tetanus vaccination. Students are required to carry health insurance and it is recommended that they get the rabies vaccination series.

Personnel with incidental/limited animal exposure:

- Visitors review the “Occupational Health & Safety Program for Animal Handlers” pamphlet provided by LAMS (which outlines animal exposure risks) and sign the OHS for Visitors form. The following are examples of groups of individuals that would be considered visitors by UC’s OHSP:
 - (1) UC housekeeping.
 - (2) Non-UC contractors. This process is conducted on a project by project basis or annually for term contractors. These individuals are required to participate in their employer’s OHSP.
 - (3) Visiting scientists who are enrolled in their own institutional/organizational OHSP and individuals attending one day training sessions. In addition, the individuals are directly supervised by IACUC approved personnel when working with animals.
 - (4) Students (UC and non-UC) participating in a class tour of the animal facility.
- Personnel working in open laboratories where animals may be located are informed of animal exposure risks through signage and educational handouts.

- 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.*

Individuals working with animals cannot decline participation in UC’s OHSP. Submission of the Animal Handler/Researcher Medical History form to UHS automatically enrolls individuals in the program. For UC employees with no direct contact with animals and individuals deemed as “visitors”, review of “Occupational Health & Safety Program for Animal Handlers” pamphlet and signing of the OHS for Visitors form enrolls that individual in UC’s OHSP.

- c) Describe provisions for assuring confidentiality of medical information.

All medical information is handled by UHS.

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

Personnel with incidental/limited animal exposure:

- Visitors review the “Occupational Health & Safety Program for Animal Handlers” pamphlet provided by LAMS (which outlines animal exposure

risks) and sign the OHS for Visitors form. The following groups of individuals are considered visitors by UC's OHSP:

- (1) UC housekeeping.
 - (2) Non-UC contractors. This process is conducted on a project by project basis or annually for term contractors. These individuals are required to participate in their employer's OHSP.
 - (3) Visiting scientists enrolled in their own institutional/organizational OHSP and individuals attending one day training sessions. In addition, the individuals are directly supervised by IACUC approved personnel when working with animals.
 - (4) Students (UC and non-UC) participating in a class tour of the animal facility.
- Personnel working in open laboratories where animals may be located are informed of animal exposure risks through signage and educational handouts.

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.

The medical evaluation program is administered by UHS, which assesses OHS risks based on species and health status of the animals to be used, type of work to be performed, and extent of individual exposure. Research team members and animal care personnel initiate the assessment process when completing a medical health questionnaire at the time of IACUC training and every three years thereafter. UC divides personnel into these categories:

- Category I: People with no direct animal contact or those with limited direct animal contact who are under the oversight of trained staff (LAMS or UC researchers).
- Category II: Personnel with exposure to laboratory raised rodents and/or rabbits or exposure to amphibians, reptiles, or birds.
- Category III: Personnel with exposure to pigs, non-pregnant ruminants, or rabies-vaccinated carnivores.
- Category IV: Personnel with exposure to wild caught mammals or unvaccinated carnivores.
- Category V: Personnel with exposure to pregnant ruminants.

Preventative medicine: The type of preventive medicine services offered to each individual depends on risk category. Other services may be necessary and are at the discretion of the health care provider. Individuals may opt out of any provided services.

Category I

- Review OHS fact sheet and sign an OHS for Visitors form.

Category II

- Online training course (pre-exposure and every 3 years)
- Health history questionnaire (pre-exposure and every 3 years)
- Tetanus immunization (recommended and offered)

Category III

- All category II requirements, plus:
- Physical examination with laboratory testing (as determined by UHS)

Category IV

- All category III requirements, plus:
- Rabies vaccination/titer (as determined by UHS)

Category V

- All category III requirements, plus:
- *Coxiella burnetii* antibody titers (as determined by UHS)

Note: Facilities maintenance staff are subject to Category II requirements.

Follow-up medical care: UHS reviews all occupation-related health problems detected through history questionnaires, physical examinations, laboratory testing, or that are self-reported.

Hazard avoidance: UC recognizes that biological, chemical, physical/radiological, and protocol related hazards are inherent to research. Risk assessments are performed and appropriate measures are taken by the relevant safety offices and committees to ensure that risks are mitigated.

Potentially hazardous species: UC does not house potentially hazardous species (e.g., nonhuman primates, sheep, venomous species).

- 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.

During business hours, personnel report to UHS. UHS medical staff consists of full-time and part-time board certified physicians and consultants in various specialties, and licensed professional nurse practitioners, nurses, medical assistants, X-ray technicians, and pharmacists. If after hours care is required, personnel report to an urgent care facility (e.g., hospital emergency room) and report to UHS the next business day for follow up assessment. UHS physicians attend committee meetings related to animal or institution hazards and risks (e.g., IBC).

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.

Researchers and animal care personnel are required to complete the “Occupational Health and Safety Program for Animal Handlers” online module that covers OHSP related to animal exposure. The module is a required component of IACUC Orientation and of each successive triennial retraining. A post-module proficiency exam is required as well as completion of a medical health questionnaire (which is electronically submitted to UHS for review) to secure credit for the training.

UC Facilities Maintenance personnel complete an online training module and a medical health questionnaire that is reviewed by UHS, which automatically enrolls them in UC’s OHSP.

Students in the VTP receive a one hour presentation on zoonoses, PPE, and preventive measures by LAMS veterinary staff. They must complete the medical health questionnaire that is reviewed by UHS and automatically enrolls them in UC’s OHSP.

Environmental Health and Safety administers required online training based on risk assessment, including topics such as: allergens, anesthetic gases, bloodborne pathogens, compressed gases, hazardous waste, noise, and respirators. Retraining is conducted annually.

Biosafety Office administered required training if utilizing viral vectors *in vitro* and/or *in vivo*. Retraining is not required unless deemed necessary by the IBC.

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.

Work clothing (LAMS staff): Scrubs (worn in animal rooms), laboratory coats (worn outside animal rooms), and safety shoes or work boots.

Standard PPE: Disposable/washable gowns/body suits, shoe covers, gloves (nitrile & latex), protective sleeves, hair bonnets, surgical masks (N-95 respirators or powered air purifying respirators (PAPRs) are available).

Specialized PPE (depending on area assignment): Goggles, face shields, safety glasses, eyeglass cords, work gloves, knee pads, ear muffs (upon request), ear plugs, waterproof aprons, rubber boots, and heat resistant gloves (for autoclaves).

- b) Describe arrangements for laundering work clothing.

LAMS uses a third party vendor to launder work clothing (scrubs, lab coats) and barrier/surgical gowns. Each vivarium is equipped with in-house laundry capabilities, used to launder washable gowns or body suits and small items such as surgical towels.

- 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.

Provisions for washing hands: Animal and support rooms either have sinks with soap and paper towels or rinse-free hand sanitizers.

Showering and changing clothes: Lockers, showers, and change facilities are located in the following areas:

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

LAMS staff are given time at the beginning of each workday to change into their uniforms and at the end of each work day to shower (encouraged, not mandatory) and change back into personal clothes.

Laundry and uniforms: LAMS employees are provided with scrubs (worn in and out of animal rooms) and laboratory coats (worn outside of animal rooms) that are laundered by a third party vendor. Clean laboratory coats/gowns are worn over scrubs when leaving the vivarium (e.g., lunch, travel between facilities).

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

The University of Cincinnati is a smoke-free campus. Personnel are not allowed to eat or drink in any animal areas. The following LAMS areas are approved for eating and drinking:

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

*Rooms approved for eating and drinking which are located within the secured perimeter of the animal housing/procedure areas.

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).

EH&S provides online training that includes safety-related information, such as: Back Safety: Ergonomic Connection; Ergonomics; Hearing Conservation; Respiratory Protection: Air Purifying; Safety Orientation Training; and Work-Related Injury/Illness: Supervisor Training. Term Contractors that supply cleaning chemicals/PPE may also provide training.

LAMS and/or the safety offices (BSOf, EH&S, RSO) conduct training prior to allowing personnel to work in areas that require specialized skills or where hazards are present. Protective equipment utilized depends on the agent/risk and may include safety shoes, hearing protection (e.g., ear plugs or muffs), respiratory/face protection (e.g., PAPR with chemical resistant face shield), and chemical and/or heat resistant gloves.

LAMS utilizes equipment that helps minimize risk of physical injury such as: pallet jacks and hand trucks, bulk trucks equipped with ergonomic handles and load retention chains, feed bin carts that reduce lifting and bending, and water bottle transport carts. Aluminum Sani-Rail is installed in facility corridors and some animal rooms to minimize hand injuries. In [REDACTED], automatic push plates or door sensors have been installed to assist with opening/closing of entry doors. Some laminar flow hoods and biosafety cabinets (BSCs) are equipped with variable height adjustment.

Anti-fatigue mats are available for use to help minimize the impact of standing in place for prolonged periods.

When moving agricultural animals used in biomedical research (e.g., pigs) between pens or for administering injections, pig boards/pig sorting panels are used. Transport carts are used when moving animals between rooms. For transporting anesthetized animals from holding rooms to surgery prep/surgery, lift tables are utilized.

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

UC's ACUP consists primarily of rodent species. The most likely source of allergens are from rodent caging. Mice and guinea pigs are housed in containment caging (e.g., individually ventilated cages [IVCs] or static microisolator [SMI] cages). Whenever possible, mouse cages are opened in a hood. Staff handling mice and guinea pigs wear PPE (sterile gown, cap, mask, gloves).

Rats and gerbils are typically housed in open shoebox cages. Dedicated scrubs or disposable gown and gloves are worn. Respiratory protection is recommended.

For other species (e.g., frogs, rabbits, pigs), species-specific room PPE is donned. Respiratory protection is recommended when working with rabbits.

Whenever a rodent cage leaves the animal housing room, it must be covered with a filter top. If animals are transported outside of the vivarium, the animals must be in clean cages or shipping containers prior to transport per IACUC Transportation Policy.

In dirty side cage wash, a waste disposal system or down draft dumping stations is/are utilized to minimize exposure to allergens present in dirty bedding. Additionally, PPE (including eye, hearing, and respiratory protection) must be worn.

All personnel working with animals are informed of risks of occupational-associated allergies. LAMS staff are required to complete a respiratory clearance form and be fit tested annually (or be cleared to wear a PAPR).

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

The vast majority of animals housed at UC (laboratory-bred rodents and rabbits) are not likely sources of zoonoses. For species with zoonotic

potential, engineering controls (e.g., use of BSC, chemical fume hood [CFH], transfer stations), use of PPE and attention to personal hygiene (e.g., frequent hand washing) are the primary mechanisms to reduce potential exposure.

For farm raised pigs, *Salmonella* sp, *Campylobacter* sp., *Cryptosporidium* sp, and *Balantidium coli* are the most likely source of zoonoses. All staff wear PPE and wash their hands upon completion of their tasks.

Ectotherm species are potential sources of zoonoses:

Amphibians (*Xenopus* sp): Zoonotic agents include *Salmonella*, *Mycobacterium*, *Chlamydia*, and *Aeromonas* spp. Use of waterproof gloves and frequent hand washing is recommended. When splash hazards are present, use of a protective mask and eye protection is also recommended.

Fish (Mexican cavefish and Zebrafish): Unlikely sources of zoonoses. Use of waterproof gloves and frequent hand washing is recommended.

Snakes: Zoonotic agents include *Salmonella* and other bacteria, viruses and parasites. Use of gloves and hand washing is recommended.

For [REDACTED] client-owned dogs and cats, proper handling and restraint techniques, use of PPE, and frequent hand washing minimize risk of exposure to potential zoonoses (e.g., leptospirosis, toxoplasmosis). When a splash hazard is present (e.g., handling urine), use of a protective mask and eye protection is also recommended.

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

Capital equipment: LAMS equipment is maintained and certified in accordance with manufacturers' recommendations and regulatory guidance. Commercial vendors who have Term Contracts with UC oversee maintenance of sanitation equipment (tunnel/rack washers, bulk autoclaves, Garb-el® dump station) and certification of BSCs. Proper operation of safety mechanisms on sanitation/sterilization equipment is verified quarterly. All BSCs and CFHs are certified annually.

PPE: Safety shoes/boots and ear-muffs are replaced as needed. Disposable PPE including ear plugs and gloves are provided in readily accessible locations throughout LAMS.

- e) Respiratory Protection

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

Respiratory protection is mandatory for any individual working in dirty side cage wash or the biosafety level (BSL)/animal biosafety level

facility and recommended if working in , chemical, or open caging rooms. Respiratory protection (e.g., N-95, PAPR) is provided for all LAMS staff.

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

Use of respirators (N-95 or PAPR) requires participation in the Respiratory Protection Program. A Respiratory Medical Questionnaire is completed annually and submitted to UHS for review. If using an N-95 respirator, annual fit testing conducted by EH&S is required. Following fit-testing, each individual is provided with a certificate and “Respiratory Fit Test Card” documenting respirator results and date of next test. Both N-95s and PAPRs are provided for LAMS staff. Research staff provides their own respirators when needed.

Newly hired personnel must receive medical clearance from UHS prior to completing the online Respirator Training administered by EH&S. Once the training is completed they are scheduled for N-95 fit testing by EH&S Industrial Hygienist. Thereafter, submission of the Respiratory Medical Questionnaire to UHS and N-95 fit testing is performed annually. PAPR(s) are available for personnel who are not able to receive medical clearance for the N-95 respirator. PAPR(s) are maintained per LAMS’ quality assurance program.

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

PAPRs are inspected before and after each use for safe operation and battery life. In addition, they are inspected and battery checked monthly and results documented on the Quality Control (QC) log.

When employees don an N-95 respirator, they have been trained to conduct a leak test. Employees replace their N-95’s as needed based on use and results of the leak test.

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).

Washers: Tunnel washers are equipped with either a kill switch, pull cable, or both. Rack washers are equipped with an emergency stop

device, explosion relief latches (e.g., push plate, pull cable, pull lever), and interior instructional signage. If the emergency stop device has been activated or the door opened, the rack washer will de-energize and immediately stop the flow of water into the interior of the chamber along with termination of the wash cycle. This design feature requires deliberate reactivation of the machine to restart a wash cycle. Personnel are instructed to always push items into the rack washer and then pull them out when the cycle is complete.

Autoclaves: All bulk autoclaves require a button to be depressed and held down during the entire door closure process to prevent any accidental entrapment of personnel. Some bulk autoclaves have a sensor that will detect an object blocking the door. Similar to the rack washer, items are pushed into or pulled out of the unit to prevent individuals from having to enter the autoclave.

Waste disposal system (Garb-el®): One system is in use at the [REDACTED] building. The unit has a grate over the top and the grinding mechanism is offset to protect the operator. The unit is equipped with a kill switch.

Training: All LAMS husbandry personnel (LAAs and LATs) who may work in cage sanitation areas are trained on operation and safety features of the equipment. New employees are assigned to work alongside experienced personnel until they can satisfactorily demonstrate proficiency.

- 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 other heavy equipment utilized.

- 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.

All animal transportation must comply with IACUC Policy #003. Specifically, non-rodent USDA covered species must be transported by LAMS where other species may be transported by the researcher or LAMS. Whenever possible, a dedicated animal transport vehicle should be used. If a personal vehicle is used, the researcher must notify the IACUC office.

For LAMS transport vehicles, the cabin and cargo areas are physically separated. Rodents are transported in either SMI caging (or solid-top cages if “in-cage” time is 30 minutes or less) or filtered shipping containers. Cats, dogs and rabbits utilized by the [REDACTED] VTP are transported in secured carriers in LAMS vehicles. LAMS drivers are trained on OHS risks related to the species being transported. LAMS staff wears uniforms and safety shoes/work boots. Uniforms are laundered commercially and not worn home. Species-specific PPE is either disposable or laundered on site.

Cargo van surfaces (e.g., side panels and bulkhead) are wiped down after each animal transport with a germicidal cloth (e.g., Sani-Wipe cloth). The floor is sprayed with a chlorine dioxide based disinfectant (e.g., Clidox [chlorine dioxide]) allowing contact time of 10 minutes. Our Fuso box truck cargo area is sanitized after each animal transport and/or between equipment transports. The cargo area is fogged for 30 minutes with broad-spectrum disinfectant (e.g., Virkon). Vehicle sanitization is verified using an adenosine triphosphate (ATP) swab to detect residual ATP as an indicator of potential bacterial growth. All sanitations are documented on the vehicle log sheets.

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

Per EH&S Advisory 8.5 Anesthetic Gas Use (Research): “All personnel using anesthetic gases must use adequate local exhaust ventilation to minimize personal exposure. Recommended ventilation during anesthetizing and euthanizing procedures includes scavenging devices, CFHs, and snorkel hoods. Canopy hoods do not work well for this application due to the distance from the source and the large volume of air required to capture migrating gases.”

All anesthetics used in animals must be listed in the IACUC protocol. Volatile anesthetics are delivered by 2 methods: (1) precision vaporizer anesthesia machine or (2) drop box method in a CFH. Precision vaporizer anesthesia machines are the most common and safest method used for prolonged anesthetic gas delivery to animals. The machine relies on either active or passive scavenging of gas into an F-air canister which contains activated charcoal. Each canister is weighed regularly (every 2 weeks in LAMS with the same recommendation for PI-owned machines) and charcoal replaced according to manufacturer’s recommendation.

When using a drop box method for short term anesthetic delivery (e.g., euthanasia, tail clipping), the box must be used within the confines of a CFH or hard-ducted BSC (e.g., [REDACTED]).

EH&S provides an online training module entitled: Animal Care Health and Safety Anesthetic Gases Training for personnel using volatile anesthetics.

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.

Refer to **Supplemental Appendix 1.**

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

Refer to **Supplemental Appendix 2.**

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

Radiation Generating Equipment (RGE): CT scanner; Fluoroscopy; X-ray machine
Magnetic Fields: magnetic resonance imaging (MRI); nuclear magnetic resonance (NMR)
Other: Laser light; Noise (96-128 dB SPL); ultraviolet (UV) light (25-500 mJ/cm²)

- 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.

All experimental hazards must be listed in the IACUC protocol. Part of the IACUC protocol review and approval process involves a protocol safety

assessment. The biosafety officer (BSO), radiation safety officer (RSO), and Chemical Safety Officer review each IACUC protocol prior to approval. For biological and radiological hazards used in animals, those hazards must be reviewed and approved by the IBC and RSC, respectively, prior to IACUC protocol approval being granted. All potential chemical and physical hazards are reviewed and if deemed hazardous and requiring special handling, a Safety Sheet is created for each hazard and attached to the IACUC protocol when it is approved. The researchers and animal care staff must follow all safety precautions as set forth by the IBC, RSC, and Chemical/Physical Hazards Safety Advisory Sheet.

- 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 IBC and RSC are responsible to reviewing biological and radiological hazards, respectively, and ensuring appropriate safety precautions are in place. The Chemical Safety Officer reviews all chemical and physical hazards and provides a Safety Sheet if potentially hazardous to humans and/or require special handling and waste disposal. As part of the IACUC approval process, the PI is required to ensure safety mechanisms are in place when dealing with hazards. LAMS staff provides hands-on facility training when working with animals and caging that have been exposed to chemicals or biohazardous agents (██████████) in animals. LAMS staff provide routine husbandry and care for animals housed in chemical containment or biocontainment (██████████) rooms. The (██████████) designee provides in person training associated with RG 3 agents. RSO personnel provide training associated with radiological hazards. Only research personnel provide husbandry and care for animals exposed to RG 3 agents or radioisotopes. Environmental controls (e.g., BSCs, CFHs) are utilized whenever possible.

- 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.

Hazardous agents are disposed of according to procedures set forth by the appropriate safety office (EH&S, RSO).

Biological/Infectious Waste – all biological wastes that are generated (including sharps and contaminated glassware) are placed in appropriate containers (i.e., rigid, puncture-resistant container for medical sharps and/or glass) and removed from the LAMS areas by request (online disposal forms submitted to EH&S). The current UC term contract vendor is Stericycle, and all biological/infectious waste is incinerated.

Hazardous/Chemical Waste – all chemical wastes (e.g., flammable, toxic, corrosive, contaminated bedding) are also removed from the LAMS areas by request (online disposal forms submitted to EH&S). Environmental Enterprises Incorporated is the current UC term contractor vendor. The final disposition of the waste depends on the particular waste stream, and the treatment technologies may include: neutralization, incineration, fuels blending, stabilization, chemical reduction, and/or disposal at a secure (hazardous waste) landfill.

Radioactive Waste - all radioactive waste must be disposed of through the RSO of in accordance with procedures outlined in the Radiation Protection Procedures Manual (Authorized User [AU] Manual). No radioactive materials (RAM) may be disposed of as normal trash or into the sanitary sewer (e.g., down the drain) as chemical or infectious waste. The frequency of waste disposal is based upon the AU's use of material and the date in which a waste pickup request is made to RSO. All radioactive waste is disposed of in accordance with UC's Ohio Department of Health RAM license.

Biohazardous and/or infectious waste containing short half-life radionuclides shall be rendered non-infectious and/or safe for general handling in accordance with procedures approved by the IBC prior to disposal through the RSO. If the waste remains an infectious waste according to regulations, the waste labeling shall include the biohazard symbol.

Biohazardous and/or infectious waste containing long half-life radionuclides shall be rendered non-infectious and/or safe for general handling and disposal as radioactive waste in accordance with procedures approved by the IBC prior to disposal through RSO.

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

All agents are evaluated on a case-by-case basis by the appropriate safety office(s) (e.g., BSO, EH&S, RSO). In addition, personnel are required to list all hazards they may be exposed to when working with animals on their OHS questionnaire that is submitted to UHS for review.

Biological hazards: The BSO reviews each biohazardous item listed on the IACUC protocol and that a corresponding IBC protocol is approved as appropriate. The IBC reviews and approves the IBC disclosures, which include provision of a comprehensive use plan. Additional training, increased PPE requirements, medical counseling, and vaccinations are recommended/provided based on risk assessment.

Chemical and/or physical hazards: EH&S reviews each chemical and physical hazard listed on an IACUC protocol and prepares an Animal Use Safety Information Chemical/Physical Safety form that identifies the hazards

and required safety precautions (e.g., caging type, engineering controls [CFH], housing room requirements, PPE, and waste disposal). For common hazards, EH&S prepares a university-wide advisory.

Radiological hazards: The RSC reviews, approves, and oversees use of radioactive material and/or RGE, including mandatory training, personal dosimeters, monitoring areas of radioactive use, and auditing.

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.

Research personnel: For individuals handling human derived materials, OSHA Blood Borne Pathogen online training is required annually. If researchers are working with viral vectors, they are required to complete online Viral Vector training. Researchers working in the [REDACTED] facility undergo hands-on training by the BSO and/or [REDACTED] facility director.

Hazard Communication online training occurs annually and is required for any individual working with hazards. Numerous online training modules are available through EH&S and training requirements will depend on the hazard. General online training modules include, but are not limited to: (1) Compressed Gases, (2) Hazardous Waste, (3) Noise, and (4) Respirators. Online modules specific to animal care health and safety include: (1) Allergens, (2) Anesthetic Gases, (3) Carcinogens, (4) Reproductive and Neurological Hazards, and (5) Shipping Dangerous Goods.

All hazards listed in an IACUC protocol are reviewed by the appropriate safety office(s)/committee(s). Safety practices are established and additional training may be mandated by the safety office/committee and/or requested by the researcher at any time. PIs have primary responsibility for training and overseeing the safety practices of their staff.

Prior to using biological or chemical hazards in animals, researchers submit a LAMS Hazard Notification form for each hazard being used in LAMS. LAMS staff will then meet with the researchers to review safety practices, including provision of hands-on chemical or biocontainment ([REDACTED]) training. Hands-on training includes operation and use of LAMS BSCs or CFHs, husbandry practices, PPE, and waste disposal.

When working with radiological hazards, training is provided and documented by the RSO. Training requirements will vary depending on the radiological hazards being used.

LAMS staff: All LAMS personnel, excluding cage wash employees (LAAs) who do not work with animals, receive specialized training prior to working with biological or chemical hazards in animals. Training includes completion of required EH&S online training modules and review of work instructions,

LAMS husbandry personnel do not work with RG 3 or radiological hazards in animals. Research staff change cages of treated animals. LAMS veterinary staff receive specialized training by the RSO for utilization of x-ray generating equipment. The veterinary staff reviews all documentation regarding use of the LAMS X-ray equipment annually and this review is documented. Ancillary personnel (e.g., LAMS husbandry staff performing visual daily health checks) whose duties may require them to work in the vicinity of radioactive materials are informed about radiation hazards and appropriate precautions based upon their specific duties. Information is typically provided to the individual via watching an approved training video. It is very unlikely an ancillary worker will approach 100 mrem per year.

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

BSC – biocontainment rooms [REDACTED] certified annually by a third party vendor; BSC will alarm if not functioning within manufacturer specifications.

CFH – locations where chemical hazards are used (housing and procedure locations); certified annually by EH&S; CFHs will alarm if not functioning within set parameters.

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

Biocontainment

For [REDACTED] (rodents only) – all rooms containing biohazards have appropriate signage posted on the entrance door to the room. Signage includes: biohazard symbol, agent(s) in use, IBC required PPE, and emergency contact information. Studies are conducted in dedicated negative pressure 100% exhaust rooms using SMI cages and a BSC. Disinfectants approved by the IBC are utilized for surface disinfection (e.g., Clidox). Cages are individually identified with “Biological Hazard” stickers affixed to the cage card with the following information documented: agent, date of agent inoculation, administration route, and researcher’s initials. All cages are handled and changed within a BSC (unless there is justification why the animals must be handled outside of the BSC and there is BSO approval and guideline/SOP for safe handling in place). LAMS and research personnel wear the following PPE: disposable gown, Tyvek sleeves, hair bonnet, shoe covers, double gloves, and surgical face mask or N95 respirator whenever necessary. All cages are dumped within the BSC into a biohazard bag. The cages are sprayed with a disinfectant approved by the IBC prior to being bagged and transported to dirty side cage wash. All biological waste (bedding, feed, carcasses) is appropriately disposed of by EH&S through use of a third party vendor (Stericycle).

For [REDACTED] (rodents only) – only research personnel handle animals in this location. Specialized containment caging is used and must be handled/opened inside of a BSC. There is a glove-box in the animal procedure room. Air-flow in the animal rooms is negative to the common hallway; the hallway in turn is negative to the anteroom and associated locker rooms. All waste (e.g., caging, carcasses, PPE) is autoclaved prior to being removed from the [REDACTED] Facility. Research personnel wear the following PPE: disposable body suit with attached booties, double gloves, additional pair of shoe covers, and a PAPR. PPE is disinfected, doffed, and discarded accordingly to the [REDACTED] Facility SOP prior to leaving the suite.

Chemical containment – all animal housing rooms containing chemical/physical hazards have door signage identifying the chemical and/or physical risks or agent(s) in use, the required PPE, and emergency contact numbers. For chemical hazards, a “Chemical Hazard” sticker is affixed to the cage card with the following information: agent, date, administration route, and researcher’s initials. Hazards are used, contained, and managed in accordance with the EH&S Animal Use Safety Form that is developed for each IACUC protocol utilizing chemical and/or physical hazards in animals. The form identifies all hazards and required handling and containment practices to be performed, including waste and carcass disposal. Chemical studies are conducted in negative pressure 100% exhaust rooms using ventilated (with water bottles) or SMI caging and CFHs. All animals and cages are handled within a CFH unless otherwise justified. In situations where animals treated with a chemical hazard must be handled outside LAMS chemical containment room (i.e., specialized testing apparatus required for data collection), the guideline entitled “Working with rodents outside of LAMS chemical room that have been administered a chemical hazardous agent” must be followed. LAMS and research personnel wear the following PPE: disposable gown, hair bonnet, shoe covers, double gloves, Tyvek sleeves, and face mask (N95 or surgical mask). All cages are dumped within the CFH into an agent-specific chemical barrel. The cages are sprayed with an approved disinfectant (e.g., 20% bleach) prior to being bagged and transported to dirty side cage wash. All chemical waste (bedding, feed, carcasses) is appropriately disposed of by EH&S through use of a third party vendor.

Radiological containment – all rooms which contain radioactive material or radiation generating devices are appropriately signed (radiation trefoil, emergency contact information) and access to those areas is restricted to trained, authorized personnel. Radioactive animals are housed in SMI cages within negative pressure 100% exhaust rooms commissioned, monitored, and decommissioned by the RSO. Cages are individually identified with a label containing the following information: radiation symbol (trefoil), the words “Caution Radioactive Material”, radionuclide present, estimate of the activity present, date the activity was estimated. Animal handling and care procedures and radioactive material waste disposal (including carcasses) are reviewed and monitored by the RSO. All cages are handled by RAM AUs until the animals/cages are cleared by the RSO (or research personnel approved to perform wipe tests for particular radiological agents) to return to non-hazardous status. Radiological waste is handled and disposed of by the RSO.

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.

Currently there are two facilities at UC used for both humans and animals:

[REDACTED]

For each facility, researchers +/- LAMS veterinary staff work to schedule procedures during hours when human patients are not present. For rodents, the researchers follow IACUC Policy #003 when transporting animals to and from the facility. Following imaging, all surfaces that come in contact with the animal are disinfected. Rodents may be returned to LAMS or may be transported to the researcher's IACUC-approved satellite housing or procedure space for additional testing.

For non-rodent USDA covered species, LAMS veterinary staff transports animals from the animal facility to the imaging facility. Research staff are permitted to transport animals with IACUC approval and following their laboratory-specific transportation guideline. The animals are housed in the [REDACTED], which enables direct access to the MRI or CT imaging facility without having to go outdoors. Rabbits are transported (conscious or anesthetized) in covered, secured plastic transport carriers (vari-kennel). Pigs are anesthetized and transported on a lift table with the animal contained inside a leak-proof plastic bag, covered with a clean drape, and secured to the table (e.g., velcro straps). If available, service elevators are used for animal transport. Once imaging is complete, the area is sanitized with approved disinfectants. Animals and animal materials (e.g., chucks, needles, syringes) are returned to LAMS.

- 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.

All animal transportation must comply with IACUC Policy #003. Due to the decentralized nature of our facilities rodents may be transported to laboratories or procedure spaces through public elevators and corridors. Rodents are transported in clean SMI (solid-topped caging may be used if in-cage time will be 30 minutes or less) or filtered shipping containers and covered with a breathable opaque material to contain allergens and prevent public viewing. Up to two standard rodent cages or filtered shipping containers may be carried by hand. If three or more cages (or shipping containers) are to be transported, a cart (or shelving unit for large

numbers of cages) is required. All cages (or shipping containers) must have a cage card and cage lids must be secured to the cages with a clip, tie, or residue-free tape to prevent escape of the animals. When the need arises to transport cages of animals exposed to a biological or chemical hazard, the researcher +/- LAMS works with the appropriate safety office to develop agent specific guidelines for transport.

Caging, animal housing accessories, and supplies are transported on completely shrouded racks/carts and the outer parts of the shrouds are decontaminated prior to leaving the animal facility.

Soiled caging units from rodent satellite housing and procedure locations are returned to LAMS for processing. Cages originating from the [REDACTED] Facility are autoclaved and cage contents dumped into a biohazard bag prior to removing from the facility. All cages are then processed in LAMS cage wash.

For aquatic, semi-aquatic and terrestrial ectotherms, animals must be transported in species-specific appropriately secured containers.

The UC FETCHLAB evaluates canines for audiological/vocal testing. All dogs are client-owned, most (80%) are puppies of ages 5 to 12 weeks. Others are service dogs, police and military. Puppies are brought into the [REDACTED] building via the front door and elevator to the lab on the first floor. They enter the building in kennels or in the arms of the FETCHLAB technicians (IACUC trained). All other dogs enter the building via a rear outside stairway to the FETCHLAB door. They are on a leash and many times are sedated.

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.

The CEO/President of UC has delegated in writing the authority of the IO to appoint the IACUC. Potential IACUC members are evaluated and recommended to the IO by the IACUC Chair. UC follows PHS guidance with regard to membership composition. An IACUC appointment letter containing a list of all members appointed to the committee is reviewed by the IO at least annually or more frequently as needed. The IO signs the appointment letter, and all members are notified of changes. Refer to **Appendix 7** for the IACUC Membership roster.

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

Meetings are conducted monthly or more frequently as needed.

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

New member training: Newly appointed IACUC members must attend a formal training session conducted by the IACUC Office staff after being appointed to the Committee. The new IACUC Member Orientation training consists of:

- Introductions/Objectives
- Review of federal regulations
 - Animal Welfare Act (AWA) - USDA
 - Animal Welfare Regulations (AWRs) - USDA
 - U.S. Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training
 - Humane Care and Use of Laboratory Animals (PHS Policy) - OLAW
- Review of best practice resources
 - *The Guide for the Care and Use of Laboratory Animals*
 - AVMA Guidelines on Euthanasia
- Summary of institutional policies
 - Policies essential for animal handlers
 - Policies for PI protocol administration
- Semiannual review process
 - Facilities inspections
 - Program evaluation
- Review of IACUC protocol template
 - Information in relation to reviewer importance/performance
- Review of IACUC protocol review & circulation process
 - Research Administration Portal (RAP) protocol database is the primary vehicle for communication and circulation
 - Full Committee Review (FCR)
 - Designated Member Review (DMR)
 - Urgent Committee Review (UCR)
- OHSP enrollment
 - Program enrollment for community or non-affiliated members

Continuing education: IACUC members are encouraged to attend conferences where topics specific to IACUC issues are presented. Published articles of particular interest to the IACUC oversight process are included in the IACUC monthly meeting packets for presentation and discussion.

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 IACUC procedure for reviewing and approving animal study protocols is described below:

Preliminary review process: Upon protocol submission, veterinary consultation is assigned and conducted either in person or electronically. Correspondence continues until all changes have been addressed. Upon completion of veterinary review approval, the protocol is submitted to the IACUC.

Determination of full or designated review: Full or designated review is determined during or following veterinary review. Protocols meeting the following criteria automatically require a full review:

- Category E Protocols
- Multiple Major Survival Surgeries
- Requested by any Committee Member

For amendments to protocols containing the above criteria, automatic FCR is only required if the change impacts procedures or numbers involving Pain Category E, Multiple Major Survival Surgeries, or requested by any Committee Member.

FCR process: The protocol and associated forms are sent to all IACUC members for review and comment. All comments received by the IACUC Office are forwarded to the PI and/or their designated proxy. The researcher’s responses and the revised protocol are forwarded to all members. The protocol is discussed and action determined at the next convened meeting. Protocol action includes: approval, vote to DMR, require modification to secure approval by FCR, or withhold approval.

DMR process: The IACUC Office sends the protocol and associated forms to two reviewers as directed by the IACUC Chair. A summary of the protocol is concurrently sent to all IACUC members for an opportunity to call for FCR. After a grace period of up to 3 calendar days, if a member does not call for FCR, the designated reviewers are authorized to act. The designated reviewers may approve the protocol, require modifications in order to secure approval, or request FCR. Reviewer comments are sent to the IACUC Office and forwarded to the PI and/or their designated proxy. The researcher’s responses along with the revised protocol

are forwarded to each reviewer. This is repeated until all assigned reviewers indicate approval with no further comments; the protocol is approved at that time.

The IACUC Chair/Vice Chair may re-assign the protocol to another IACUC member in place of the original reviewer if the reviewer or their alternate is unavailable to review the protocol.

All correspondence between the PI or their designee and IACUC Office (on behalf of the reviewers) is documented and retained in the protocol file.

DMR subsequent to FCR: The IACUC has elected not to establish special standards for DMR subsequent to FCR. When the committee at a convened meeting votes to send a protocol to DMR, all members including those not at the meeting are offered the opportunity to call for full review, and the review is conducted as described in the DMR process.

Safety office/committee reviews: Safety officers (BSO, Animal Chemical Safety, RSO) review each IACUC protocol for hazards and ensure applicable committee approval (e.g., IBC, RSC) has been secured and safety practices established prior to final IACUC approval.

Personnel approval: The IACUC has given the IACUC Office the authority to add and/or remove personnel from the protocol excluding PI/Co-PI which are handled via the DMR process. Personnel being added to the protocol must first have completed all IACUC and LAMS required training.

Potential adverse effects versus potential benefits (“ethical cost”): During FCR and DMR processes, the IACUC reviews potential adverse effects of the study against potential benefits that may result from research. The following reminder is included in all requests for review when the protocol is distributed to the committee:

“By indicating your approval you are affirming the following principles were considered during your review:

- Reduction, Refinement, and Replacement (3R’s): The availability or appropriateness of alternatives was considered
- Justification of Use: use of animals, the species selected, and the quality requested was justified
- Pain or Distress: methods were employed or considered to avoid or minimize discomfort, distress, and pain
- Ethical-Cost Analysis: The objectives of the study outweigh the potential animal welfare concerns
- Clear and Concise Description: The protocol contained a clear and concise sequential description of the procedures involving the use of animals that is easily understood
- Humane Endpoints: The protocol contained clear endpoints for the removal of animals from a study”

PIs must provide rationale for using live vertebrate animals and for the selection of the species in their protocol, as well as document that they searched for alternative methods and models for their experiments. PIs also must justify the number of animals they intend to utilize over a three-year approval period.

Review of protocols involving potential pain or distress: For protocols involving the potential for pain or distress, a veterinarian must be involved in the protocol review. The veterinarian assists in experimental planning and procedures and advises on the use of anesthetics and analgesics or alternate methodologies to minimize pain and/or distress in the animal. The veterinarian must approve the protocol prior to distribution to the IACUC for review. Regardless of whether a protocol is to undergo FCR or DMR, IACUC members are responsible for the review of painful and/or distressful procedures, as well as evaluating the potential for alternative methodologies. PIs are required to provide rationale for the species utilized in their protocol(s). PIs must perform a literature search using at least two different databases looking for alternatives to the use of live vertebrate animals, ways to reduce pain and/or distress, and methods to reduce the number of animals needed. The IACUC requires that PIs search a number of terms as listed in the protocol template using a search strategy, and IACUC members review these searches during protocol review. For new procedures that have the potential to produce physiological impairment with subsequent pain and/or distress, the IACUC may elect to approve a small number of the total animals requested and require the PI and/or LAMS veterinary staff to report back to the IACUC before additional animals will be approved.

Once a protocol with painful and/or distressful procedures is approved, they are monitored by: observation by LAMS staff, post-approval monitoring (PAM), semiannual inspections, and veterinary oversight. If the IACUC determines that the experiments to be performed warrant additional oversight, they may require LAMS veterinary staff to be present.

Justification for animal and experimental group sizes: When submitting a protocol for IACUC review, PIs are required to justify and account for the number of animals required. This generally involves listing the number of animals per experimental group and the variables that constitute each study (e.g., age, genotypes, sex, time points, and treatments). PIs are required to justify group size based on a power analysis, cited publication, quantity of tissue required, and/or need for a pilot study. The animal numbers and justification are reviewed by the IACUC prior to approval.

- 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.

Minor amendment review process: Minor amendments to protocols are restricted to changes that do not increase the number of animals used, change pain class, or modify overall scientific justification or purpose of the protocol. Minor

amendments are conducted as a DMR with a veterinary member of the IACUC and the IACUC Chair acting as reviewers. The IACUC has opportunity to call for FCR. If FCR is not called for, the minor amendment can be approved by the designated members.

Major amendment review process: Changes in ongoing research projects that are not eligible for minor amendment review are reviewed as described in section I.B.1.b.i. of this document.

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.

Each IACUC protocol specifically addresses untreated adverse events that will be allowed to persist for research purposes. All expected clinical symptoms are documented and humane and/or experimental endpoints for each symptom defined. The IACUC uses this information in the context of the overall study to assess appropriateness of proposed endpoints. For protocols involving pain and/or distress not immediately alleviated once identified, justification must be provided to and approved by the IACUC. PIs are also required to perform a literature search for alternatives to painful and distressful procedures. This search must be documented in the protocol form.

- 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).

All animals are monitored by staff (LAMS and/or research) daily. In situations where the experimental endpoint is beyond the humane endpoint, the PI must provide details in their IACUC protocol as to how pain and/or distress will be minimized while meeting the scientific objectives of the studies. All endpoints must be IACUC approved.

Enhanced observational assessments by research and/or LAMS staff may be mandated by the IACUC and described in the protocol. In some situations where endpoints may be difficult to determine, the IACUC may mandate a pilot study or veterinary oversight of the proposed procedure. The researcher and LAMS veterinary staff report the findings of pilot studies to the IACUC for consideration prior to securing approval for a full scale study.

"Expected Clinical Symptoms" sheets are utilized when there is a known adverse phenotype or clinical symptom expected with a particular strain or experimental design and for a large number of cages on a rack or in a room.

The Expected Clinical Symptoms sheet is completed by an RVT in consultation with the researchers, signed by a LAMS veterinarian, and attached to the rack(s) on which affected animal cages are housed. A color-coded tag corresponding to the Expected Clinical Symptoms sheet is placed on each affected cage. The Expected Clinical Symptom sheet lists expected clinical signs along with signs that indicate when the LAT is to complete and submit an Animal Health Notification/Record (AHN/R) form to veterinary services for evaluation and follow up.

“End Stage Monitoring via Lab” cards are placed on cages that have an IACUC-approved experimental endpoint beyond the humane endpoint. Each cage containing end stage animals will be labeled with monitoring cards, utilized as a monitoring/communication tool between researchers and LAMS husbandry/veterinary staff. The researchers document their daily (acute/ severe) or weekly (chronic/ mild to moderate) individual animal assessment on the cage card, which is reviewed by LAMS husbandry and veterinary staff. Animals are tracked until their experimental endpoint is reached.

- 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.

Principal investigators are responsible for ensuring that their research team is appropriately qualified and trained in protocol specific procedures, including expected clinical symptoms and humane endpoints.

All personnel (research teams and LAMS) are trained to recognize adverse clinical signs, as well as reporting procedures for notifying the appropriate personnel. Additionally, clinical health flowcharts (with pictures) +/- expected clinical symptoms chart (if applicable) are placed in each of the animal holding rooms to assist the staff in assessing clinical health.

- 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.

Unexpected outcomes of experimental procedures are reported by husbandry or research personnel to veterinary staff using the LAMS AHN/R system, which involves completion of an AHN/R form (LAMS husbandry staff) or via e-mail/phone (research staff). Emergency health notifications are verbally communicated directly to the veterinary staff.

When an unexpected outcome is identified, the veterinary staff works with the researchers to: (1) minimize pain and distress through treatment or euthanasia, (2) identify the cause, (3) determine if additional training is required, and (4) determine if the endpoint criteria and/or pain class in the IACUC protocol needs to be

updated. Unexpected outcomes are presented to the IACUC by the LAMS Director/AV or designee at convened meetings.

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.”

For restraint greater than manual manipulation (previous definition) or ≥ 10 minutes (current definition), the IACUC requires the PI to justify the use of the restraint and describe the device(s) used. Additional information pertaining to duration, frequency, and monitoring is provided. The IACUC evaluates the necessity and appropriateness of the restraint on a case by case basis.

- 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.

The majority of restraint is short in duration and is used for blood collection, drug administration, and/or imaging. The most common restraint device used is a commercial rodent restrainer. Other procedures include the use of restraint as a stress paradigm (e.g., plastic rodent restraint tube) and during protracted cannulation/infusion procedures (e.g., rodent cages). A list of devices and a description of their use is included in **Supplemental Appendix 3**.

There are no predefined acclimation procedures based on the type of restraint method. Species-specific acclimation procedures are evaluated by the veterinary staff during the protocol review process. Acute stressors or chronic variable stress paradigms, by design, do not permit for acclimation procedures to be conducted.

Animals are initially monitored and assessed by the research staff. Animals that do not adapt to the restraint device are used on other studies that do not require restraint. If an animal experiences an adverse clinical consequence, LAMS veterinary staff evaluate and treat the animal. Whether the animal is permitted to continue on study is determined by the veterinary staff in consultation with the researcher.

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.

The IACUC reviews the proposed use of multiple surgeries with emphasis on the following factors: (1) requirements of the scientific objectives, (2) overall experience for an individual animal, and (3) total number of animals utilized. The IACUC strives to balance implementation of the 3R's, in this case a reduction in the total number of animals versus refinement in the overall potential pain and/or distress an individual animal may experience from undergoing multiple surgeries. The use of multiple major survival surgical procedures on a single animal is prohibited unless scientifically justified and approved by the IACUC.

IACUC Policy #016C covers frogs used for oocyte collection. Frogs may have up to five survival oocyte collection surgeries followed by a non-survival surgery if scientifically justified and approved by the IACUC. The IACUC policy is based upon guidance from NIH-OACU-ARAC Guideline for Egg and Oocyte Harvesting in *Xenopus laevis*, Revised 09/11/2013.

- 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.

Multiple major survival surgical procedures are only approved by the IACUC when scientifically justified. Justifications typically center on allowing physiological conditions to either develop or stabilize prior to the next surgery, reducing variability, or increasing survival rates in protracted surgeries. See **Supplemental Appendix 4** for details.

A variety of mechanisms are used to monitor these surgeries including: daily observations by LAMS husbandry staff, PAM, semiannual inspections, and veterinary oversight. If the IACUC determines that the proposed surgeries warrant additional oversight, they may require LAMS veterinary staff to be present during the peri-operative period.

LAMS [REDACTED] veterinary staff provides the post-operative monitoring and care for non-rodent USDA covered species. Each individual animal's assessment and treatment is documented in their corresponding medical record.

For rodent surgeries, researchers provide post-operative monitoring and care unless they specifically request LAMS veterinary staff to do so. LAMS utilize "Surgery Cage Card/Rodent Post-operative Record" cards placed on each

individual's cage. Information on the cage card includes but is not limited to the following: surgery date; surgical procedure performed; anesthetics, analgesics, and other drugs administered; and the date/time, clinical assessment score, and analgesics administered post-operatively. Researchers complete the card once to twice daily for up to 5 days depending on the type of procedure performed. LAMS husbandry and veterinary staff pay particular attention to cages marked with a Surgery Cage Card. Post-operative complications are reported to LAMS veterinary staff for evaluation and treatment or euthanasia.

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.

Food and/or fluid regulation beyond pre-surgical fasting must be scientifically justified and approved by the IACUC. Most of the protocols at UC involving food and/or fluid regulation involve metabolic studies in which animals are pair fed, meal fed, or deprived overnight for glucose/insulin tolerance tests. Some studies utilize food and/or fluid regulation for motivational behavioral paradigms (e.g., buried food pellet). Finally, a small portion of studies involve fluid regulation to evaluate renal physiologic mechanisms. Refer to **Supplemental Appendix 5**.

IACUC Policy #034 addresses the use of food and/or fluid regulation in rodents. The policy address both acute (less than 24 hours and not performed more than once every 7 days) and chronic (periods greater than 24 hours or performed more than once every 7 days) restriction.

Acute restriction: Rodents must be clearly identified the type of regulation (food and/or fluid) and regulation period (begin/end date and time). Once the regulation is completed, identifiers are removed from the cage by research staff. This method of identification allows the IACUC, researchers, and LAMS staff to focus on potential health issues. The IACUC does not consider acute restriction to have any ongoing clinical impact.

Chronic restriction: Rodents must be clearly identified as for acute restriction listed above. In addition, written records must be maintained for each individual animal documenting the following information:

- Body weight measurement performed at least once every 7 days (or more frequently for animals requiring greater restriction)
- Daily food and/or fluid consumption
- Hydration status
- Any behavioral and clinical changes used as criteria for temporary or permanent removal of a rodent from restriction

The PI is responsible for ensuring the above information is documented. Records are maintained for the life of the rodent.

Research staff must identify animals undergoing food and/or fluid restriction, observe animals daily during regulation periods, and promptly report unanticipated health issues to LAMS veterinary staff. In addition, LAMS husbandry staff observe animals daily and are trained to focus on animals in cages identified as undergoing food and/or fluid restriction (e.g., body condition score, hydration status). If an animal health report is received, LAMS veterinary staff examines the animal, reviews the approved IACUC protocol to ascertain monitoring requirements and endpoints, consults with the researcher, then formulates a treatment plan (e.g., remove the restriction, provide supportive care, euthanize).

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.

IACUC Policy #019 requires the use of pharmaceutical grade drugs unless it is scientifically necessary or if an acceptable veterinary or human pharmaceutical grade product is not available. Situations that would require researchers to use non-pharmaceutical grade drugs/compounds include:

- lack of availability of a pharmaceutical-grade equivalent
- incorrect formulation (e.g., presence of additives that could negatively impact the research, improper concentration, improper form [e.g., tablet, capsule])

When reviewing requests to use non-pharmaceutical grade drugs/compounds the IACUC considers the availability of alternatives, as well as sterility, storage, and shelf-life of the proposed compound(s).

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.

When reviewing field investigations the IACUC considers OHS, permitting requirements, trapping and transportation methods, safe handling and restraint, anesthesia, and final disposition of the animal.

OHS risks are evaluated by UHS when research personnel are enrolled in the OHSP through submission of the Animal Handler/Researcher Medical History form. PPE and/or immunization may be recommended based on UHS assessment.

When reviewing proposed handling, restraint, anesthesia, and euthanasia techniques, the IACUC and veterinary staff consult field research guidelines from relevant professional organizations (e.g., American Society of Ichthyologists and Herpetologists, The Ornithological Council). When appropriate and authorized by state and local authorities, field animals are returned to the area from which they were captured.

viii Animal Reuse [Guide, p. 5]

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

Currently, UC does not have protocols that involve the reuse of animals on multiple protocols. In some instances animals may be transferred to protocols associated with service cores when it supports the research aims of the original protocol. In addition, naïve animals may be transferred to other protocols for research or teaching purposes as described in the recipient's protocol.

IACUC Policy #029, Transfer of Animals between UC Approved IACUC Protocols, recognizes the need for an efficient mechanism for transferring animals between research protocols. This process facilitates collaborative research between UC researchers and is consistent with the principles of the 3R's in reducing the total number of animals used. There are two mechanisms by which animals may be transferred between protocols:

Temporary transfer of animals: Temporary transfer of animals to another protocol can occur for the purpose of having specialized procedures, not covered on the original protocol, performed as a service or collaboration by other researchers at UC. The following restrictions apply:

- The procedure must be approved in the recipient protocol.
- Multiple major survival surgeries may not be performed on the animal being transferred unless it has been explicitly described and justified in the original protocol.
- The pain category may not be increased from a less painful/distressful to a more painful/distressful class (e.g. from pain class C to D).

Temporary transfer requests are submitted electronically to LAMS veterinary staff for review. If a transfer request does not meet the requirements of IACUC Policy #029 or if there are veterinary concerns, LAMS veterinary staff will notify the researcher that the temporary transfer cannot occur.

During the transfer period, a temporary cage card is placed on each animal's cage to denote transfer to another protocol. Once the procedures are finished, the animals can be transferred back to the originating protocol.

Permanent transfer of animals: For the permanent transfer of animals in which ownership of the animal will change, a transfer request is submitted electronically. If animals to be transferred are not naïve, the request must be reviewed and approved by the AV or designee.

Postmortem tissue sharing: Researchers may also make arrangements to share tissues postmortem to reduce the number of animals being used.

- 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.

UC does not have protocols that involve the reuse of animals on multiple protocols.

- 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.

UC has an IACUC-approved adoption policy in place for animals that meet the criteria set forth in the policy. Client-owned animals are returned to the client upon completion of activities [REDACTED].

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).

De novo review: All protocols undergo a 3 year *de novo* review by the IACUC. The PI must resubmit the complete protocol along with all associated forms.

Annual report form (USDA covered species and Department of Defense [DOD]): In addition to the 3 year *de novo* review, an annual progress report must be submitted and reviewed within 12 months of the last review/approval date for all protocols containing USDA covered species or those funded through DOD (regardless of species).

Annual progress reviews are conducted using DMR with the IACUC chairperson and the AV acting as reviewers. A list of protocols undergoing annual review is sent to all members, and a full review may be requested at that time.

Semiannual facility inspections: The IACUC conducts semiannual facilities inspections. During the inspections, the IACUC may interview researchers regarding ongoing approved activities and compare the responses with the currently approved protocol. Follow-up visits are conducted in areas where issues are identified.

Protocol modification: In addition to semiannual inspections, the IACUC actively promotes and enforces the necessity of prompt protocol modification prior to procedural changes. Through direct interactions between researchers and LAMS staff, the IACUC is made aware of potential compliance issues that may warrant further review and timely actions.

Compliance hotline/reporting: The IACUC has a strong program for investigating animal welfare concerns including the subscription to an anonymous toll-free 24 hour reporting hotline service.

Protocol share drive and RAP: The IACUC Office maintains a networked shared drive containing a copy of the approved version of each IACUC protocol, which is accessible to all LAMS veterinary staff, vivarium supervisors, and the Assistant Director Vivarium Operations in read-only format. LAMS references this shared drive when questions arise regarding protocol-related procedures. UC is transitioning to an electronic management system for IACUC protocols, including a list of approved personnel and safety office ancillary reviews if hazardous materials are utilized.

Post approval monitoring (PAM) program: The IACUC has also implemented a PAM program in which members of the IACUC office work with LAMS staff to identify issues and retrain researchers on procedures such as aseptic technique, surgical monitoring, anesthesia, and analgesia.

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

At least once every six months, no fewer than two IACUC members review the Institution's ACUP. All IACUC members are offered the opportunity to participate in the review. The IACUC uses a checklist developed from OLAW and USDA examples as the basis for evaluation. The 12 main categories evaluated include: ACUP, Disaster Planning and Emergency Preparedness, IACUC, IACUC Protocol Review-Special Considerations, IACUC Membership and Functions, IACUC Training, IACUC Records and Reporting Requirements, Veterinary Care, Personnel Qualifications and Training, OHS of Personnel, Personnel Security, and Investigating & Reporting Animal Welfare Concerns. Subcategories within each category are scored as follows: Acceptable, Minor Deficiency, Significant Deficiency, Change in Program, or Not Applicable. Supplemental checklists are utilized for the following areas: Veterinary Care; Terrestrial Animal Housing and Support Areas; Special Facilities: Aseptic Surgery; Special Facilities: Procedure Areas, Non-survival Surgeries, Laboratories, Rodent Surgeries, Imaging, Whole Body Irradiation, Hazardous Agent Containment, Behavioral Studies; Aquatic Housing, and Support Areas; and Cage Wash. In addition to the use of checklists, review of LAMS SOPs, safety practices (Biosafety, Chemical safety, Radiation safety), and/or accreditation documents may occur.

- 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**.

At least once every 6 months, no fewer than two IACUC members inspect all housing and procedure spaces (including satellite areas). For non USDA covered species housing/procedure areas, the IACUC may elect to use ad hoc consultants in place of the two IACUC members, but the IACUC remains responsible for the evaluation and report. All IACUC members are offered the opportunity to participate in the inspections. IACUC members utilize checklists and have access to an online virtual IACUC inspection web link (<https://ori.hhs.gov/education/products/IACUC/home.html>) as part of their IACUC member training. Refer to **Appendix 10** for a copy of the last IACUC program review and semiannual facilities inspection reports.

- 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.

There are no deficiencies on regulatory inspection reports.

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

None.

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

Any concerns involving the care and use of animals may be submitted to LAMS (which includes the AV), the IACUC Office (which includes the IACUC Chair), the IO, the Vice President for Research, the University Ombuds, or the Compliance Hot Line (handles reports of non-compliance for those who wish to remain anonymous). Signage for reporting animal welfare concerns is posted at the entrance of each animal facility.

The IACUC Office (or individual(s) appointed by the IACUC Chair or IO) will initiate a prompt and thorough investigation of all complaints. All such complaints and follow up are documented. If a significant animal welfare issue is identified, the AV and/or IACUC Chair has programmatic authority to halt activities pending review by the IACUC. Substantiated complaints along with proposed resolutions are presented to the IACUC for review, discussion, and corrective actions are developed in consultation with the IO. Applicable parties are notified in writing of the outcome. When a significant non-compliance is identified or an approved protocol suspended, the appropriate federal agencies are notified by the IO. UC assures that individuals reporting concerns are protected from reprisals and discrimination.

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.

The individual with overall responsibility is the IO or designee (e.g., LAMS Director/AV or Assistant Directors [Veterinary Services or Vivarium Operations]). In the event of an emergency involving an animal housing area, the LAMS Director/AV must be contacted. For an emergency involving a hazardous material (biological, chemical, physical, radiological), the applicable safety office (BSOf, EH&S, RSOf) is contacted. For security breach or infrastructure problems, UC Emergency Dispatch is notified.

The LAMS Director/AV or designee will deploy available trained personnel to maintain animal health and well-being. LAMS personnel will report to the affected facility and assess animal health after the facility is deemed safe to re-enter.

Provisions for addressing animal needs to minimize the impact to animal welfare include:

- Performing animal health checks as soon as possible after an emergency.
- Replacing compromised feed. Standard diets may need to be replaced with alternative diets if required. A two-week supply of standard diets is maintained in each facility.
- If there is an interruption to the water supply, water can be obtained from another facility or from a commercial source. Water provided will be potable and, ideally, delivered in the same form (e.g., reverse osmosis [R/O]) as normal.
- Routine sanitation will resume as soon as possible assuming equipment is functional. If equipment is not functional, alternate method(s) are available (e.g., hand washing, use equipment in other facilities). Additionally, less critical activities (e.g., mopping floors) may be deferred.
- In cases of power loss, lighting, temperature control, and/or Heating, Ventilation, and Air Conditioning (HVAC) or environmental contamination (e.g., smoke, chemicals), each facility is equipped with methods to control minor variations (e.g., portable cooling units, fans, increased exhaust). However, in cases of serious damage to environmental systems, animals could relocate to alternate facilities as determined by the LAMS Director/AV or designee.

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.

Temperature and humidity are monitored in all animal housing locations (including IACUC-approved satellites) using a building automated system (BAS) provided by Siemens APOGEE, with three exceptions (see below). Monitoring includes utilization of a 24 hour paging system which notifies UC Facilities Maintenance, LAMS “on call” vivarium supervisor, and LAMS Assistant Director, Vivarium Operations when temperatures are outside of set point ranges.

The BAS provides room temperature and humidity values in “real time” and can be printed, trended, and archived. LAMS vivarium supervisors review temperature and humidity data when a deviation is suspected. The LAMS Assistant Director, Vivarium Operations reviews temperature and humidity trend reports monthly.

Exceptions to the BAS: There is one satellite housing location () that is not monitored by the BAS. The room is used for experiments requiring rodent restraint in cages during lymphatic cannulation studies. The cages are maintained within environmental chambers with automated temperature control and a view screen for temperature display. The animals are housed in this room for up to 2 days following implantation surgery and data collection. Manual monitoring and recording of temperature and humidity is conducted daily by the research staff.

The HVAC System Summary can be found in **Appendix 11**.

- 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]

Species	Temperature (°F) +/- 4°F	Humidity (%)
Cat	72	30-70
Dog	72	30-70
Fish	68	30-70
Frog	68	30-70
Gerbil	74	30-70
Guinea Pig	68	30-70
Mouse	74	30-70
Rabbit	68	30-70
Rat	74	30-70
Pig	68	30-70
Snake	78	30-70

Note: During certain times of the year (e.g., winter), humidity may fall below the recommended 30%. However, LAMS veterinary staff has not observed animal health issues associated with decreased humidity levels at the room level.

- 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]

Temperature set points and/or environmental conditions outside the thermoneutral zone for a species requires IACUC approval. The proposed procedure must be justified and described. Examples of IACUC-approved studies include: (1) evaluating the function of brown adipose tissue's ability to defend internal/core temperatures in response to a cold challenge, (2) elucidating the impact of resting thermogenesis and basal metabolic rate on overall energy balance regulation using thermoneutrality experiments, and (3) using cold temperature as part of chronic variable stress paradigms.

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.

Facilities Maintenance monitors air flow (cubic feet per minute [CFM]) via BAS. If a problem is identified (e.g., a temperature control alarm or LAMS reports a noticeable imbalance, odor, and/or noise), an HVAC technician responds.

Pressure gradients are monitored either by ball-in-tube indicators (████ [mouse barrier and selected rooms on the conventional side] and █████ animal housing rooms and █████ Clinical Lab) or "flow check powder" (hazard rooms [e.g., biological, chemical, radiological] are verified weekly and USDA covered species survival surgery rooms are tested prior to surgery). Results ("flow check powder") are documented on the QC log, which is reviewed monthly by vivarium supervisors.

If any alterations in ventilation rates or pressure gradients are noted, LAMS management staff are notified and work with Facilities Maintenance to correct the problem. On a triennial basis, room ventilation rates and pressure gradients are measured by EH&S.

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

LAMS has six different styles of IVCs/pressurized individually ventilated (PIV) racks used in the maintenance of rodents (mice and guinea pigs): (1) Alternative Design's Gentle Air system – positive air pressure cages; (2) Alternative Design's Modular Animal Caging System (MACS) – adjustable air pressure differential (LAMS uses in positive pressure mode); (3) Allentown NexGen Mouse IVC – adjustable air pressure differential; (4) Lab Product's One Cage™ Ventilated Rack - negative pressure rack with positive pressure cages; (5) Innovive's rodent housing system - disposable 100%

polyethylene terephthalate plastic bisphenol A (BPA)-free recyclable cages, dual high efficiency particulate air (HEPA)-filtered ventilation, transversal airflow, positive/negative modes of operation, IVC or static lid option, and universal bottom, water bottle, and stainless steel wire bar; and (6) Lab Products bCON™ Bio-containment system - negative air pressure cages used in [REDACTED] facility, HEPA-filtered supply and exhaust air (exhaust into the room).

- 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.

Animal rooms (including satellites) are supplied with 100% fresh air. Cages on ventilated racks obtain their supply air from the room. The ventilated racks supply and exhaust air is HEPA filtered into the animal housing room.

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).

IACUC Policy #012B requires development of an SOP which describes general requirements for housing systems, housing densities, water treatment, maintenance, and QA in satellite housing areas.

- 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).

Husbandry Practices for Aquatic Species: Fish are maintained in a recirculating aquatics system (Aquaneering, Inc) and/or static tanks at room temperature (23-24°C). The systems have proven optimal for rearing/breeding wild-caught *Astyanax* sp. and laboratory strains of *Danio* sp. Lights are maintained on a 12:12 light:dark cycle using automated light timers. Water (R/O) is treated with commercially-available salts ("Instant Ocean") and sodium bicarbonate prior to entering the tanks to achieve an optimal pH (~7.2-7.8) and conductivity (~500-1000µS) for these fish. Water entering the animal's enclosure undergoes mechanical, carbon, and bio-filtration and UV sterilization. Housing density varies with age and/or size of the animals. Juveniles are housed up to 50 per 5 gallon tank and up to 100 per 10 gallon tank. Adults are housed up to 25 per 5 gallon tank and up to 50 per 10 gallon tank. Water quality in static tanks is monitored manually using water test strips. For the Aquaneering system, temperature, pH, and conductivity levels are monitored electronically. Water test strips are used to measure nitrate, nitrite, and ammonia levels.

Xenopus laevis and *X. tropicalis* are maintained in flow through, recirculating, or static tanks at a density of 1 adult per 1-3L (depending on species). LAMS uses a Tecniplast flow through aquatic system to maintain experimental animals. Lights are maintained

on a 14:10 light:dark cycle. Frog water is R/O. Water entering the animal's enclosure undergoes mechanical, carbon, and bio-filtration and UV sterilization. The system is programmed to perform a 4.5% water change daily based on size and number of tanks. If there are problems related to water quality parameters, pH probe calibration, or conductivity probe calibration, or when the filter or UV bulb needs replacement, the Tecniplast system will display the information on the monitoring screen. The system monitors temperature, pH, and conductivity levels electronically and water test strips are used to manually measure nitrate, nitrite, water hardness, chlorine, and alkalinity levels. All other water quality testing is done manually. Per our Tecniplast service contract, routine and preventative maintenance is performed quarterly.

In satellite locations, Aquatic Habitat's (currently Pentair Aquatic Eco-systems) stand-alone recirculating aquatic systems are used (1850 gallon system and 370 gallon system) for housing *X. laevis* and *X. tropicalis*. Lights are maintained on a 12:12 light:dark cycle using automated light timers. Water is R/O. Water entering the animal's enclosure undergoes mechanical, carbon, and bio-filtration and UV sterilization. The system performs a 10% water change daily. Temperature is monitored continuously using the Fluval system. The pH, conductivity, ammonia, nitrite, nitrate, hardness, and alkalinity are monitored weekly using pH meter, conductivity meter, test strips, and liquid tests. Static tanks (2-180 liters) are used for temporary housing and short term experiments. Water is changed every 1-7 days. The water comes from frog reservoir water which is freshly prepared R/O with salts and bicarbonate added to 800uS and pH 7.0.

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.

When facilities are designed, noise and vibration are reviewed to minimize disturbances to both animal and human occupants. Whenever possible, cage processing equipment is located at the periphery of the facility (e.g., [REDACTED]) or physically separated from animal holding rooms by corridors (e.g., [REDACTED]), and in some instances, entire floors (e.g., [REDACTED]) and separate buildings (e.g., [REDACTED]). Doors to animal rooms are kept closed and staff is apprised of the noise impact on animals. Species separation is considered when vocalizations may be distracting or agitating to other species (e.g., large animal and barrier rodent housing are on opposite sides of the [REDACTED]). Fire alarms are set below rodent hearing frequency. Facility infrastructure consists of materials that help minimize transmission of noise and vibration (e.g., walls made of cement plaster over concrete block, epoxy aggregate floors, concrete plaster over metal lathe or fiberglass reinforced plastic ceilings, and insulated steel doors). Renovation/maintenance that generate noise is scheduled in advance with researchers to help minimize disruption to animals and research.

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 UC IACUC primarily uses the *Guide* and AWA/AWR as guiding documents to verify the adequacy of space for research animals. Other guiding documents for space requirements for ectotherms include: The Laboratory *Xenopus* (2010), American Society of Ichthyologists and Herpetologists (2004 edition), and Guidance on the Housing and Care of Zebrafish (2011).

- 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]

A limited number of protocols are approved in which animals are housed with less space than recommended by the *Guide*. These exceptions have been specifically reviewed and approved by the IACUC based upon scientific justification or animal welfare considerations.

4 primary groups of IACUC-approved housing space exceptions:

- (1) Mice: 2 female and 2 litters in the same primary enclosure - some strains have adverse maternal phenotypes leading to poor milk production, maternal neglect, or increased post-partum morbidity/mortality of the dam.
- (2) Mice or rats: Stress paradigms where increased housing density is used as either an acute stressor or as part of a variable stress paradigm.
- (3) Dwarf rats or burn injury young rats: Housed in reduced height cages (e.g., 5 inches rather than 7 inches) to allow access to food.
- (4) Mice or rats: Calorimetry housing systems have reduced chamber height (e.g., 3.4 inches for mice and 5.5 inches for rats) which is necessary for rapid collection of metabolic data.

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).

Amphibians (other than frogs): Artificial or natural environmental strata (e.g., tree branches, rocks)

Cats: Resting platforms (e.g., boards, kennel mats, open carriers)

Dogs: Resting platforms (e.g., boards, kennel mats, open carriers)

Frogs: Tinted tank color provides optimal light level, polycarbonate /PVC tubes
Mice: Trapeze swing
Pigs: Visual fence pens with contact bedding (pens are expanded to provide as much exercise space as possible)
Rabbits: Visual fence pens with contact bedding, resting platforms, polycarbonate huts
Reptiles: Artificial or natural environmental strata (e.g., tree branches, platforms, heating lamps with basking rocks)

- 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).

To encourage natural behavior and minimize stress, efforts are made to naturalize primary enclosure environments to enhance opportunities for animals to exhibit species-specific activities that will not negatively impact research outcomes. If animals require single housing for study or health-related reasons, additional enrichment items are provided through rotation or replacement (unless scientific justification to withhold enrichment has been reviewed and approved by the IACUC). In addition to nutritionally balanced diets food treats may be provided to some species to encourage browsing, exploring, foraging, gnawing, grazing, and rooting behaviors. The following non-structural provisions are utilized:

Amphibians (other than frogs): Artificial or natural environmental strata (e.g. tree branches, rocks)

Cats: Taken out of cages daily and provided with human interaction, exercise, play time, non-edible chew toys, scratching posts, grooming, hide box, bedding and cushion, food treats

Dogs: Taken out of runs daily and provided with human interaction, exercise, play time, non-edible toys, grooming, plastic beds, bedding and cushion, food treats.

Fish: Artificial or natural environmental strata (e.g. artificial plants, polycarbonate/PVC tubes)

Frogs: Artificial environmental strata (e.g., polycarbonate/PVC tubes, artificial floating plants, floating ping pong balls)

Gerbils: Dust bath, crinkle paper, disposable huts, polycarbonate huts, nylabone, non-edible chew toys

Guinea Pigs: Crinkle paper, disposable huts, polycarbonate huts, nylabone, and/or non-edible chew toys, food treats (e.g., hay cubes, produce)

Mice: Nestlets, crinkle paper, disposable huts, polycarbonate/PVC huts, nylabone, non-edible chew toys

Pigs: Food treats, non-edible toys, radio, hanging mirrors, wall-mounted mirrors

Rabbits: Non-edible chew toys, polycarbonate tunnels, open carriers, hanging whisk filled with timothy hay, mineral blocks, food treats

Rats: Crinkle paper, disposable huts, polycarbonate huts, nylabone, non-edible chew toys

Reptiles: Artificial or natural environmental strata (e.g. rocks, tree branches, platforms, heating lamps with basking rocks)

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

i. Describe institutional expectations or strategies for [social housing](#) of animals.

IACUC Policy #030 addresses social housing and follows the recommendation of the *Guide*. Unless scientifically justified and approved by the IACUC or medically necessary as determined by the veterinary staff, social species are group housed. The IACUC in consultation with the veterinary staff has defined social species as all species used at UC except amphibians and reptiles.

Standard exceptions to social housing: The IACUC recognizes that situations exist in which single housing of social species may be inevitable. These include: (1) separation of aggressive cage mates, (2) attrition of cage/pen mates or uneven number of animals, (3) last animal remaining in an experimental cohort, (4) single animal ordered, (5) pregnant females separated to prevent overcrowding, and (6) separation of pups at weaning when the number of pups does not allow for all animals in a litter to be placed with a compatible cage mate (e.g., single male pup in a litter).

Experimental requirements for single housing: Single housing must be reviewed and approved by the IACUC. Information provided in the protocol includes the scientific justification for single housing and the period(s) in which single housing is required. LAMS staff is notified by the researcher of the single housing requirement through submission of an online husbandry service request.

Veterinary health reasons for single housing: Veterinary approval for single housing is required and states the health reason for single housing the animal, the period(s) requiring single housing, and frequency of re-evaluation of the need for continued single housing status (which occurs at least once every 30 days).

The IACUC acknowledges that under certain circumstances attempts to socially house animals could significantly alter scientific outcomes and/or jeopardize animal welfare. The IACUC grants approval for single housing for the standard exceptions listed above. The time an animal is kept in single housing shall be minimized.

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.

Justification for single housing of social species may include:

- (1) **Scientific requirement:** Animals may need to be housed in specialized cages (e.g., calorimetry chambers, metabolic cages) to obtain data. Exteriorized implants (e.g., brain or venous cannulas) or surgical incisions may be damaged by cage/pen mates. Animals on food or fluid intake studies may require single housing. Some stress paradigms use single housing as a stressor. Use of voluntary running wheels to monitor exercise requires the individual being monitored to be single housed. A model of nonalcoholic steatohepatitis uses

single housing to encourage a sedentary lifestyle, facilitating model development. Finally, studies utilizing infectious agents may require single housing to prevent cross-contamination of cage/pen mates.

- (2) Veterinary health/animal welfare: Animals may be single housed due to veterinary health or animal welfare concerns. Animals with unknown health status may be single housed to minimize/prevent potential for cross-contamination of conspecifics. Injured, sick or, post-surgical animals often require single housing to aid in recovery. Animals known to have an aggressive phenotype require single housing to prevent injury to cage mates. Pregnant females are often separated to prevent overcrowding based on cage space requirements.
- (3) Other: Death or termination for experimental reasons of a cage mate may result in a single housed animal. When rodent pups are weaned, the number of pups may not allow for all animals in a litter to be placed with a compatible cage mate (e.g., single male pup in a litter). Finally, particularly with large animals, only one animal may be procured and on study at a given time.

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

When single housing or social isolation occurs, methods to ensure psychological well-being are implemented. Methods include use of additional enrichment items or addition of a companion animal in the room or housing area; auditory, olfactory, tactile, and/or visual contact with compatible conspecifics; and/or interaction with the animal care staff. In cases where enhanced enrichment measures would interfere with the research, a request to withhold enrichment must be described and submitted as part of the protocol that is reviewed and approved by the IACUC.

When single housing or social isolation occurs with larger species (e.g., cat, dog, pig, rabbit), human interaction is significantly enhanced. Whenever feasible, at least 2 animals of the same species are procured at the same time to avoid social isolation. Housing rooms are set up to accommodate multiple animals to ensure auditory, olfactory, tactile, and/or visual interaction. In addition, the enrichment program includes provision of auditory items (radios); food treats to enhance the opportunity to browse, explore, forage, gnaw, graze, and root; expanded caging and/or exercise areas; wall-mounted mirrors; toys; and grooming opportunities.

In the event an animal is single housed due to post-operative restrictions or incompatible behavior with conspecifics, that individual is provided all other enrichment opportunities with the exception of having a pairing partner.

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.

LAMS veterinary staff maintains a list of approved enrichment items for each species. The list is updated as needed and/or adjusted on a case-by-case basis when deemed necessary following evaluation by the veterinary staff and researcher consultation.

Non-USDA covered species: The UC animal population is primarily comprised of mice and rats (99%). The rodent enrichment program consists of social housing and provision of cage enrichment (e.g., crinkle paper, huts, nestlets, nylabones). All rodent cages receive at least one form of enrichment unless there is an IACUC-approved exception. Single housed rodents for experimental/veterinary reasons receive at least two forms of enrichment unless otherwise reviewed/approved by the IACUC.

Ectotherms are provided with cage enhancements to encourage species-typical behavior (e.g., rocks for basking, branches for climbing). There is no formal process to evaluate the effectiveness of cage enrichment for amphibians, fish, lizards, and snakes due to lack of published data.

During IACUC semiannual facility inspections, the IACUC pays particular attention to social housing and enrichment status. LAMS husbandry staff performs daily observations and if anything unusual is noted, it is reported to LAMS veterinary staff for evaluation. If a stereotypic behavior is identified, that animal (or group of animals) is provided with enhanced enrichment opportunities following researcher consultation.

USDA covered species (e.g., cats, dogs, gerbils, guinea pigs, pigs, rabbits): The same requirements for social housing and enrichment as described above apply. Whenever possible, animals are group housed. If single housed, every effort is made to ensure indirect contact with conspecifics. For larger species (e.g., cats, dogs, pigs, rabbit, sheep), there is enhanced human interaction. Careful attention is paid to identifying any stereotypic behavior, and if found, immediate changes are made in social housing status and cage/pen enrichment. Exempt animals based on incompatibility and/or health concerns are provided with enhanced human interaction and/or novelty enrichment items through rotation or replacement.

Short term exemptions from all or part of the enrichment program are reviewed at least once every 30 days. All permanent exceptions must be reviewed and approved by the IACUC followed by submission of a LAMS husbandry service request.

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.

Habituating animals to routine husbandry procedures is accomplished through animal interaction with husbandry/research staff, environmental enrichment, and open communication with research staff in efforts to fulfill animal needs while simultaneously providing research support. Animal handling procedures may be modified to minimize stress. For studies that require significant animal cooperation/compliance (e.g., routine body weight measurements, treadmill training), additional socialization, handling, and/or reward-based training may be performed.

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).

Not applicable.

- 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.).

Not applicable.

- 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.

Not applicable.

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).

Not applicable.

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

Not applicable.

- iii. Describe how animals are captured.

Not applicable.

C. Animal Facility Management

1. Husbandry

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

- i. List type and source of food stuffs.

In addition to commercially-prepared diets (see table below), the following food items are provided:

Amphibians/Lizards: live feeders (e.g., crickets, flightless drosophila, waxworms, dehydrated fruit). *Source: Chirp N Time, cultured in lab, local pet food market or supermarket.*

Cats/Dogs: food treats. *Source: Purina.*

Fish: live black worms. *Source: Drs. Foster and Smith.*

Guinea Pigs: timothy hay and fresh produce/fruit (e.g. carrots, green leafy vegetables, and apples). *Source: Cincinnati Lab Supply, local pet store or supermarket.*

Pigs: fresh fruit and food treats (e.g. bananas, banana chips, yogurt, peanut butter, canned dog food, and gummy treats). *Source: local pet store or supermarket.*

Rabbits: timothy hay, alfalfa cubes, apple juice, and fresh produce /fruit (e.g. kale, brussel sprouts, carrots, apples). *Source: Cincinnati Lab Supply, local pet store or supermarket.*

Snakes: live or euthanized prey (e.g., mice, rats, lizards). *Source: RodentPro or LAMS.*

Species and Type	Source/Vendor
Cats: Purina Dry and Canned Diet	Cincinnati Lab Supply
Dogs: Purina Dry and Canned Diet	Cincinnati Lab Supply
Fish: Tetra Min Tropical Crisps	Drs. Foster and Smith/ Green Thumb Aquatics
Gerbils: NIH-07 Mouse/Rat Irradiated #7922	Envigo Teklad
Guinea Pigs: Guinea Pig Diet # 2940 (irradiated)	Envigo Teklad
Lizards (not currently housed at UC): Crickets	Fluker's Cricket Farm
Mice/Rats: [REDACTED] Teklad LM 485 Mouse/Rat Sterilizable Diet # 7012 Teklad LM-485 Irradiated Rodent Diet # 7912 Teklad LM-485 Powdered Mouse/Rat diet #7012M (Special order)	Envigo Teklad
Mice/Rats: [REDACTED] Purina Mills Picolab Irradiated Rodent Diet # 5058 (Breeder)	Cincinnati Lab Supply
Mice/Rats: [REDACTED] NIH-07 Mouse/Rat Irradiated Rodent Diet #7922 (Standard) Teklad Global 19% Irradiated Rodent Diet # 2919 (Special order) Teklad Global 18% Irradiated Rodent Diet # 2918 (Special order)	Envigo Teklad

Mice/Rats: [REDACTED] Purina Mills Picolab Irradiated Rodent Diet # 5058 (Breeder)	Cincinnati Lab Supply
Pigs: Purina Mills Porcine Grower Diet # 5084	Cincinnati Lab Supply
Rabbits: Purina Mills High Fiber Diet #5326	Cincinnati Lab Supply
Snakes: Dead, frozen mice/rats; live mice/rats/lizards	RodentPro; LAMS (live or dead frozen mice/rats); Wild caught (live lizards)
Xenopus: Frog brittle; Raw chicken liver	Nasco; Local supermarket

- 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

VENDORS

Cincinnati Lab Supply

Terminix Pest Control Program: Pest control is performed by Terminix Pest Controls professionally trained technicians on a monthly basis, utilizing the most advanced techniques, equipment, pesticides and knowledge of biological, ecological, and environmental considerations. Services provided include:

- Strategically located tamper resistant rodent bait stations along the entire outside perimeter.
- Rodent Ketch-All trapping equipment and glue traps strategically located throughout the inside of the facility.
- A map of all rodent equipment is kept on file.
- During each service, technician's check, clean, date, and initial each device and re-bait the bait stations.
- EPA-approved insecticides/pesticides are applied to cracks and crevices with low pressure pin stream treatment or according to EPA approved label directions eliminating any possibility of product contamination.
- Technicians complete a log sheet for each service. This documentation includes the pesticides used, how they were applied, the EPA registration number for each pesticide, the amount of material used and the percent of the finished product; any recommendations regarding sanitation, pest problems, or structural defects are also included.

Cincinnati Lab Supply Internal Sanitation and Quality Control Program: In addition to the Terminix Pest Control program, Cincinnati Lab Supply internal sanitation and quality control includes:

- All outside and inside devices are checked and logged weekly. Any activity is noted to pinpoint problem areas.
- All incoming products are visually inspected for damage or infestation.

- All certified lab chows are logged by manufacturer date codes, customer's name, purchase date, and quantity purchased-this enables the tracking of a particular product if necessary.
- All products are rotated by date to ensure freshness.
- All products are stored on pallets and pallet racking off the floor and 18" inches from the walls.
- An 18" space painted white on the floor along the perimeter of the walls for easy inspection of any insect or rodent activity.
- All doors and windows are kept shut and are adequately sealed to prevent potential pest entry.
- The warehouse building is a modern facility constructed of concrete block and steel. The floors are smooth concrete and all joints are caulked and sealed. The outside is surrounded by blacktop.
- The entire warehouse is heated and a section of the warehouse is air conditioned for feed storage to control the heat and humidity in the summer months. The temperature is set at 68°F.
- Floors/delivery equipment are swept daily to avoid infestation from spillage.
- Outside surroundings are kept free of weeds and debris.

Envigo: Envigo Teklad diets are delivered directly from the manufacturer's warehouses. Diet storage facilities are fully climate-controlled with temperature and humidity being maintained at < 70°F and 55%, respectively. Temperature and humidity are monitored and recorded daily.

All seams and floors of each warehouse are sealed to keep vermin out and eliminate possible areas of harborage. An 18 inch wide white sanitation border is painted around the entire interior perimeter. This white border facilitates visual inspection and helps ensure products or equipment are stored no closer than 18 inches from the walls, which aids in cleanup. Each warehouse is inspected and cleaned on a daily basis. All spills are cleaned up immediately. Delivery vehicles are cleaned with a chlorine dioxide-based product (e.g., MB-10) after every use.

Envigo's vermin control program includes sanitation combined with careful temperature and humidity control, proper stock rotation, and observation. Every pallet of product that enters Envigo's facilities is carefully inspected with a black light for any sign of damage or vermin infestation. They routinely re-palletize incoming items as an extra precautionary measure in checking for signs of vermin activity. Product is then rotated and stored using a first-in, first-out inventory rotation system. Warehouse managers walk the entire perimeter of each facility daily. If any vermin activity is observed, immediate and appropriate action, including the disposal of any potentially infested or contaminated diets, is taken. In addition to the white sanitation border, glue boards are located every 10 to 15 feet throughout each warehouse. Pheromone traps are also utilized. Additionally, an independent pest control vendor is contracted for each facility; inspecting warehouses and the feed mill facility twice per month and reporting any observations or potential concerns.

CENTRALIZED OR BULK FOOD STORAGE FACILITIES

Not applicable.

ANIMAL FACILITY OR VIVARIUM FEED STORAGE ROOMS

Feed Storage Rooms:

Temperature and humidity parameters are monitored daily in feed storage locations by the BAS (Siemens APOGEE) and/or hygrometers.

Food is stored on pallets or transport carts away from walls in dedicated rooms set at < 70°F (temperature set point of 68°F) as recommended by the *Guide*. Feed room doors are equipped with door sweeps to restrict and prevent vermin. Live traps are placed in each feed storage location and inspected daily. Insect traps are utilized if a problem is suspected. In rooms that also contain non-food items (e.g., bedding, rodent enrichment items), feed is kept off to one side and not co-mingled with non-food items. Open bags of food are not stored in feed rooms. On-hand feed inventory is kept to a minimum (2 week supply), aiding stock rotation.

STORAGE CONTAINERS WITHIN ANIMAL HOLDING ROOMS

LAMS uses ergonomic feed bins or covered containers to store and distribute feed within animal housing rooms. Feed storage containers are labeled with food type, milling date, expiration date of the feed, and date the feed container was last sanitized. Feed bins are sanitized monthly.

- iii. Describe special food preparation areas, such as feedmills 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).

None

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

The following describes feeders/feeding for each species.

SPECIES –FEEDER-PROVISION

Amphibians: Cage floor (limited)

Cats: Bowl (limited)

Dogs: Canine J-feeder on gate or bowl (limited)

Fish: Tank (limited)

Gerbils: Suspended hopper (*ad libitum*)

Guinea Pigs: J-feeder (*ad libitum*)

Mice: Suspended hopper (*ad libitum*)

Pigs: Plastic feeder troughs with aluminum brackets (limited)

Rabbits: J-feeder, stainless steel bowl, wire whisk (limited)

Rats: Suspended hopper (*ad libitum*)

Reptiles: Cage floor (limited)

Xenopus: Tank (limited)

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

Food is stored on pallets or transport carts away from walls in dedicated rooms set at < 70°F (temperature set point of 68°F) as recommended by the *Guide*. Feed room doors are equipped with door sweeps to restrict and prevent vermin. Live traps are placed in each feed storage location and inspected daily. Insect traps are utilized if a problem is suspected. In rooms also containing non-food items (e.g., bedding, rodent enrichment items), feed is kept off to one side and not co-mingled with non-food items. Open bags of food are not stored in feed rooms. On-hand feed inventory is kept to a minimum (2 week supply) which aids in stock rotation. Food storage rooms are swept and mopped at least weekly and sanitized every 6 months.

All feed shipments are inspected on arrival. At the time of receipt, milling dates are checked and noted. LAMS does not accept compromised feed bags and/or bags with milling dates less than 60 days from expiration. The diets used have a recognized shelf life of 6 months from the date of milling. Frog brittle has a 12 month expiration date when kept frozen. Feed is rotated weekly when new deliveries are received to ensure older feed is used first. In addition “Use First” signage is placed on pallets to help facilitate appropriate rotation of stock. If feed is noted to be abnormal, moldy, or vermin infested, it is discarded and the cause is investigated. When the feed is distributed to the animal rooms for use the feed storage containers are labeled with food type, milling date, expiration date of the feed, and the date the feed container was last sanitized. Feed bins are sanitized monthly. Food is discarded in accordance with manufacturers’ recommendations (e.g., 6 months from date of milling).

Non-commercial diets and feed supplements include: fresh produce/fruit supplements, raw chicken liver, and live food fed to fish, amphibians, and reptiles.

Fresh produce/fruit is stored in sealed plastic bags marked with purchase date and checked daily for indication of spoilage. Any food showing spoilage is discarded. Any unused produce/fruit is discarded 30 days after purchase date. Refrigerators and/or freezers are available in feed storage room(s) for cold storage diets.

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).

All facilities use potable water that originates from the city of Cincinnati. The types of filtered water used include: potable tap water, cartridge filtered tap water, and R/O water with UV sterilization.

Specialized BPA-free studies use a process of filtration and deionization to produce high purity water (Millipore) for rodents on these studies.

One PI utilized acidified water for mice that have undergone whole body irradiation and bone marrow transplantation.

The rodent barrier portion of [REDACTED] uses the Flexeon AT-1000 commercial R/O unit for the water supply. The system uses a combination of carbon, sediment, and semi-permeable membrane filters and UV sterilization to remove minerals and impurities. Conventionally housed rodents also receive R/O water. Large animals housed along the [REDACTED] are provided with filtered tap water. Each 5 micron filter cartridge is replaced at least monthly.

The [REDACTED] animal facilities use Systems Engineering™ ReCIRC™ system for the water supply. The system uses a combination of micron filters and UV sterilization to remove minerals and impurities.

The [REDACTED] facility uses tap water with a 5 micron cartridge filter for the water supply.

The [REDACTED] housing rooms use potable city tap water. For the *Xenopus laevis*, *X. tropicalis*, and fish aquatic systems, city tap water is sent directly to each re-circulating water system for processing of R/O water. The systems use a combination of biological, chemical, and mechanical filtration and UV sterilization to remove minerals and impurities.

PROVISION OF WATER

[REDACTED] Rodents: R/O fed to automatic water valve and/or water bottle with sipper tube.

[REDACTED]
Frog: R/O water in re-circulating system

Gerbil/ guinea pig/rabbit: R/O in water bottle with sipper tube

Mouse/rat: R/O fed to automatic water valve and/or water bottle with sipper tube

Pig: filtered tap fed to automatic water valve, bowl, bucket, and/or water trough

[REDACTED]:

Cat: filtered tap water, bowl

Dog: filtered tap water which is fed to automatic water valve and/or bowl

Rabbit: filtered tap water, water bottle with sipper tube

Rodent: filtered tap water and/or water bottle with sipper tube

[REDACTED]
Fish/frog: R/O water in multi-stage filtered, UV sterilized re-circulating system and/or static tank

Reptile (lizard, snake): potable city tap water, bowl

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

In the LAMS monthly QC program, the Flexeon AT-1000 R/O unit and Systems Engineering™ Lab ReCIRC™ water system storage tanks are partially drained

and/or the 5 micron filter replaced. Water is tested with an ATP swab to detect residual ATP, an indicator of potential bacterial growth. If ATP is detected, the affected holding tank is completely drained, sanitized, rinsed, and retested. The Flexeon AT-1000 carbon cartridge filter, sediment cartridge filter, and semi-permeable membrane cartridge is replaced minimally every 3, 6, and 36 months, respectively. Each system's UV light bulbs are replaced minimally every 10 months.

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

Water lines on rodent racks that use the automated water delivery system are flushed with R/O water twice per week. In addition, the racks are washed in a rack washer with a final rinse of 180°F and undergo preventative maintenance biannually.

For large animal pens that utilize an automatic watering system, the recoil hoses connected to the main water line are sanitized in the tunnel washer when the pens are broken down and sanitized (at least once every 2 weeks). The lixit water dispensers which are attached to the pens are sanitized in the rack washer (final rinse of 180°F).

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

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

Direct Bedding	Source Vendor	Storage
Sterilized corncob combo (Rodent)	Cincinnati Lab Supply	Unopened bags on pallets/transport cart in feed/bedding room
Sterilized Sani-Chip (Rodent)	Cincinnati Lab Supply	Unopened bags on pallets/transport cart in feed/bedding room
Irradiated Alpha Dri (Rodent)	Cincinnati Lab Supply	Unopened bags on pallets/transport cart in feed/bedding room
Irradiated Diamond Dri #7970 (Rodent)	Envigo Teklad	Unopened bags on pallets/transport cart in feed/bedding room
Pine shavings (Pig, Rabbit)	Cincinnati Lab Supply	Unopened bags on pallets/transport cart in feed/bedding room
Potting soil (Lizard, no longer housed)	Local supermarket	Resealable plastic bag stored in animal housing room
Indirect Bedding	Source Vendor	Storage
Cell Sorb (litter pan/cage tray) (Cat, Rabbit)	Cincinnati Lab Supply	Unopened bags on pallets/transport cart in feed/bedding room
Scoopable cat pan litter (Cat)	Cincinnati Lab Supply	Resealable plastic bucket stored in animal housing room
Excreta paper (cage tray) (Cat, Rabbit)	Bunzl Paper Distributor	Bundle on pallets/transport cart in feed/bedding room

Excreta paper (cage bottom), (Lizard [no longer housed], Snake)	Bunzl Paper Distributor, local supermarket	Stored in housing room
Nesting Materials	Source Vendor	Storage
Crinkle paper	Cincinnati Lab Supply	Boxes on shelving units/carts in feed/bedding room; autoclaved in covered cage in housing room
Nestlets	Ancare	Boxes on shelving units/carts in feed/bedding room; autoclaved in covered cage in housing room

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

Bedding Storage Rooms:

Bulk bedding is stored in the same rooms as feed. Temperature and humidity parameters are monitored daily in all feed/bedding storage locations by the BAS (Siemens APOGEE) and/or hygrometers.

Bedding is stored on pallets or transport carts away from walls in feed/bedding rooms set at < 70°F (temperature set point of 68°F) as recommended by the *Guide* (for feed storage). Bedding/feed room doors are equipped with door sweeps to prevent vermin. Live traps are placed in each bedding/feed storage location and inspected daily. Insect traps are utilized if a problem is suspected. Open bags of bedding are not stored in bedding/feed rooms.

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

Bedding is stored on pallets or transport carts, off the floor, away from the walls in combined feed/bedding rooms at temperatures <70°F as recommended by the *Guide* (for feed storage). Temperature and humidity parameters are monitored daily in all feed /bedding dedicated storage locations by the building automated system (Siemens APOGEE) and/or a hygrometer. The doors are equipped with door sweeps to restrict and prevent vermin. Live traps are placed in each feed/bedding storage location and inspected daily. Insect traps are available if a problem is suspected. All bedding shipments are inspected on arrival. LAMS will not accept compromised bedding bags. No open bags of bedding are stored in the feed/bedding rooms. Feed/bedding storage areas/rooms are swept and mopped at least weekly and sanitized every six months. The level of sanitization is tested with an ATP swab to detect residual ATP as an indicator of potential bacterial growth. If results are above acceptable levels, different areas of the room will be retested. If 3 test results remain above acceptable levels, the room is resanitized and retested.

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.

LAMS owns/operates 2 vehicles that are used for animal transportation:

2005 Dodge Mini-Caravan Cargo Van: License plate [REDACTED] is equipped with bulk head, heat, air conditioning, and tinted windows to protect the animal and/or cage from direct sunlight.

2010 Mitsubishi Fuso Box Truck: License plate [REDACTED] is equipped with a hydraulic lift gate and climate controlled custom designed box for secure transport of animals and 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.).

Specialized equipment includes HEPA filtered vacuums, automatic floor scrubbing machines, manual floor scrubbers with solution dispensing tanks, high pressure washers, automatic measuring devices for mixing and dispensing disinfectant, filtered transport carts, air shower for entry into the CVC animal facility, vapor fumigating units, Bio-bubble isolation unit, and dump stations.

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	Enclosure composition & description	Frequency of Change
Cat	Suspended - litter box	Daily
Dog	Suspended – kennel/run	Daily
Gecko (not currently housed)	Glass aquaria or plastic box with lid	Weekly
Gerbil	Solid bottom	2 times/week; may be weekly if low density
Guinea Pig	Solid bottom	2 times/week; may be 3 times/week depending on weight/size
Lizard (not currently housed)	Natural soil	*Variable

Mouse	Solid bottom with solid top (IVC/PIV cage)	Weekly (high density); bi-weekly (low density)
Mouse	Solid bottom with filter top (SMI cage)	2 times/week (high density); weekly (low density)
Pig	Pen - contact bedding	3 times/week; picked daily
Pig	Kennel mat, Tenderfoot ® plastisol coated grate floor (used only for overnight fasting)	After each use
Rabbit	Pen - contact bedding	3 times/week; may be weekly if low density
Rabbit	Suspended - excreta paper	Daily
Rat	Solid bottom	2 times/week; may be weekly if low density
Snake	Glass aquaria or sealed wood with plexiglass - excreta cage paper, paper towel, newspaper	Variable based on feeding frequency/defecation and/or shed frequency

* The substrate is changed if there is any change in the occupants of the primary enclosure.

- 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 IACUC-approved exceptions to cleaning frequencies.

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

Rodent caging: Non-hazardous soiled bedding is removed from cages in dirty side cage wash. Bedding potentially contaminated with hazardous agents (e.g., biological or chemical) is removed in the animal housing room inside a BSC or CFH and placed in bags/containers that are picked up by EHS and disposed of as hazardous waste. Chemical hazardous waste may also be removed inside a CFH in the ■■■ necropsy room. Radioactive material waste is handled and disposed of according to RSO of guidelines. Clean bedding is placed in cages in clean side cage wash.

Non-rodent USDA covered species: Soiled bedding and excreta paper are removed from pens/suspended cages in the animal room and replaced with clean bedding/excreta paper. Bedding potentially contaminated with a hazardous agent (e.g., chemical) is removed in the animal housing room and placed in bags/containers that are picked up by EHS and disposed of as hazardous waste.

Ectotherm satellite housing rooms: Soiled substrate and excreta paper are removed from cages/aquaria in the animal room and replaced with clean substrate/excreta paper.

Facilities:

- [REDACTED] soiled bedding is dumped at the animal bedding disposal unit (bioBUBBLE, Inc) located in dirty cage wash [REDACTED]. Clean bedding is placed into cages in the adjacent room [REDACTED] (clean cage wash). Cages from the [REDACTED] Facility are prepped and autoclaved in [REDACTED] before being transported to the facility for use. Cages originating from the [REDACTED] Facility are autoclaved and cage contents dumped into a biohazard bag prior to removing from the facility. All cages are processed in LAMS cage wash. All biological waste is incinerated offsite by a commercial contract service.
- [REDACTED]: soiled bedding is dumped in front of a negative HEPA airflow Bio-bubble bedding disposal unit in dirty cage wash [REDACTED]. Clean bedding is placed into cages in the adjacent room [REDACTED] (clean cage wash).
- [REDACTED]: clean rodent cages with bedding are transported [REDACTED] [REDACTED]. Clean cages are processed at [REDACTED] in [REDACTED]. At [REDACTED], soiled bedding is dumped in front of a negative HEPA airflow Bio-bubble bedding disposal unit in dirty cage wash [REDACTED].
- [REDACTED] soiled bedding is dumped into a waste disposal system which empties into the sewage located in dirty cage wash [REDACTED]. A large exhaust hood is located above the waste disposal system. Clean bedding is placed into cages in the adjacent room [REDACTED] (clean cage wash).

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 IACUC-approved exceptions to recommended sanitization intervals.

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).

Water temperature monitoring: All tunnel and rack washers have a 180°F final rinse cycle. All temperatures can be monitored via a view screen with temperature display. At the start of initial operation, a temperature recording label is utilized to validate the 180°F temperature requirement.

Microbiological monitoring: The level of sanitization is tested monthly on all mechanical washers using ATP swabs. Self-contained biological indicators are used in monthly monitoring of steam sterilization. OK® sterilization indicator strips and/or autoclave tape is used for each load to verify sterilization is achieved. All mouse cages are autoclaved prior to use.

Visual inspections: Mechanical washers (except one small tunnel washer in ■ used as back up) are equipped with a view window for visual inspection of cycle processes. All caging, equipment, and supplies are visually inspected after a cycle in the mechanical washer and/or steam autoclave. For manually washed items, visual inspection, confirmed with ATP swabs, ensures the quality of the sanitation process.

b) Describe preventive maintenance programs for mechanical washers.

LAMS personnel inspect mechanical washers prior to initial operation to ensure emergency exit plungers are operational, emergency stop cables are not obstructed, and detergent/acid levels are sufficient. Strain basket screens are cleaned at the end of the shutdown procedure.

Preventative maintenance is performed by a contracted service vendor at least quarterly based upon manufacturers' recommendations. In addition, a contracted service vendor verifies detergent concentration.

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 either bagged and placed into a building specific closed dumpster for removal through a commercial contract service or disposed of using a waste disposal system that flushes into the sewer system.

ii. Animal carcasses.

All animal carcasses are bagged (hazardous carcasses are double bagged) and stored in building specific short-term dedicated refrigerators and/or freezers until scheduled pickup by EH&S personnel. All carcasses are incinerated offsite by a commercial contract service.

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).

LAMS' sanitation program, which is overseen by the husbandry management team, limits the resources pests need to survive and reproduce. The sanitation practices in LAMS for pest management include: regular sanitization of all facility rooms and corridors, storage of feed on pallets or transport carts (off the floor) and away from walls, use of tight sealing feed containers, inspection of feed deliveries on arrival, use of door sweeps to restrict pests, regular trash removal, removal of cardboard whenever possible, regular equipment cleaning (including strain screens, floor drains, and vents), elimination of standing water, and sealing of any gaps or holes in infrastructure where pests may reside. Insect traps are available if a problem is suspected. Live traps are placed in each feed/bedding storage location and high risk areas (e.g., cage wash, loading dock) and inspected daily. If a rodent is captured in a live trap, the LAMS "Feral/Escaped Guideline" details instructions for processing.

A certified commercial pest control service is available to treat building peripheries if a problem is suspected. DuPont Advion cockroach gel bait (active ingredient - Indoxacarb) is approved by the LAMS AV to use in wet areas of cage wash away from animal housing locations. No insecticides are applied within the vivarium.

- 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.

If a problem is suspected a certified commercial pest control specialist works with LAMS to determine the appropriate product and application method. LAMS notifies animal users of the problem, suggested treatment, and requesting any concerns they may have be brought to the attention of LAMS management. LAMS works individually with concerned researchers to develop a treatment plan that is mutually agreeable and efficacious. If needed, a "town hall" meeting would be conducted between LAMS and researchers, detailing the choice of agent, application method, and potential effects. Animals may need to be removed from a room or away from the area during application of pesticides if deemed necessary by the LAMS veterinarians, the researchers, or pest control specialist.

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.

A veterinarian and/or RVT and vivarium supervisor/manager are always on call. LAMS animal care staff provides weekend and holiday care. Written schedules are provided to animal care staff outlining facility/room responsibilities and any special instructions. All cages are checked for sufficient food and water; sick, injured,

and/or dead animals; new litters; and overcrowding. Wet or flooded rodent cages are changed. Overcrowded cages are separated according to LAMS SOP. Ventilated rack function is verified. Large animal pens (e.g., pigs) are picked, animals fed, and water supply checked. Animal health and facility issues are reported to the on call RVT and vivarium supervisor/manager, respectively. Weekend and holiday update reports are sent out via e-mail by the on call RVT and vivarium supervisor/manager to all veterinary staff, vivarium supervisors/managers detailing any issues encountered.

In the [REDACTED] facility, the Facility Director, BSO, and IBC are responsible for ensuring a safety program is established and followed. Researchers authorized to work in the [REDACTED] facility are responsible for executing husbandry duties, performing daily health observations, and ensuring the established safety program is followed. The [REDACTED] Facility Director is responsible for overseeing animal health in conjunction with the [REDACTED] researchers.

For IACUC-approved Satellite Housing locations, the PI or their research staff provide weekend/holiday care. Monitoring and documentation requirements as well as reporting of animal welfare or facilities issues are the same as described above.

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

Not applicable.

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

LAMS on call veterinarian, RVT, and vivarium supervisor/manager are contacted through an automated voice paging system (Google Voice), cell phone, facility pager, e-mail or text if there are any animal health, equipment, HVAC, and/or facility issues. Emergency phone contact numbers (e.g., AV and Assistant Director, Veterinary Services, RVT, and vivarium supervisor; EHS; Radiation Safety; IACUC Office; UC Maintenance; Security; 911 Emergencies (Medical, Police, or Fire); UC Emergency Dispatch; and Computer/Phone Support) are posted throughout each vivarium and satellite housing location. In the [REDACTED] facility, emergency contact numbers are posted throughout the facility.

The protection of animals and property of UC during an emergency requires the coordination and cooperation of many campus units, including UC Police and Facilities Maintenance. The LAMS Emergency Plan establishes procedures for the animal management during emergencies and provides direction for campus units required to assist in animal facility management during emergencies or disaster. The Emergency Plan provides a detailed list of individuals, their contact information, and individual contact order in the event of an emergency.

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).

Cage cards are used to identify all LAMS maintained animals. Each cage card has a bar coding system used for tracking animals and/or cage location. Each cage card/bar code is specific to the following information:

- (1) PI name
- (2) IACUC protocol number
- (3) Species (strain or stock)
- (4) Gender
- (5) Source of animal (vendor name or in-house/UC bred)
- (6) Birth or arrival date
- (7) Account number
- (8) Bar code number

Per IACUC Policy #002, the following are acceptable permanent individual animal identification methods:

Species	Acceptable Identification Methods
Amphibians	beads, tattoo, toe clipping, microchip/transponder/PIT tag, photography
Cats	microchip, collar tag, tattoo
Dogs	microchip, collar/tag, tattoo
Fish	fin clipping
Gerbils	ear punch, ear tag, microchip, tattoo
Guinea Pigs	ear punch, ear tag, tattoo, microchip
Mice	ear punch, ear tag, tattoo, microchip, toe clip (with conditions)
Pigs	ear tag, ear notch, tattoo, microchip
Rabbits	ear tag, tattoo, microchip
Rats	ear punch, ear tag, tattoo, microchip
Reptiles	toe clipping, microchip/transponder/PIT tag, photography
The following additional methods for animal identification are also used if approved in the associated IACUC protocol:	
Non-rodent USDA covered species - natural coloration/skin pattern	
Rodents - non-toxic nail polish and permanent non-toxic marker	
Fish - morphology	

b. Breeding, Genetics, and Nomenclature

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

LAMS veterinarians are available to all researchers for advice on any aspect of animal research including the selection of stocks and strains. LAMS veterinarians review all IACUC protocols and meet with the PI/researchers as part of the IACUC protocol preliminary review process. Choice of species is discussed during the

review. References from commercial vendors regarding genetic information on all of their animal models are also utilized.

- 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.

Commercial vendor strain names are used on cage cards. LAMS veterinarians provide advice, information, and answer questions about standard genetic nomenclature. Researchers are advised to utilize vendor resources (e.g., The Jackson Laboratories Mouse Genome Informatics database) to ensure proper reporting of the identification of the animals.

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

Researchers are encouraged to keep detailed breeding information to simplify tracking of offspring (e.g., sire/dam number, date and number born, date and number weaned, how offspring are used [e.g., replacement breeders, experimental subjects], euthanasia/deaths [date and reason]). Generation of mice may require genetic analysis. The methods of tissue collection follow IACUC Policy #002 "Identification and Genotyping". LAMS veterinary staff offers suggestions to researchers on how to manage breeding colonies and tips/strategies to minimize chances of strain contamination (e.g., keeping adjacent cages/strains as phenotypically and genotypically distinct as possible, using different color cage cards to make each colony visually distinguishable). Researchers are informed of conservation strategies to preserve unique genetic lines (e.g., cryopreservation of ova, sperm, and/or embryos). To avoid substrain divergence in transgenic colonies, it is recommended to backcross to the parental strain every 10 generations. On a routine basis, LAMS hosts vendor-sponsored continuing education opportunities related to breeding colony management.

- 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."

LAMS veterinarians and researchers discuss genotypes that have known adverse phenotypes. For newly generated genotypes, unexpected adverse phenotypes are reported through LAMS AHN/R system. Expected Clinical Symptoms sheets are utilized when there is a known adverse phenotype or clinical symptom expected with a particular strain or experimental design. This system is utilized for large number of cages on a rack or in a room. The Expected Clinical Symptoms sheet is completed by an RVT in consultation with the researchers, signed by a LAMS veterinarian, and attached to the rack(s) on which affected animal cages are housed.

A color-coded cage card corresponding to the Expected Clinical Symptoms sheet is placed on each affected cage. The Expected Clinical Symptom Sheet lists expected clinical signs along with signs indicating when the LAT is to complete and submit an AHN/R form to veterinary services in order for the animal(s) to be evaluated.

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.).

Approved vendors: LAMS maintains a list of vendors that are evaluated based on health status, facility conditions, and quality of stock and services. LAMS veterinary staff monitors vendor health surveillance reports and receives notification from vendors and other suppliers if any excluded pathogens have been identified. Animals from approved vendors are evaluated upon receipt by LAMS animal care staff and directly admitted into the main population. If a health problem originates at the vendor or develops during transportation, LAMS veterinary staff works with the vendor to resolve the problem. Pigs are conditioned. Research dogs are purpose bred.

Non-approved vendors: LAMS veterinary staff reviews current health information, housing/husbandry descriptions, and history of excluded pathogens for each request. LAMS veterinary approval is required prior to acceptance of animal shipments into LAMS quarantine rooms or segregated rooms for short term experimental procedures (e.g., Mouse Metabolic Phenotyping Core [MMPC], Preclinical Imaging Core [PIC]).

Wild-caught/random source ectotherms: The researchers evaluate the quality of animals prior to admittance into their IACUC-approved satellite housing rooms.

██████ VTP: Cats, dogs and rabbits primarily are shelter-owned. These animals are of unknown health status and are isolated from purpose bred animals.

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).

Transportation between outside sources and UC: Shipments of animals between outside sources and UC are coordinated between the researcher and LAMS.

- (1) Approved vendors (rodents, rabbits, *Xenopus*): Most approved vendors ship animals to UC using their own climate controlled vehicles. In some cases, commercial couriers with climate control vehicles are used. For rodents and rabbits, vendors use sterile microisolator shipping crates. Rodents and rabbits receive a source of food and water (commercially-available gel water) during transportation. *Xenopus* are shipped from approved vendors via commercial courier in expanded polystyrene coolers containing a special media or cool gel packs and wet moss for cushioning and to maintain hydration during transit. Shipping containers provide appropriate oxygen, space, and temperature. Rodents and amphibians are received at LAMS animal facility's loading dock. LAMS receiving personnel check the condition of the shipping containers and verify the purchase requisitions prior to acceptance. The outside surfaces of shipping containers are disinfected prior to entrance into the vivarium and intended housing rooms. LAMS receiving staff wear dedicated scrubs and PPE when disinfecting incoming shipping containers. Once within the appropriate housing room, LAMS animal care staff unpacks each shipping container to ensure adequate health status and order accuracy prior to placing in cage/pen/tank. Any abnormalities (e.g., injured, sick, dead) are reported to LAMS veterinary staff via submission of an AHN/R. LAMS animal care staff examine USDA covered species upon arrival and report any abnormalities/sick animals to LAMS veterinary staff.
- (2) Non-approved vendors (mice and rats): Rodent shipments from non-approved vendors are handled the same as for approved vendor sources with the exception of housing location. All mice and rats from non-approved vendors enter LAMS quarantine rooms or a segregated room for short term experimental procedures (e.g., MMPC, PIC).
- (3) Approved vendors non-rodent USDA covered species (dogs, pigs): LAMS veterinary staff approves the acceptance of all USDA covered species based on clinical health. Dogs and pigs are delivered directly to LAMS [REDACTED] loading dock. Prior to unloading, LAMS animal care staff verify that all documentation is accurate (e.g., USDA paperwork; health certificates listing type of animal, sex, number of animals, and vendor health information) and that the animals are in good physical condition. LAMS staff assists the vendor in unloading and weighing each animal. Animals are then transported to their assigned room either in vari kennels (dogs), transport carts (pigs) or by use of pig boards (pigs). Once in their assigned housing location, LAMS animal care staff performs a gross physical examination with their findings documented. Abnormalities are reported to LAMS veterinary staff via an AHN/R.
- (4) Wild caught/random source ectotherms: Depending on the location of the animal, it may be transported to the PI's approved satellite housing room via the researcher's personal vehicle (following general criteria for a transport vehicle as outlined in **IACUC Policy #003**) or commercial carrier (e.g., Delta Dash, U.S. Post Service).
- (5) Shelter-owned animals used by the VTP at [REDACTED] (cats, dogs, rabbits): Animals are transported to and from [REDACTED] loading dock by the shelter (previously done by LAMS animal care staff). On occasion, [REDACTED] vet staff will transport animals according to requirements set forth in IACUC Policy #003. Animals are evaluated by [REDACTED] veterinary staff (previously done by LAMS animal care staff). Any abnormalities identified are communicated to LAMS veterinary staff.

Transportation within UC: Researchers may transport animals outside of LAMS facilities as described in **IACUC Policy #003**. All non-rodent USDA species must be transported by LAMS. Measures are taken to protect the animals in transport, personnel

working with the animals, and other individuals who may be exposed to the animals or cages. For animals used in biological, chemical, or radiological studies, additional safety requirements may apply following consultation with the applicable safety committee (IBC, RSC) and safety office (BSOf, EH&S, RSO). Aspects addressed in **IACUC Policy #003** include:

(1) Transportation within the same or interconnected building(s):

- a. Containers used for transport should be clean and should limit exposure to allergens, waste products, or odors while providing sufficient air for normal respiration.
- b. Proper identification must accompany the animal.
- c. Service elevators must be used where available.
- d. Containers must be secured to prevent escape of the animal.
- e. One or two containers may be carried by hand. If 3 or more containers are to be transported, a cart is required.
- f. Rodents
 - i. Solid top lids may be used if transportation and holding of animals will be 30 minutes or less. If greater than 30 minutes, a filter top cage or breathable shipping crate must be used.
 - ii. All containers must prevent public viewing during transport.
 - iii. Upon arrival to the destination, animals should have access to food and water (if species appropriate) unless restriction has been stipulated and approved in the IACUC protocol.
- g. Aquatic and semi-aquatic and terrestrial ectotherms are transported in species specific appropriate secured containers.

(2) Transportation outside of a building (same procedures as for within building transport with the following additional considerations):

- a. During times of extreme temperatures animal transport may be detrimental to animal well-being and, therefore, may not be possible unless an appropriately heated or cooled means of transportation is available (the Guide). Precautions should be taken to help ensure that appropriate, species-specific ambient temperatures within the cage are maintained (e.g., additional nesting material provided, heat source, or transporting within a thermally insulated container).

(3) Transportation vehicles:

- a. Whenever possible, a dedicated animal transport vehicle should be used (e.g., LAMS climate-controlled vehicles). If a personal vehicle must be used, IACUC office must be notified.
- b. The heating/cooling system of the vehicle must maintain the inside temperature of the vehicle at an appropriate temperature (based on species) prior to loading the animals (e.g., 65-75°F for laboratory rodents).
- c. The animal container(s) should be positioned in the vehicle so that airflow is not blocked and the container(s) will not tip or slide.
- d. Efforts should be made to protect cages from direct sunlight to avoid overheating.
- e. Animals should not be left in the vehicle any longer than what is necessary to transport them to their destination.
- f. In the event a vehicle malfunctions in transit, animal welfare takes priority.

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.

LAMS personnel receive all purchased animals (except ectotherms in satellite housing rooms). Prior to uncrating, a thorough observation of the shipping container(s) is made to assess for damage and observe animal(s) for any obvious health problems. Animals received from approved vendor sources are placed directly into the colony animal housing room. Approved vendors routinely supply health reports to UC to ensure the animals we are receiving are specific pathogen free (SPF). The vendor health reports are reviewed by LAMS veterinary/QA staff. Animals from non-approved vendor sources undergo a quarantine period prior to being incorporated into existing colony animal housing rooms. Mice and rats from non-approved vendor sources used for short term experimental studies that are housed in segregated rooms must meet the same entry requirements as rodents going into LAMS quarantine. These short term animals may or may not undergo additional screening for infectious agents prior to use.

A health surveillance program is in place to monitor the health status of all mice and rats. Researchers are promptly informed of any contamination concerns. The selection of excluded pathogens is based on industry standards and the agent prevalence noted by leading commercial diagnostic laboratories. At least one cage of two young adult, immunocompetent, SPF sentinel animals (ICR mice or Sprague Dawley rats purchased from approved vendors) is maintained in each room where there is long-term housing of mice and rats (excluding hazardous rooms). Sentinel density varies based on rack and room density. At least two sentinel cages are designated per IVC/PIV (one on each side), one sentinel cage per SMI rack, and at least one sentinel cage for each open-top conventional rat housing room. Sentinel cages are placed alongside colony cages and receive dirty bedding from each cage on full change out days. Each room is tested every 3 months. Sentinel rats and mice are replaced every 3 and 6 months, respectively. For non-approved vendor rodents, colony animals are directly sampled (oral/fur swabs and fecal samples) approximately 3 weeks post-arrival and screened by polymerase chain reaction (PCR) Rodent Infectious Agent (PRIA) testing. Quarantine room(s) is/are last order entry to prevent potential cross-contamination. Additionally, ectotherm satellite housing rooms are last order entry due to use of non-SPF rodent food sources.

For colony mice: Serology is performed quarterly. In the first and third quarters, ecto- and endoparasite testing is performed by fecal flotation and tape testing (perianal and pelt). In the second and fourth quarters, post-mortem ecto- and endoparasite testing is performed by microscopic examination of cecum/colon contents and cooled pelt samples. Mesenteric lymph nodes and/or spleen from one sentinel animal in each cage is retained and frozen for use in confirmatory testing if needed.

For colony rats: Serology and post-mortem examinations are performed quarterly (same as described above for mouse post-mortem examination).

For quarantine mice and rats: Oral and fur swabs and fecal pellets are collected and pooled (10 samples/pool) prior to submission. Imported animals are treated with selamectin topically (2 doses 30 days apart).

Serology and PCR is performed by an outside laboratory (e.g., Charles River, IDEXX RADIL). Fecal flotation, microscopic examination of cecum/colon contents, pelt examinations, and tape tests are examined in-house.

All mouse colonies are tested at least annually for the following infectious agents:

- Cilia-associated Respiratory Bacillus (CARB)
- *Clostridium piliforme* (Tyzzer's Disease; CPIL)
- Ecto/endoparasites (furmites/pinworms)
- Ectromelia virus (Mousepox)
- *Encephalitozoon cuniculi* (ECUN)
- Hantavirus
- K Virus
- Lactate Dehydrogenase Elevating Virus (LDEV)
- Lymphocytic Choriomeningitis Virus (LCMV)
- Minute Virus of Mice (MVM)
- Mouse Adenovirus (MAV-1 and MAV-2)
- Mouse Cytomegalovirus (MCMV)
- Mouse Hepatitis Virus (MHV)
- Mouse Norovirus (MNV)
- Mouse Parvovirus panel 1-5 (MPV)
- Mouse Rotavirus (Epizootic Diarrhea of Infant Mice, EDIM)
- Mouse Thymic Virus (MTV, MTLV)
- *Mycoplasma pulmonis* (MPUL)
- NS-1
- Pneumonia Virus of Mice (PVM)
- Polyoma Virus (PVM)
- Reovirus 3 (REO-3)
- Sendai virus (SV)
- Theiler's virus (TMEV/GD7)

All mouse colonies are tested at least quarterly for the following infectious agents:

- Ecto/endoparasites
- EDIM
- MHV
- MNV
- MPV
- MVM
- MPUL
- NS-1
- SV
- TMEV/GD7

All rat colonies are tested at least annually for the following infectious agents:

- CARB
- CPIL
- ECUN
- Ecto/endoparasites
- H-1 (Toolan's)
- Hantavirus
- Infectious diarrhea of infant rats
- Kilham's rat virus
- LCMV
- MAV-1 and MAV-2
- MPUL
- NS-1
- PVM
- Rat Minute Virus (RMV)
- Rat Parvovirus (RPV)
- Rat Theilovirus (RTV)
- REO-3
- SV
- Sialodacryoadentitis Virus (Corona virus; SDAV/RCV)

All rat colonies are tested at least quarterly for the following infectious agents:

- Ecto/endoparasites
- H-1 (Toolan's)
- Kilham's rat virus
- MPUL
- NS-1
- PVM
- RMV
- RPV
- RTV
- SV
- SDAV/RCV

During times of known infection, the type of monitoring performed is dependent on the agent present. Sampling directly from colony animals is conducted to identify affected individuals and evaluate efficacy of treatment. Fecal centrifugation/flotation, fecal PCR, and perianal tape testing is used for detection/monitoring of pinworms. Fur pluck/trichograms and fur swab PCR testing is utilized for detection/monitoring of fur mites. Serology and/or PCR is performed for detection/monitoring of bacterial/viral agents.

For species other than those listed above, testing is performed directly on colony animals if disease is suspected. Testing may include complete blood counts (CBCs), serum blood chemistries, radiographs, bacterial and/or viral assays, fecal examination (e.g., direct smear, flotation, culture, SNAP® tests) and other tests necessary to characterize disease.

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

Assignment of vivarium and animal housing room space takes into account the following: species to be housed, health status, location of the PI's laboratory, and collaborations with other researchers. All USDA covered species are housed in [REDACTED] (guinea pigs) and [REDACTED] (gerbils, pigs, rabbits). When guinea pigs and rabbits are on study at the same time, personnel cannot enter a rabbit room and then a guinea pig room without showering and changing clothes. This is to minimize the potential risk of transmission of *Bordetella bronchiseptica*. Personnel access is restricted as much as possible to minimize movement between the different vivaria.

For mice and rats that leave the vivarium to go to procedure areas where both UC and non-UC rodents may be present (e.g., imaging centers, irradiators), animals are placed in last order entry "return rooms" due to increased potential risk of exposure to excluded pathogens. Health reports are reviewed/approved by LAMS veterinary/QA staff for each group of experimental animals coming from an outside institution. No animals with known excluded pathogens are permitted to use UC facilities.

When an infectious agent is identified, quarantine procedures are implemented including but are not limited to: (1) entering the quarantined room at the end of the day or showering with clothing change if having to re-enter clean rooms, (2) enhanced PPE procedures, (3) dumping and dipping cages in a disinfectant or autoclaving prior to running through cage wash, (4) ensuring the room pressure differential is negative to the hallway, (5) not entering another animal housing room or vivarium once one has entered a quarantine room, and (6) controlling movement of animals, equipment and personnel. Once the scope and scale of an outbreak has been determined methods used to control, contain, or eliminate the agent include: rederivation (viral pathogens), treatment (bacterial agents, fur mites, pinworms), depopulation, vermin control, and environmental decontamination.

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

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

LAMS: LAMS receiving personnel verify orders to ensure accuracy and visually evaluate the animals' health status upon receipt/unpacking. For non-rodent USDA covered species, body weight is obtained and recorded. Any abnormalities are reported to LAMS veterinary staff via submission of an AHN/R.

Wild-caught/random source ectotherms: Research personnel visually evaluate snakes or amphibians purchased from private sources (e.g., reptile shows) or wild-caught reptiles or amphibians housed in PI-maintained, IACUC-approved satellite housing rooms. Researchers report animal health issues to LAMS veterinary staff.

[REDACTED] **VTP:** Animals are visually evaluated upon arrival by LAMS husbandry or [REDACTED] veterinary staff. Any abnormalities are reported to the [REDACTED] and LAMS veterinary staff for assessment.

- 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.

Purpose bred dogs, gerbils, guinea pigs, mice, minipigs, rabbits, rats, and *Xenopus* from LAMS approved vendors: no quarantine required. Purpose bred mice and rats from non-approved vendors are quarantined.

LAMS does not have dedicated quarantine facilities. LAMS maintains one to two rodent quarantine rooms that are located on the conventional side in [REDACTED]. Other quarantine rooms may be opened if needed. Quarantine rooms are negative pressurize 100% exhaust and equipped with hoods for cage changing (e.g., BSC, laminar flow). Rodents are housed in SMI caging on shelving units. Cages are dumped and sprayed with a disinfectant or autoclaved prior to running through cage wash. Once quarantine is completed and all test results confirmed to be negative, a LAMS veterinarian approves release into the general rodent population.

Short term/terminal quarantine: Rodents obtained from non-approved sources may be admitted into an isolated, last order entry short term/terminal quarantine to prevent cross-contamination based on animal health data provided by the sending institution. These rodents are either currently on study or will be used for short term experiments. All rodents are housed in SMI cages and handled in a containment hood or on a benchtop. Pooled colony samples (e.g., blood, feces, fur swabs, perianal and pelt tapes) may be obtained to verify SPF status. This type of quarantine is terminal; no live rodents are released from this quarantine area.

Random sourced animals: Production pigs are not purpose bred. Once at UC, pigs undergo in-house fecal testing to confirm endoparasite status. If positive, the animal is treated with an anti-parasitic agent. New arrivals are separated from established animals for at least 7 days. LAMS staff provide husbandry and care first to established animals, then to new arrivals to prevent cross-contamination. Entry order is posted on each pig's animal housing room door.

LAMS houses client-owned shelter animals as a part of the [REDACTED] VTP. If a communicable disease arises, such as kennel cough or parvovirus, the animal is isolated and treated or euthanized in consultation with the client.

Quarantine procedures for wild-caught animals or random source ectotherms vary depending on the species, presence or absence of existing colony animals, and, if applicable, the status of the existing colony. All animals are housed in PI-maintained, IACUC-approved satellite housing rooms.

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

All species undergo a minimum 48-hour acclimation period upon arrival. Exceptions to the standard 48-hour acclimation period must be scientifically justified in the protocol and approved by the IACUC or, on rare occasion, individually exempted by the veterinarians.

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.

Separation by species: LAMS practice is to maintain species separately. For mice and rats housed in the same room, SMI caging is utilized. Examples of situations when different species may be housed in the same room include:

- quarantine of mice and rats
- studies utilizing hazardous agents (biological, chemical or radiological) in mice/rats
- mice and rats in the same satellite housing room
- mice and rats housed at █████ VTP
- compatible ectotherms with similar environmental requirements and minimal interspecies disease transmission risk housed in satellite housing rooms
- compatible large animal species to avoid social isolation

Separation by source: Animals are separated by source if the source variation poses any significant risk to the animals. For example, mice and rats from approved and non-approved vendor sources are housed separately.

Separation by health status: Animals are separated by health status if deemed appropriate by the LAMS or █████ veterinarians. For example, newly-arrived random source production pigs are housed in separate rooms from established animals for at least 7 days so health status can be ascertained.

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

LAMS maintains species separately except under special circumstances. Mice and rats are housed in SMI caging when located in the same housing room. Examples of situations when different species may be housed in the same room, area, or enclosure include: (1) shipments of mice and rats from non-approved vendor sources housed in quarantine, (2) studies utilizing hazardous agents (biological, chemical or radiological) in mice and rats where dedicated rooms by species are not available, (3) IACUC-approved satellite housing rooms where PIs utilize both mice and rats, (4) mice and rats housed at █████ VTP due to the short term nature of the housing requirements (typically less than 30 days), and (5) IACUC-approved satellite housing rooms where compatible ectotherms with similar environmental requirements and minimal interspecies disease transmission risk are housed.

- c. Describe isolation procedures and related facilities for animals.

LAMS: █████ houses mice and guinea pigs in IVC/PIV or SMI caging with no return rooms. Only mice and guinea pigs from approved vendor sources or mice from non-approved vendors that have undergone quarantine can enter █████.

█████ houses almost exclusively mice in IVC/PIV caging (occasional SMI caging) but on occasion will house rats (SMI caging). The PIC will house a mixture of mice and rats depending on case load. Rodents being imaged come from both UC as well as non-UC sources. There are several return rooms set up in the █████ vivarium for housing of post-irradiation animals and overflow from the PIC. Return rooms and PIC housing cubicles are isolated and last order entry to minimize the potential spread of pathogens.

The █████ █████ houses mice in IVC/PIV and SMI caging; rats in IVC/PIV, SMI, and open top conventional caging; *Xenopus*; and USDA covered species. There is physical separation between the mouse barrier side and the conventional (rats, USDA covered species, and *Xenopus*) side. There are several rodent return rooms set up on the conventional side for animals that leave the █████ █████ to go to satellite facilities.

At █████, there is a mixture of mice in IVC/PIV and SMI caging and rats in SMI and open-top conventional caging housed on all 3 floors.

If animals are found to be contaminated with pathogens that UC excludes from rodent colonies, they are either isolated and treated, culled, or rederived. Isolation may be at the facility, room, or primary enclosure level. This may include the use of containment caging, sequenced facility or room entry order, and use of additional barrier practices. Isolation is maintained until subsequent testing verifies that cross contamination has not occurred and the agent(s) has been eliminated.

█████ █████: Animals are housed in an “all-in, all-out” fashion except in rare instances where this is not possible due to quarantine of a specific animal or animals. Different species are housed in separate rooms. As a group of animals arrives, they are placed into a sanitized housing environment. As subsequent groups of animals arrive, they are placed into physically separate animal housing areas (different rooms). In cases of mild infectious disease (e.g., upper respiratory infection), animals are generally kept in the same housing area but may be physically separated if possible (e.g., moved to a separate caging bank or kennel away from the affected animal). In cases of more severe infectious disease (e.g., canine parvovirus), strict quarantine measures are taken. All non-affected animals are moved to another housing area to prevent spread of disease, and the sick animal is quarantined. Only persons wearing appropriate PPE entering the room to care for the animal. In some cases, due to strict quarantine of one individual animal, it may be necessary to combine different groups of healthy animals of the same species together in a room. Every attempt is made to minimize contact between groups (separation of caging racks or placing animals in runs at opposite room ends).

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.

Procedure(s) for daily observation of animals: All animals are observed at least once daily by LAMS staff or research personnel. LAMS animal care staff performs the vast majority of animal observations. Animals on study requiring minimal disturbance or those housed in IACUC-approved satellite housing rooms are monitored daily by research personnel. All animal health observations are documented on the room log. LAMS staff review room logs for satellite housing rooms at least once every 2 weeks to verify completion of daily observations and health status of the animals.

Training: As part of new and continuing employee training all LAMS personnel are trained to recognize signs of animal health abnormalities, to report abnormalities to the veterinary staff using the AHN/R form, and to provide basic health care to animals as prescribed by the veterinary staff. Research staff is trained during initial IACUC orientation, LAMS vivarium orientation, and species-specific training. Additional training is provided if requested or if animal welfare/compliance concerns arise.

Method for reporting observations: LAMS animal care staff and researchers report abnormal animal health observations by completing an AHN/R form for non-urgent veterinary review (or call/e-mail if animals are located in satellite housing locations). Cages containing sick or injured rodents are identified with “RA Check Me” tags placed on the cage card holders. All health information is documented on the AHN/R and/or individual animal health records (USDA covered species).

For non-emergency animal health issues, each vivarium has a designated AHN/R form drop off location. Animals with abnormalities are examined by LAMS veterinary staff for assessment and treatment. If an RVT or veterinarian is not immediately available to examine the animal, the vivarium supervisor will help triage rodent health issues in consultation with the veterinary staff. The LAMS RVT reviews each new non-emergency AHN/R and determines whether the animal should be monitored, treated, or euthanized in consultation with research personnel. A veterinarian is consulted on all USDA covered species cases and if needed, on rodent or ectotherm cases.

For emergency animal health issues, the facility RVT is contacted (in person or by phone). If the facility RVT cannot be reached, a LAMS veterinarian, vivarium supervisor, or on-call RVT is contacted. Contact information for the veterinary staff and on-call numbers for evenings, weekends, and holidays is posted in all vivaria and satellite housing locations.

For animals at [REDACTED], health issues are reported to [REDACTED] and LAMS veterinary staff. The [REDACTED] veterinary staff evaluates the animals and sends a report to the LAMS veterinary staff outlining tentative diagnosis and treatment plan. A member of the [REDACTED] veterinary staff is on call for evenings, weekends, and holidays. Contact information for both [REDACTED] and LAMS veterinary staff is posted in the vivarium.

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

Any health concerns identified by LAMS staff are promptly reported to the veterinary staff (in person or phone for emergencies and AHN/R form for non-emergencies), and

the researchers are notified (in person, phone, or e-mail) of the issue by either LAMS veterinary or animal care staff depending on the details of the case. Researchers are contacted to discuss the tentative diagnosis, its implications to the well-being of the animal and to the research, and treatment options available.

Researchers are instructed to promptly report to the veterinary staff any health problems that they discover. Contact information for the LAMS staff, including on-call information for evenings, weekends, and holidays, is posted in each animal facility and on the entrance door of satellite housing rooms. Essential personnel (e.g., veterinarians, RVTs and supervisors) have cell phones and contact information is posted in the vivaria. Researchers are called in emergencies (PI contact information is on the LAMS share drive, service requests located in the housing room, and in the on-call vivarium supervisor bag).

For [REDACTED], health issues are documented as noted above and reported directly to [REDACTED] veterinary staff. The [REDACTED] veterinary staff evaluates the animal and determines appropriate treatment or euthanasia. LAMS veterinary staff is notified of all sick or injured animals, tentative diagnosis, and treatment plan. LAMS veterinary staff provides assistance to [REDACTED] veterinary staff as needed.

- 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.

LAMS maintains an approved vendor list for all species based on health status, facility conditions, and quality of stock/service. Approved vendor surveillance of vaccination, deworming, and health data is monitored by LAMS veterinary staff.

Mice and rats: UC's rodent sentinel and quarantine program has been previously described. The LAMS veterinary staff receives and reviews commercial rodent health reports as they are sent by the vendor as part of rodent health monitoring.

Gerbils and guinea pigs: Animals are weighed upon arrival, then as needed based on researcher needs (e.g., prior to anesthesia or drug administration) or if health issues arise.

Rabbits: Body weights are monitored at least monthly. Nails are checked at least monthly and trimmed as needed. Rabbits scheduled for survival surgery have, at a minimum, packed cell volume (PCV) and total protein (TP) performed at the time of anesthesia and surgical preparation.

Pigs: Animals are weighed upon receipt and at least monthly thereafter. LAMS staff evaluate hooves at least monthly and trims as needed. Animals scheduled for survival surgery have, at a minimum, fecal examinations within 72 hours of arrival and PCV and TP performed at the time of anesthesia and surgical preparation. For long term animals, LAMS veterinary staff performs physical exams at least every six months.

██████ ██████: Shelter-owned cats and dogs receive physical examinations including body weight and diagnostic testing and treatment as needed. These include: blood collection/analysis (FeLV +/- FIV for cats and heartworm for dogs), ear cleaning, fecal examination, vaccinations, +/- flea prevention, nail trim, urine collection (catheter or cystocentesis), ocular examination and application of medication, skin scraping, radiographs (routine and with contrast), and dental prophylaxis.

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.

LAMS animal care personnel provide routine daily care (365 days a year) to animals housed in LAMS vivaria. Animals on study requiring minimal disturbance or those held in satellite housing rooms are cared for daily by research staff. Animal care personnel performing daily observations report sick or injured animals to the veterinary staff. Depending on the sickness or injury reported, the veterinarian may (e.g., lameness in a pig) or may not (e.g., ulcerative dermatitis in a mouse) directly observe the animal prior to making a treatment recommendation. The researcher or their designee will be contacted to discuss the case before medical treatment is started or euthanasia performed. If an emergency situation arises and research personnel cannot be contacted in a timely manner, the AV or her designee (LAMS veterinarian or RVT) will make the decision whether to treat or euthanize based on the severity of the sickness or injury and review of the endpoints approved in the IACUC protocol.

Veterinary care is provided 24 hours per day, 365 days per year. Veterinary staff is on-call after-hours. Any health problem noted by any animal user at any time, including evenings, weekends and holidays, is reported promptly to the veterinary staff. LAMS and ██████ veterinary staff carry cell phones (direct call or through Google Voice) and all other LAMS personnel have either a cell phone or access to a land line. A contact list with phone numbers for supervisory and veterinary personnel is posted in each animal facility. The emergency contact information for research staff is also posted. Satellite housing rooms have emergency contact numbers posted on the room door.

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

LAMS personnel have the authority to provide emergency treatment to any animal. A veterinarian and an RVT are on-call at all times. Emergency treatment includes provision of analgesics or other medications and/or euthanasia if warranted. Every effort is made to contact and consult with the researcher regarding an emergency; however, treatment or euthanasia is ultimately the responsibility and decision of the AV or designee (e.g., LAMS veterinarian or RVT).

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.

LAMS veterinarians evaluate all emergency clinical cases involving USDA covered species and those cases involving non-USDA covered species (e.g., mice, rats, ectotherms) in which the researcher elects not to immediately eliminate the animal from the colony following consultation with the RVT. LAMS veterinary and animal care staff assist in the evaluation of non-USDA covered species. Once clinical cases are evaluated and discussed with the researcher, the plan of action is documented. All diagnostic tests performed on USDA covered species (e.g., blood work, fecal examination) are evaluated by a veterinarian prior to filing in the medical record. All treatments regardless of species are overseen by the LAMS veterinary staff.

USDA covered species: Individual written records are currently maintained for all USDA covered species. The medical records include: clinical assessment; treatment forms; anesthesia, surgery, and post-surgical monitoring forms; and clinical laboratory results (including necropsy findings). All entries in the written record have a date, time, and initials of the person responsible for the entry.

Non-USDA covered species: Clinical assessments and treatment plans are documented on AHN/R forms and then entered into an electronic health monitoring spreadsheet (e.g., Excel spreadsheet by vivarium located on the LAMS shared drive) by the RVT or veterinarian. The LAMS veterinary staff uses the LAMS health notification tag placed on the cage to denote the diagnosis, treatment plan, and monitoring requirements. On each health notification card, the LAMS staff member or researcher records any diagnostics performed, treatments provided, and patient progress.

Satellite housing facilities (mice, rats, and ectotherms): All information regarding clinical assessment of sick or injured animals and treatments are documented on the AHN/R form (or equivalent) as noted above.

■■■■: Complete medical records include clinical assessment; treatment forms; anesthesia, surgery, and post-surgical monitoring forms; and clinical laboratory results (including any necropsy findings). All entries in the written record have a date, time, and initials of the person responsible for the entry (e.g., veterinarian, RVT, husbandry technician, student).

- 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.

USDA covered species: The records are created and maintained by LAMS staff (veterinary and animal care) and applicable research personnel. Individual animal health records are maintained in a location proximate to where the animal is housed

and are readily accessible to LAMS staff, research personnel, IACUC, and regulatory agencies (e.g., USDA). Research records are maintained by the PI. Upon disposition of the animal, the health record is reviewed and signed by a LAMS veterinarian and maintained in the AV's office for 3 years.

Non-USDA covered species: LAMS veterinary staff is responsible for maintaining the original AHN/R in a folder/file cabinet in the RVT office and updating the electronic file. All entries on the cage card and/or AHN/R have a date and initials of the person responsible for the entry. Once the health issue has resolved or the study has ended, the original AHN/R is discontinued and the health notification tag on the cage is removed. The written AHN/R forms are maintained for at least 3 months. Electronic records are maintained for at least 1 year to help identify/track trends.

Satellite housing facilities (mice, rats, and ectotherms): Observation and treatment of animals housed in satellite facilities are conducted by trained research personnel under the oversight of LAMS veterinary staff. The AHN/R for mice and rats are maintained by LAMS veterinary and research staff. The AHN/R or equivalent is maintained by research staff following consultation with LAMS veterinary staff.

██████: The Department Chair of ██████ is responsible for maintenance of individual animal records while the animals are present at UC. Active records are kept with each species in the housing areas. Individual medical records for shelter-owned animals are returned to the shelter with the animal.

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

USDA covered species: Upon disposition of the animal, the health record is reviewed and signed by a LAMS veterinarian and maintained in the AV's office for 3 years.

Non-USDA covered species: Per the AV, clinical assessments and treatment plans are documented on AHN/R forms and then entered into an electronic health monitoring spreadsheet (e.g., Excel spreadsheet by vivarium located on the LAMS share drive) by the RVT or veterinarian.

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

a. In-house diagnostic laboratory capabilities.

LAMS is equipped to perform these diagnostic tests: cytology, ecto- and endoparasitology, hematology (PCV, TP), ophthalmologic testing (stain and intraocular pressure), radiography (██████), and urinalysis (chemical, specific gravity, and sediment evaluation).

██████ is equipped to perform these diagnostic tests: cytology, ecto- and endoparasitology, endoscopy, hematology (white blood cell counts, differentials, PCV, TP), biochemical profiling, ophthalmologic testing (tear test, stain, and intraocular

pressure), radiography (full body and dental), and urinalysis (chemical, specific gravity, and sediment evaluation).

b. Commercially provided diagnostic laboratory services.

Commercial laboratories routinely provide the following services: bacterial/fungal cultures, CBC, histopathology, PCR, serology, and serum chemistry profiles. LAMS and [REDACTED] utilize the following commercial diagnostic laboratories: Antech Diagnostic Laboratories, Charles River Laboratories, and IDEXX RADIL.

c. Necropsy facilities and histopathology capabilities.

LAMS and [REDACTED] have necropsy space available in all vivaria. Histopathology is performed by commercial diagnostic laboratories.

d. Radiology and other imaging capabilities.

A portable x-ray unit is maintained in [REDACTED] LAMS. An automatic film processor is available ([REDACTED]). [REDACTED] in [REDACTED] is equipped for laparoscopy and fluoroscopy. The [REDACTED] VTP has endoscopy, ultrasound, and an x-ray unit (full body and dental, both digital and film-based) and processor. The PIC offers non-invasive imaging services for rodents, including micro-CT, positron emission tomography (PET), single-photon emission computed tomography (SPECT), optical, fluorescence, bioluminescence, planar x-ray, and radioisotopic techniques.

5. Drug Storage and Control

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

The AV maintains two of each Drug Enforcement Administration (DEA), Ohio Board of Pharmacy (OBP)/Terminal Distributor of Dangerous Drugs (TDDD) licenses (one covers [REDACTED] and one covers [REDACTED]) for procurement and storage of controlled and non-controlled drugs from approved vendor sources (e.g., veterinary product distributors, local pharmacies). LAMS controlled and non-controlled drugs are maintained in LAMS vivaria and are managed by LAMS veterinary staff. PIs using drugs in research, teaching, and/or testing maintain their own DEA and OBP/TDDD licenses.

LAMS controlled drugs: Controlled drugs are maintained in drug safes located behind locked doors in [REDACTED]. In [REDACTED], the Master safe contains all of the controlled drug stock except working stock. Only LAMS veterinarians and the Veterinary Technician Supervisor/Training Coordinator access the Master safe. The working safes contain small quantities of controlled drugs currently in use that are accessible to all LAMS veterinary staff. At [REDACTED], the working safe is located in the RVTs office. There are no controlled drug storage locations at [REDACTED]; all controlled drugs used in those vivaria are obtained from the [REDACTED] working safe.

LAMS non-controlled drugs: Non-controlled drugs are stored in LAMS clinical laboratories, either behind a locked door () or in a locked cabinet (). Small quantities of commonly used non-controlled drugs are maintained in cabinets (e.g., triple antibiotic ointment, ophthalmic lubricant), in incubators (e.g., lactated ringers), and in refrigerators (e.g., Rimadyl®) located in the clinical treatment laboratories in all LAMS facilities.

: The maintains its own DEA and OBP/TDDD licenses. Non-controlled drugs are stored in locked cabinets; controlled drugs are stored in a double-lock cabinet bolted to the procedure area wall. The faculty veterinarians and staff RVTs are the only personnel with access to the controlled drug cabinet.

PIs: PIs using and storing controlled and non-controlled drugs in their laboratories for research purposes are responsible for the storage, security, and maintenance according to DEA and OBP regulations. LAMS veterinary staff can prescribe and administer LAMS controlled and non-controlled drugs as indicated for health issues.

b. Describe record keeping procedures for controlled substances.

Records for controlled drugs are maintained either by LAMS veterinary staff or by the PI per DEA regulations (e.g., initial inventory, biennial inventory, drug usage log, reverse distribution records for expired controlled substances). All records of controlled drugs are kept for a minimum of two years per DEA requirements. During semiannual inspections the IACUC reviews drug logs and inspects drug inventory.

LAMS records for controlled substances are kept with the associated drug safe. When controlled substances arrive, each drug is assigned a number and entered in the controlled substance logbook. LAMS veterinary staff record and initial all usage of controlled substances. After the usage sheets are completed, they are filed in the drug logbook. LAMS veterinary staff inventories controlled substances at least monthly.

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.

Pre-surgical planning efforts start during the IACUC protocol development phase which includes direct consultation between a LAMS veterinarian and the PI. The LAMS veterinarian discusses anesthetics and analgesics, dosages, routes of administration, intra- and post-operative monitoring, and potential complications. During this meeting or subsequent meetings with research personnel, training needs are discussed. During protocol review, the IACUC works to further refine procedures described in the protocol in an effort to minimize pain or distress to the animal. The IACUC requires the use of pre-emptive analgesics unless scientifically justified to withhold analgesics. The IACUC and/or the AV may require researchers to demonstrate proficiency.

Non-USDA covered rodents: All research personnel performing surgical procedures on rodents must complete the IACUC training module: Training in Rodent Survival Surgery. The module contains information on record keeping, instrument preparation and sterilization, aseptic technique, general surgical principles, anesthesia/analgesia, animal preparation, assessing depth of anesthesia, recognition of pain or distress, and postoperative care. A completion record of each researcher's training is maintained by the IACUC Office. The PI is responsible for assuring all research personnel are trained in the surgical procedures they will be performing. Hands-on training provided by LAMS is documented and forwarded to the IACUC Office. Each vivarium contains procedure rooms where surgical procedures can be performed. Additionally, there are numerous IACUC-approved satellite procedure locations for survival and non-survival surgical procedures.

USDA covered species: AV-approved RVTs (LAMS or [REDACTED] oversee surgical procedures. Pre-surgical planning includes meeting with the PI and applicable research team members to review roles and responsibilities; discuss training needs; verify supplies required for the procedure; review anesthetics, analgesics, and post-operative care; and recordkeeping requirements. LAMS veterinary staff is directly involved in all survival surgical procedures, which are performed in LAMS or [REDACTED] dedicated surgical rooms. The RVT's administer pre-emptive analgesics, anesthetics, and surgical drugs in accordance with the approved IACUC protocol, or as prescribed by the veterinarian, and monitor the animal's vital signs throughout the surgical procedure. LAMS veterinarians are available during the procedures. All non-survival surgical procedures are performed in LAMS [REDACTED] with the exception of one satellite procedure location that is approved for non-survival surgery conducted on gerbils (auditory research).

Based on researcher needs, customized training sessions are provided by LAMS veterinary staff. Topics include but are not limited to: pre-surgical evaluation, cleaning and disinfection of a dedicated surgery room or rodent surgery area, rodent anesthesia machine instruction, monitoring anesthetic depth, anesthesia complications, analgesia, application of ophthalmic ointment, use of supplemental heat sources, patient preparation, surgeon preparation, sterilization of surgical instruments and materials, use of a bead sterilizer, basic rodent surgical procedures (e.g., ovariectomy, fat pad injection, osmotic pump implantation), suture selection, placement and removal of clips or staples, post-operative recovery including assessment for pain or distress, and record keeping requirements.

[REDACTED] [REDACTED]: [REDACTED] veterinarians and RVTs oversee all aspects of surgery conducted on client-owned animals, including administration of anesthetics/analgesics, intra-operative monitoring, and post-operative care. [REDACTED] veterinarians perform all surgical procedures.

All other species (e.g., *Xenopus* oocyte collection): LAMS veterinary staff provides consultation and training for research personnel as described above. Surgical procedures are performed within LAMS procedure rooms or in IACUC-approved satellite locations.

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/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.

Major survival surgery in USDA covered species requires dedicated surgical facilities. These facilities are operated and maintained under aseptic conditions. Specialized design considerations for these areas include the following:

1. Interior surfaces are monolithic and impervious to moisture.
2. Surgery room is positive pressure.
3. There is minimal traffic.
4. A surgeon preparation area is available.
5. Sterile surgical instruments and supplies are required.

IACUC Policy #016B Policy for Non-Rodent USDA-Regulated Animal Survival Surgery contains additional information regarding ACUP requirements.

Dedicated surgical rooms for USDA covered species are located in [REDACTED]. There are 2 rooms utilized for aseptic surgery: [REDACTED]. Operating rooms are located in areas of minimal traffic flow. Ventilation is 100% fresh air with a positive pressure differential relative to the adjoining spaces. LAMS veterinarians provide oversight of these areas. LAMS RVTs provide all of the pre-, intra-, and postoperative monitoring and care. Animals are prepped for surgery by LAMS RVTs in the LAMS clinical laboratory [REDACTED] [REDACTED]). Surgical supplies are maintained in the adjacent room [REDACTED] and transported to the operating room the day prior to the procedure. Once the animal is anesthetized, catheters placed, hair removed, and initial skin preparation performed, it is transported to either [REDACTED] for aseptic surgery. Surgeon's scrub occurs at the scrub sink located within [REDACTED] or in the adjacent hallway outside of [REDACTED].

Once surgery is complete, the animal is transported either to the clinical laboratory [REDACTED] (e.g., rabbits) or the animal housing room (e.g., pigs) for recovery.

For all other species, surgeries are performed in procedure rooms within LAMS vivaria or IACUC-approved satellite procedure locations adhering to the following parameters:

1. Traffic flow is appropriately managed to minimize contamination from other activities in the room.
2. Surgeries are conducted in areas that are uncluttered and easily disinfected.
3. No other activities are performed in this same area while surgery is being performed.
4. Sufficient space for patient preparation and patient recovery is provided.
5. Patient preparation (fur removal) occurs in a location separate from the surgical area.
6. Sterile instruments and supplies are required. Instruments may be used on multiple animals following **IACUC Policy #016A Rodent Survival Surgery**.

- **Door:** steel painted with gloss enamel alkyd, hung on steel frames with windows covered with “red light” spectrum viewing ports
- **Sanitization:** easily sanitized

- [REDACTED]
 - Species: USDA covered species and rodents
 - Procedures: non-survival
 - Usage: moderate
 - Major Surgical Support Equipment: surgical tables, instrument tables, ceiling mounted surgical lights, oxygen, large animal gas anesthesia machines, suction unit, pulse oximeter, capnometer, mechanical ventilators, Doppler blood pressure monitor, infusion pumps, circulating water blankets, electrocautery unit, laparoscopy equipment, endoscopy equipment
 - Fixed Equipment: Ceiling mounted surgical lights
 - Finishes:
 - **Floor:** sealed terrazzo
 - **Walls:** epoxy coated poured concrete cement, painted with high alkyd enamel paint
 - **Ceiling:** epoxy coated plaster on wire mesh, painted with alkyd enamel paint
 - **Door:** stainless steel frame
 - **Sanitization:** easily sanitized

- [REDACTED]
 - Species: USDA covered species and rodents
 - Procedures: major/minor/emergency/survival/non-survival
 - Usage: moderate
 - Major Surgical Support Equipment: surgical table, instrument tables, ceiling mounted surgical lights, oxygen, large animal gas anesthesia machines, suction unit, pulse oximeter, capnometer, mechanical ventilator, Doppler blood pressure monitor, infusion pumps, circulating water blankets, electrocautery unit, fluoroscope
 - Fixed Equipment: Ceiling mounted surgical lights
 - Finishes:
 - **Floor:** sealed terrazzo
 - **Walls:** epoxy coated poured concrete cement, painted with high alkyd enamel paint
 - **Ceiling:** epoxy coated plaster on wire mesh, painted with alkyd enamel paint
 - **Door:** stainless steel frame
 - **Sanitization:** easily sanitized

- [REDACTED]
 - Species: rodents
 - Procedures: minor/major/survival/non-survival
 - Usage: light
 - Major Surgical Support Equipment: surgical tables, rodent anesthesia machine

- [REDACTED]
 - Species: rodents
 - Procedures: minor/major/survival/non-survival
 - Usage: light
 - Major Surgical Support Equipment: surgical table
- [REDACTED]
 - Species: rodents
 - Procedures: minor/major/survival/non-survival
 - Usage: light
 - Major Surgical Support Equipment: surgical table, [REDACTED]
- [REDACTED]
 - Species: rodents
 - Procedures: minor/major/survival/non-survival
 - Usage: heavy
 - Major Surgical Support Equipment: surgical table, [REDACTED]
- [REDACTED]
 - Species: rodents
 - Procedures: minor/major/survival/non-survival
 - Usage: moderate
 - Major Surgical Support Equipment: surgical table
- [REDACTED]
 - Species: rodents
 - Procedures: minor/major/survival/non-survival
 - Usage: heavy
 - Major Surgical Support Equipment: surgical table
- [REDACTED]
 - Species: shelter-owned dogs/cats/rabbits, rodents
 - Procedures: minor/survival
 - Usage: moderate
 - Major Surgical Support Equipment: surgical table, instrument tables, surgical lights, oxygen, gas anesthesia machines (isoflurane or sevoflurane), suction unit, central vacuum, pulse oximeter, capnograph, mechanical ventilator, Doppler blood pressure monitor, infusion pumps, circulating water blankets, electrocautery unit
- [REDACTED]
 - Species: shelter-owned dogs/cats/rabbits, rodents
 - Procedures: major/minor/emergency/survival
 - Usage: moderate
 - Major Surgical Support Equipment: surgical table, instrument tables, surgical lights, oxygen, gas anesthesia machines (isoflurane or sevoflurane), pulse oximeter, capnograph, mechanical ventilator, Doppler blood pressure monitor, infusion pumps, circulating water blankets, electrocautery unit

<i>Species</i>: mice <i>Procedures</i>: major/minor/survival/non-survival <i>Usage</i>: moderate <i>Major Surgical Support Equipment</i>: surgical table, surgical light <i>Species</i>: mice <i>Procedures</i>: major/minor/survival/non-survival <i>Usage</i>: light <i>Major Surgical Support Equipment</i>: surgical table, surgical light Satellite procedure rooms: There are numerous satellite procedure rooms where mice, rats, or <i>Xenopus</i> may be transported for both minor and major survival surgery as well as non-survival surgeries. There is one satellite procedure room where gerbils undergo survival and non-survival surgical procedures.
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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).

Major survival surgical procedures are any procedure that penetrates and exposes a body cavity or produces substantial impairment of physical or physiologic functions.

Minor survival surgical procedures are primarily those in which only skin or mucous membranes are incised. Also included as minor are procedures involving minor manipulation of muscle (e.g., biopsy, placement of instrumentation) and entry into a body cavity through a needle or trocar.

The IACUC has the ability to alter this general distinction on a case-by-case basis depending on the complexity of the surgery and its expected effect on the animal.

- b. How is non-survival surgery defined?

Any surgical procedure conducted under a surgical plane of anesthesia where an experimental manipulation or data collection is performed prior to the animal being euthanized while still under anesthesia.

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

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

IACUC Policy #016A Policy for Mouse, Rat, Hamster, & Gerbil Survival Surgery, IACUC Policy #016B Policy for Non-Rodent USDA-Regulated Animal Survival Surgery, and IACUC Policy #016C Policy for Ectotherm Survival Surgery and Frog Oocyte Collection outlines specific procedures to be followed when performing aseptic surgery. A description of the aseptic technique to be used is described within each IACUC-approved protocol that involves aseptic surgery.

Patient preparation: For furred species, the area must be clipped and skin prepared with a surgical disinfectant (e.g., povidone iodine or chlorhexidine) followed by alcohol. For amphibians, a disinfectant is not used as it is detrimental to the protective mucosal layer of the skin. For other ectotherms, skin preparation is described in the IACUC-approved protocol and follows standard recommendations for the species. A sterile drape is used for USDA covered species and is recommended for other species.

Protective clothing:

Non-rodent USDA covered species: mask, bonnet or surgical cap, shoe covers, sterile surgical gloves, sterile surgical gown.

Other species: dedicated surgical attire such as a clean lab coat or surgical scrubs, mask, sterile surgical gloves. A bonnet is recommended.

- 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.

LAMS: The most common methods used to sterilize instruments are steam autoclaving and gas sterilization (e.g., ethylene oxide). Surgeon's gloves, disposable drapes, and other items (e.g., specialized devices) come sterile direct from the manufacturer. Surgeon's gowns, cloth towels (e.g., huck towels), and some drapes are washed, wrapped, and steam autoclaved.

Researchers: The most common method for sterilizing instruments is steam autoclaving. For batch surgeries on rodents or *Xenopus*, a glass bead sterilizer is most commonly utilized. For rodent telemetry units, 2% glutaraldehyde with a minimum 10 hour contact time is used. For select delicate items that cannot be steam or gas sterilized or exposed to high-level disinfectants/liquid sterilants (e.g., rodent lymphatic duct cannula tubing), freshly prepared 70% ethanol is used (IACUC-approved). These studies are of short duration (less than 36 hours) and no clinical evidence of infection has been observed. Per manufacturer recommendation, one PI (ophthalmology) uses 10% bleach overnight in ultrasonic bath followed by sterile water & 75% ethanol rinse.

Liquid sterilants/high-level disinfectants: Under rare circumstances when steam or gas sterilization is not possible, other high-level disinfectants/liquid sterilants may be used according to manufacturers' instructions. Examples of acceptable products:

- (1) Sporidicin® (buffered phenol 1.56% and sodium phenate 0.06%) - requires 10 minute contact time to kill 100% of vegetative organisms. It provides high-level disinfection in 20 minutes and complete sterilization in 12 hours at 25°C.
- (2) MetriCide™ OPA Plus (ortho-Phthalaldehyde <1) - provides high-level disinfection in 12 minutes at 20°C. MetriCide™ 28 (2.5% glutaraldehyde) provides

intermediate-level disinfection in 10 minutes at 20°C, high-level disinfection in 20 minutes at 20°C, and sterilization in 10 hours at 25°C.

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

Non-rodent USDA covered species: Instruments are not reused between animals.

Other species: For batch surgeries, one sterile surgical pack may be used for no more than 5 surgeries. Between animals, instruments are sterilized using a glass bead sterilizer. Since only the instrument tips are sterile, research personnel take appropriate precautions to maintain sterility of the operative site. The IACUC has reviewed and approved the use of low or high-level disinfectants (e.g., 70% ethanol) in rodents for microsurgical instruments or tubing used in lymph-fistula procedures.

d. Indicate how effectiveness of sterilization is monitored.

LAMS: To monitor sterility, each pack (e.g., instrument, gown, drape, gauze) is prepared with an indicator strip and sterilization tape appropriate for the sterilization method used. Biological indicators are included in autoclave loads monthly as an additional verification of effectiveness of the sterilization process.

Researchers: Effectiveness of sterilization is via the use of steam indicator tape, indicators on sterilization pouches, or sterilization strips.

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

LAMS provides the following surgical support functions:

1. **Equipment.** Refer to III.D.2. for a comprehensive list of items provided by LAMS.
2. **Anesthesia, surgical support, and post-operative care of USDA covered species survival and non-survival surgeries.** Provided by LAMS veterinary staff.
3. **Rodent surgical models.** LAMS RVTs perform a variety of surgeries for PIs upon request.

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.

Non-rodent USDA covered species: AV-approved RVTs (LAMS or █████ monitor the animal's vital parameters continuously throughout all surgical procedures. Vital parameters (e.g., heart rate, respiratory rate, body temperature, SPO₂, ETCO₂, indirect or direct blood pressure, mucous membrane color) are recorded every 10-15 minutes in the anesthesia record. Anesthesia and surgical records are maintained for each animal and each procedure and kept with the animal in the housing room. All medical records are maintained for at least 3 years beyond the disposition date of the animal.

Rodents: Administration of anesthetics and analgesics is recorded in surgery records maintained by research personnel. Monitoring parameters include lack of reflex responses (e.g., pedal withdrawal, tail pinch, palpebral/corneal) and assessment of respiratory rate

and depth, body temperature, muscle relaxation, and mucous membrane color. Specialized procedures may involve monitoring of heart rate, ECG, and/or blood pressure. Records (anesthesia, analgesia, surgery) are typically maintained in a surgical log or on a surgical cage card and are maintained for the life of the animal or 3 years beyond the disposition date (USDA covered rodents). The LAMS Surgery Cage Card contains the following information: date, surgeon, animal ID#, surgery performed, pre-surgical evaluation body weight, USDA pain class, anesthetic drugs, analgesic drugs, and other drugs.

Other species (e.g., ectotherms): Research personal monitor the animals and follow similar monitoring and recording parameters as described for rodents.

All species: If animals have been surgically manipulated by a vendor prior to receipt at UC (excluding routine castration in production pigs), a copy of the animal's health record is obtained. The record lists the surgery date, procedure performed, analgesics administered, and any postoperative complications encountered.

██████ ██████: Veterinary Technology students are under direct supervision of a trained, experienced ██████ veterinarian or veterinary technician at all times during the anesthetic and surgical period. Using both monitoring equipment and manual assessment, the students monitor vital parameters continuously throughout all procedures until the animal is sternal and mobile. Vital parameters (e.g., body temperature, heart rate, respiratory rate, SPO₂, indirect blood pressure, mucous membrane color, capillary refill time and ETCO₂ [on select monitoring equipment]) are recorded every 10-15 minutes in the anesthesia record. Anesthesia/surgical records are maintained for each animal and each procedure, kept with the animal in the housing room. Anesthesia/surgical records are maintained ██████.

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.

IACUC Policy #016A Policy for Mouse, Rat, Hamster, & Gerbil Survival Surgery, IACUC Policy #016B Policy for Non-Rodent USDA-Regulated Animal Survival Surgery, and IACUC Policy #016C Policy for Ectotherm Survival Surgery and Frog Oocyte Collection outlines postoperative care and record requirements by species type.

LAMS: For USDA covered species, LAMS veterinary staff provides all post-operative monitoring and care until the animal is fully recovered and requires no additional analgesics. Post-operative records maintained per animal include: behavioral/pain assessment form ("green" sheet) that documents twice daily evaluation and analgesic administration while the animal is receiving analgesics, drug administration treatment sheets (when applicable), and daily observation sheets (for observations or treatments that occur in addition to the twice daily "green" sheet evaluations). Additional records maintained include: anesthesia log, surgery report, initial examination form (completed upon animal receipt), weight log, and Master Summary page (outlines health issues encountered, invasive and non-invasive procedures performed, and drugs administered). Upon animal disposition, records are maintained in the AV's office for at least 3 years.

For all other species, research personnel provide post-operative monitoring and care unless prior arrangements are made with LAMS veterinary staff. Following surgery, animals are continuously monitored until recovered from anesthesia. Post-operative analgesics are administered in accordance with the IACUC-approved protocol and documented. Post-operative records are maintained by research personnel. The LAMS Surgery Cage Card contains the following postoperative information: date, time, surgical site, animal condition, analgesic/treatment, initials, and the suture/staple removal date. Daily monitoring by research personnel continues until the animal is recovered and no longer requires analgesics. In addition, LAMS husbandry staff monitors all animals daily and pays particular attention to animals in cages labeled with Surgery Cage Cards. Any abnormalities encountered are reported to LAMS veterinary staff for evaluation/treatment.

██████: Veterinary Technology students and staff provide all pre-, peri-, and post-operative monitoring and care until the animal is fully recovered. A post-operative vital signs/behavior/pain assessment/treatment form ("green" sheet) is utilized to document twice daily evaluation and analgesic administration (as needed) beginning on the afternoon of surgery. The Colorado State University Veterinary Medical Center Canine Acute Pain Scale is utilized twice daily to assess pain level in dogs and need for analgesic administration. Similar forms have been developed for other species utilized. Additional records maintained include anesthesia administration and peri-operative monitoring logs, surgery report, animal health record, initial examination form (completed upon animal receipt) and any records provided by the animal shelter from which the animal was obtained. Upon animal disposition, records are maintained in the ██████ office.

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

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

The IACUC protocol review process includes an assessment (+/- assignment of USDA pain class) of anticipated pain and/or distress during experimental manipulation(s). All personnel working with animals are trained to recognize normal and abnormal species-typical behaviors to ensure pain and/or distress is minimized.

For USDA covered species and all animals used at ██████, pain and/or distress is evaluated by LAMS husbandry as part of daily observations. Post-operative assessments are conducted by LAMS or ██████ veterinary staff to monitor recovery, ensure analgesics being used are efficacious, and determine when analgesics are no longer required (beyond the minimum requirement set forth in the IACUC-approved protocol).

Monitoring of pain and/or distress in other species (e.g., rodents, ectotherms) is performed primarily by research personnel, who are commonly the individuals administering analgesics. LAMS staff performs health monitoring rounds daily on all animals housed in the vivaria. If any animal is noted to be in pain and/or distress, an emergency AHN/R is submitted and the animal immediately evaluated by LAMS veterinary staff.

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

As part of new and continuing employee training all LAMS personnel are trained to recognize signs of animal health abnormalities, to report abnormalities to the veterinary staff using the AHN/R form, and to provide basic health care to animals as prescribed by the veterinary staff. Staff is trained to understand the signs of acute pain vs chronic pain from species to species, and within a species as it relates to individual, sex, and age differences. Staff training is an ongoing exercise (e.g., refresher training) to keep staff current on updates in knowledge, practices, and, most importantly, to recognize early signs of pain and distress in novel and new experimental models. Animal care technicians are cross-trained in species-specific behavior, and care needed to avoid problems when primary technicians are away from the facility during weekends, holidays, and vacations. Additional resources (e.g., AALAS training manuals, books, CE classes, and online courses) are available to support the training for the species-specific recognition of pain and distress. Research staff are trained during initial IACUC orientation, LAMS vivarium access orientation, and species-specific training. Additional training is provided if requested or if animal welfare or compliance concerns arise.

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.

<u>Species</u>	<u>Drug Type</u>	<u>Drug Name</u>
Amphibian	Anesthetic	Tricaine methanesulfonate
	Analgesic	Benzocaine Xylazine
Cat	Anesthetic	Ketamine/Diazepam
		Ketamine/Midazolam
		Telazol
		Propofol
		Isoflurane
		Sevoflurane
	Analgesic	Buprenorphine
		Oxymorphone
		Meloxicam
		Carprofen
		Lidocaine
		Bupivacaine
Dog	Anesthetic	Ketamine/Diazepam
		Ketamine/Midazolam
		Telazol
		Propofol
		Isoflurane
		Sevoflurane

<u>Species</u>	<u>Drug Type</u>	<u>Drug Name</u>
Dog	Analgesic	Buprenorphine Oxymorphone Meloxicam Carprofen Lidocaine Bupivacaine
Fish	Anesthetic	Tricaine methanesulfonate Benzocaine
Gerbil	Anesthetic	Ketamine/Xylazine Isoflurane Pentobarbital sodium
	Analgesic	Buprenorphine Meloxicam Bupivacaine
Guinea Pig	Anesthetic	Ketamine/Xylazine Isoflurane Sevoflurane
	Analgesic	Buprenorphine Meloxicam Bupivacaine
Mouse	Anesthetic	Ketamine/Xylazine Ketamine/Xylazine/Acepromazine Ketamine/Inactin Isoflurane Sevoflurane Pentobarbital sodium Tribromoethanol
	Analgesic	Buprenorphine Meloxicam Carprofen Bupivacaine
Pig	Anesthetic	Ketamine/Acepromazine Telazol/Xylazine Isoflurane
	Analgesic	Buprenorphine Carprofen Bupivacaine
Rabbit	Anesthetic	Ketamine/Xylazine Propofol Isoflurane Sevoflurane Pentobarbital sodium

<u>Species</u>	<u>Drug Type</u>	<u>Drug Name</u>
Rabbit	Analgesic	Buprenorphine Oxymorphone Meloxicam Carprofen Bupivacaine
Rat	Anesthetic	Ketamine/Xylazine Ketamine/Xylazine/Acepromazine Inactin Isoflurane Sevoflurane Pentobarbital sodium
	Analgesic	Buprenorphine Meloxicam Carprofen Bupivacaine
Reptile	Anesthetic	Isoflurane
	Analgesic	Meloxicam Butorphanol Buprenorphine Bupivacaine Lidocaine gel

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

As part of the IACUC protocol pre-review process, a veterinarian advises the PI on the selection of anesthetics (i.e., injectable, inhalation), analgesics (i.e., opioids, nonsteroidal anti-inflammatory agents, local anesthetics) and other pain moderating methods based on the species being used and the procedure being performed. Whenever possible, multi-modal analgesia is employed. Research personnel can contact LAMS veterinary staff at any time to discuss anesthetic/analgesic regimens. If there is evidence that the anesthetic and/or analgesic regimen selected is inadequate, the LAMS veterinarians will work with the researcher to make the needed refinements in order to enhance the well-being of the animals. Modifications are submitted to the IACUC for review and approval.

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.

USDA covered species: Effectiveness of anesthetics and analgesics is assessed by RVTs (LAMS or [REDACTED]) and LAMS veterinarians. Animals are monitored continuously while anesthetized and until recovered. Post-operatively, animals are assessed for pain and/or distress at least twice daily.

■■■■■ ■■■■: Effectiveness of anesthetics/analgesics are monitored by ■■■■■ veterinarians and RVTs using similar guidelines described above for USDA covered species.

Other species: Effectiveness of anesthetics and analgesics is assessed by trained research personnel. LAMS staff can provide anesthetic and analgesic monitoring if specifically requested by the PI. Unless otherwise specified through a LAMS Veterinary Service Request, post-surgical care and monitoring (including effectiveness of analgesics) are provided by research personnel. Daily assessment by research personnel continues until the animal is recovered and no longer requires analgesics. In addition, LAMS husbandry staff monitors all animals daily and pays particular attention to animals in cages labeled with Surgery Cage Cards. Any evidence of pain or distress is reported to LAMS veterinary staff through generation of an emergency AHN/R. The LAMS veterinary staff will evaluate the animal and discuss options with the PI (e.g., administration of additional or alternative analgesics, euthanasia).

For new procedures, the IACUC may require LAMS veterinary staff to be involved initially to ensure efficacy of anesthetics and analgesics used.

Non-pharmacological means to help diminish pain or distress include the use of hot/cold therapy and additional enrichment items unless contraindicated by the study design.

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.

The use of neuromuscular blocking agents is strongly discouraged. Its use must be scientifically justified in the IACUC protocol and must include a detailed description of how the depth of anesthesia will be assessed (e.g., electroencephalogram, heart rate and/or blood pressure trends).

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

LAMS and ■■■■ gas anesthesia machines and mechanical ventilators: Each F/Air canister used to collect waste gases is dated and weighed every 2 weeks. The average useful life of each canister is estimated to be approximately 12-15 hours of use. Once the canister reaches 50 grams above starting weight, it is discarded and replaced. If the canister does not reach 50 grams above starting weight by 6 months, it is replaced to help ensure the activated charcoal does not dry out leading to diminished scavenging capacity.

Soda lime absorbent granules used with large animal anesthesia machines are changed after every procedure unless the procedure is short (e.g., less than 1 hour). LAMS does not rely on color change as an indicator to change granules since color change may vary.

Inhalation and exhalation valves of anesthesia machines are cleaned as needed after use. They are disassembled and wiped with cloth to remove accumulated water vapor. The valve discs and seats are cleaned. The knurled retainer rings are loosened to make sure that the O-rings and clear dome are clean when reassembling the valves. The breathing bag and

hoses are soaked in 2% chlorhexidine solution diluted in warm water, rinsed with water, and hung up to dry after each use.

Oxygen cylinders are checked prior to each use to ensure there is an adequate supply of oxygen available. All gas anesthesia machines and mechanical ventilators that are in use are serviced annually by an authorized vendor.

■■■■■ gas anesthesia machines: A Machine Use Card is maintained for each gas anesthesia machine. Each F/Air canister used to collect waste gases is weighed before each use and the weight is recorded on the Machine Use Card. Once the canister reaches 30 grams above starting weight, it is refilled with fresh activated carbon manufactured for that purpose and the new weight is recorded on the card. If the machine has not been used for 6 months or more the canister will be refilled before use to help ensure the activated charcoal does not dry out leading to diminished scavenging capacity.

CarbOlime absorbent granules used with the anesthesia machines are physically felt for freshness bi-weekly and changed at least monthly. ■■■■■ does not rely on color change as an indicator to replace absorbent granules since color change may vary.

The length of each anesthetic procedure is noted on the Machine Use Card, which also helps to gauge when to change crystals. Average monthly machine usage is 8-10 hours.

The breathing bag and hoses are soaked in 2% chlorhexidine solution diluted in warm water, rinsed well with water, and hung up to dry after each use. Flutter valves are cleaned and dried on an as-needed basis.

The pounds per square inch of oxygen cylinders and the central oxygen tank are checked prior to each use to ensure there is an adequate supply of oxygen available. A machine leak test is performed before each use. When anesthetic gas (isoflurane or sevoflurane) is added to the vaporizer the expiration date of the gas is recorded on the Machine Use Card.

All anesthetic machines are thoroughly checked by staff before being put into lab use at the beginning of the Fall semester. Any problems that ■■■■■ staff cannot resolve results in the machine being removed from use until professionally repaired. All gas anesthesia machines that are in use are serviced annually by an authorized vendor.

PI-owned rodent anesthesia equipment: The same recommendations apply with regard to routine maintenance of gas anesthesia machines and ventilators. Servicing of equipment by an authorized vendor is done at least once every 3 years.

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.

All methods of euthanasia are supported by the AMVA Guidelines for the Euthanasia of Animals: 2013 Edition unless scientifically justified and approved by the IACUC. The following are common methods employed:

Amphibians (all species): immersion anesthetic overdose, decapitation under anesthesia, injectable barbiturate overdose

Cats: intravenous barbiturate overdose

Dogs: intravenous barbiturate overdose

Fish (all species): immersion anesthetic overdose

Gerbils: injectable barbiturate overdose, CO₂ overdose, decapitation under anesthesia

Guinea Pigs: injectable barbiturate overdose, CO₂ overdose, decapitation under anesthesia

Mice: injectable barbiturate overdose, CO₂ overdose, cardioplegic overdose under anesthesia, cervical dislocation with or without anesthesia, decapitation with or without anesthesia, inhalant anesthetic overdose, injectable anesthetic overdose, perfusion under anesthesia, pneumothorax under anesthesia, vital organ removal under anesthesia

Pigs: intravenous barbiturate overdose, vital organ removal under anesthesia

Rabbits: injectable barbiturate overdose, injectable anesthetic overdose, perfusion under anesthesia

Rats: injectable barbiturate overdose, CO₂ overdose, cardioplegic overdose under anesthesia, decapitation with or without anesthesia, inhalant anesthetic overdose, injectable anesthetic overdose, perfusion under anesthesia, pneumothorax under anesthesia, vital organ removal under anesthesia

Reptiles (all species): inhalant anesthetic overdose, injectable anesthetic overdose, injectable barbiturate overdose, cervical dislocation without anesthesia, decapitation without anesthesia, hypothermia followed by decapitation (field pythons)

For mice and rats 6 days of age or younger, hypothermia followed by a physical method (e.g., decapitation) may be performed.

Decapitation or cervical dislocation in conscious rodents (e.g., mice, rats) or other small species (e.g., desert lizards) is acceptable with conditions (per AVMA).

Locations: Animals are euthanized in LAMS procedure/necropsy rooms or IACUC-approved satellite procedure locations. Animals exposed to hazardous agents and rodents in quarantine rooms may be euthanized within the animal housing room due to OHS and biosecurity concerns.

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

CO₂ overdose: CO₂ euthanasia systems include flow meters and pressure regulators which are preset for appropriate CO₂ gas output. LAMS CO₂ euthanasia systems are checked daily to ensure proper function.

Inhalant anesthetic overdose: Inhalant anesthetic overdose can be performed using a precision vaporizer or a drop box method within a CFH. Anesthesia machine maintenance has been previously discussed. CFHs are inspected and certified annually.

Physical method: Equipment used to perform physical euthanasia (e.g. guillotines, sharp scissors) must be maintained and serviced regularly to be in appropriate operating condition at all times. Maintenance logs or service work orders are reviewed during IACUC semiannual inspections and PAM visits.

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

Death is confirmed by cessation of breathing, full ocular dilation, absence of a heartbeat, and negative corneal reflexes. A secondary method to confirm death must be used when the primary method involves the use of chemical agents (e.g., CO₂ overdose, inhalant anesthetic overdose, injectable barbiturate overdose). The following physical methods are used depending on species: cervical dislocation, decapitation, bilateral pneumothorax or cutting of the diaphragm, removal of a vital organ, perfusion with fixative, and pithing.

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.

[Redacted content]

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).

- ██████████

 1. **General arrangement:** Conventional corridor arrangement (clean and dirty utilizing the same corridors) with animal housing rooms, procedure/surgery rooms, necropsy room (contains a CFH and refrigerator for carcass storage), feed storage, cage storage, a clean and dirty side cage wash area (rack washer plus autoclave), sterile cage prep area, R/O water system room, laundry room, air shower, personnel lounge, supervisor's office, RVT office, and rest rooms with showers and lockers.
 2. **Relationship to laboratories:** Connected to ██████████ by a dedicated elevator located inside the ██████████. Use of this elevator requires badge access into the ██████████. Additional IACUC-approved satellite procedure laboratories are located throughout the building. A freight elevator outside of the vivarium connects ██████████ to the adjacent laboratories.
 3. **Types of available housing space:** Barrier.
 4. **Finishes:**
 - Floors: epoxy resinous flooring in corridors, animal holding, and support rooms.
 - Walls: cement plaster over concrete block and are painted with high gloss alkyd enamel. Aluminum crash rails and stainless steel corner guards protect the corridors. One room (previously housing but currently used for storage) has an impact board installed to protect the high traffic area.
 - Ceilings: concrete plaster over metal lathe, painted with high gloss oil base alkyd enamel.
 - Doors: gloss alkyd enamel painted, steel metal doors, metal door frames, no vision panel.
 - Sanitization: easily sanitized.
 5. **Engineering features used in hazardous agent containment:** No hazardous agents used in this facility.
 6. **Security features:** The ██████████ building has perimeter electronic badge readers (main entrance and connection doors to ██████████) that are deactivated Monday-Friday 6am-6pm. All other times (weekends, holidays, snow days) these badge readers are activated. The ██████████

occupies part of the of this building. A dedicated elevator connects cage staging area E904 (which has no direct access to the animal housing or procedure rooms) with the . Use of this elevator requires electronic badge reader access into the . Entrance into the requires electronic badge reader access into the .

7. **Exterior windows:** None.

8. **Storage areas for flammable or hazardous agents and materials:**

- : chemical disinfectant mixing station

1. **General arrangement:** Conventional corridor arrangement with animal housing rooms (rodent [barrier and open top conventional], rodent quarantine, *Xenopus*, and USDA covered species), procedure rooms, specialized areas for use of biological (rooms with BSCs) and chemical (rooms with CFHs) agents, storage rooms (cages, chemicals, feed/bedding, gas cylinders, supplies), enclosed receiving area/loading dock, sterile cage prep, clean and dirty side cage wash areas (two tunnel washers, two rack washers, and four autoclaves), X-ray/veterinary supply room, Clinical Lab, R/ water system room, USDA covered species surgery room, necropsy room (one CFH, two down draft tables and walk in cooler for carcass storage), laundry room, personnel lounge, rest rooms with showers and lockers, and LAMS central office.

- : Specialized areas for rodent animal housing (contain BSCs), inoculation of experimental animals and/or collection of biological materials from animals a glove box isolator (procedure room), an autoclave, and rest rooms with showers and lockers. Care is provided daily by research personnel.

2. **Relationship to laboratories:** Multiple elevators connect the and the suite. The (located in) interconnects with the by an enclosed corridor and two interior doors equipped with secured badge readers. Additional IACUC-approved satellite housing () and procedure laboratories are located on the upper floors of .

is directly connected to internal walkways. All additional satellite procedure locations in are internally connected to .

3. **Types of available housing space:** Barrier, Conventional, Isolation/quarantine, Hazard containment.

4. **Finishes:**

- - Floors: epoxy resinous flooring with chemical resistant aggregates in corridors, animal holding, and support rooms. Cage wash has sealed grout floor tile. The breakroom () is sealed vinyl flooring.
 - Walls: epoxy coated cement block, epoxy coated poured concrete cement with a cement plaster coat, and painted with high gloss alkyd enamel paint. Aluminum crash rails and stainless steel corner guards protect the corridors.
 - Ceilings: epoxy coated plaster on wire mesh, painted with alkyd enamel paint in animal holding, and support rooms, acoustical ceiling tiles in corridors and procedure room , and reinforced fiberglass plastic tiles in cage wash and necropsy.
 - Doors: steel painted with gloss enamel alkyd, steel door frames with windows covered with "red light" spectrum viewing ports.
 - Sanitization: easily sanitized.

- [REDACTED]
 - Floors: epoxy resinous flooring in corridors, animal holding, and support rooms.
 - Walls: epoxy coated cement block and epoxy coated poured concrete cement with a cement plaster coat and painted with high gloss alkyd enamel paint.
 - Ceilings: epoxy coated plaster on wire mesh, painted with high gloss alkyd enamel.
 - Doors: steel painted with gloss enamel alkyd, steel door frames, no viewing panels.
 - Sanitization: easily sanitized.

5. Engineering features used in hazardous agent containment:

- [REDACTED]
 - [REDACTED]: Room is equipped with a CFH, safety shower, and eyewash station for housing rodents in sterile ventilated or filtered SMI caging used in experiments involving chemical hazards.
 - [REDACTED]: Procedure rooms are equipped with a CFH and eyewash station for procedures involving chemical hazards in mice.
 - [REDACTED]: Room is equipped with two Class 2 BSCs and eyewash station for housing mice in sterile SMI caging used in experiments involving biohazardous materials.
 - [REDACTED]: Room is equipped with one Class 2 BSC and eyewash station for housing rats in SMI caging used in experiments involving biohazardous materials.
 - [REDACTED]: Room is equipped with one Class 2 BSC and eyewash station for housing gerbils in SMI caging used in experiments involving biohazardous materials.
 - [REDACTED]: Procedure rooms are equipped with a Class 2 BSC and eyewash station for procedures involving hazardous materials in mice.
- [REDACTED]: Mice are housed in sterile HEPA filtered negative pressure ventilated caging with a water bottle. Eyewash stations are located at each sink.

6. Security features: The [REDACTED] has perimeter electronic badge readers that are deactivated Monday-Thursday 6 am-7pm, Friday 6am-6pm, Saturday-Sunday 8am-5pm, and 8am-5pm on holidays and snow days. All other times these badge readers are activated. The [REDACTED] occupies part of the [REDACTED] of this building. The two main entry areas are the west doors that require electronic badge reader access. Additional electronic badge reader entrances are the south door outside the [REDACTED] space, the [REDACTED] receiving dock, and the dedicated elevator connecting the [REDACTED] with the [REDACTED] cage staging area [REDACTED]. The [REDACTED] interconnects with the [REDACTED] by an enclosed corridor and two interior doors equipped with electronic badge readers. Entrance is through electronic badge reader access into the [REDACTED] central receiving dock located adjacent to the [REDACTED] space. The [REDACTED] facility has three levels of access control in addition to [REDACTED] electronic badge readers. Authorized users are issued access information to enter the suite. Once inside the anteroom, each authorized user has a unique code that is entered on an electronic pin pad to enter the main corridor. To enter each specific room ([REDACTED]), the user must enter a unique lab code on an electronic pin pad.

7. Exterior windows: None.

8. Storage areas for flammable or hazardous agents and materials:

- [REDACTED]
 - [REDACTED]: flammable cabinet; equipped with an emergency eyewash, safety shower, and spill kit; epoxy resinous flooring with chemical resistant aggregates; walls are epoxy coated poured concrete cement with a cement plaster coat painted with high gloss alkyd enamel paint; ceiling is reinforced fiberglass plastic tiles.

- [REDACTED]: detergents and acids in 30-55 gallon drums are directly fed by a pump and chemical resistant tubing directly into [REDACTED] (dirty cage wash) tunnel/rack washers; floors are epoxy painted cement; ceilings are epoxy coated plaster on wire mesh painted with alkyd enamel paint; walls are epoxy coated poured concrete cement with a cement plaster coat painted with high gloss alkyd enamel paint.
- [REDACTED]: CO₂ & O₂ tanks; floor is epoxy painted cement; ceiling is acoustical ceiling panels; walls are epoxy coated poured concrete cement with cement plaster coat.
- [REDACTED]: chemical disinfectant mixing station and laundry room; epoxy resinous flooring with chemical resistant aggregates; walls are epoxy coated poured concrete cement with a cement plaster coat painted with high gloss alkyd enamel paint; ceiling is epoxy coated plaster on wire mesh painted with alkyd enamel paint.
- [REDACTED]: chemical storage for cleaning/sanitation products; epoxy resinous flooring with chemical resistant aggregates; walls are epoxy coated poured concrete cement with a cement plaster coat painted with high gloss alkyd enamel paint; ceiling is epoxy coated plaster on wire mesh painted with alkyd enamel paint.
- [REDACTED]
 - Chemical disinfectants in a cabinet under the sink in the anterooms; chemicals for decontamination stored in the interior hallway and anteroom entrance; epoxy painted cement floors; ceilings are epoxy coated plaster on wire mesh painted with alkyd enamel paint; walls are epoxy coated poured concrete cement painted with high gloss alkyd enamel paint.

- 1. General arrangement:** Conventional corridor arrangement with animal housing rooms (rodent barrier and open top conventional), procedure rooms (two rooms contain a NMR, one room contains a TSE Systems PhenoMaster/LabMaster system, and one room contains an Oxymax Comprehensive Lab Animal Monitoring System [CLAMS]), specialized areas for use of biological (room with BSC), chemical (four rooms contain CFHs), and radiological agents, enclosed receiving area/loading dock (contains one cooler for hazardous agents/carcass storage), feed/bedding storage, cage storage, sterile cage prep, a clean and dirty side cage wash area (contains one tunnel washer, one rack washer, and two autoclaves), R/O water system rooms, necropsy room (contains freezer for carcass storage), laundry area, supply storage room, personnel lounge, supervisor's office, RVT office, and rest rooms with showers and lockers.
- 2. Relationship to laboratories:** LAMS maintains a suite of 10 centralized dedicated procedure rooms in [REDACTED] to reduce animal transport to laboratories. Elevators located outside the [REDACTED] to IACUC- approved satellite housing and procedure laboratories located in [REDACTED].
- 3. Types of available housing space:** Barrier, Conventional, Isolation/quarantine, Hazard containment.
- 4. Finishes:**
 - Floors: epoxy resinous flooring with a coved base in corridors, animal holding, and support rooms. The ground floor [REDACTED] and ground floor [REDACTED] ([REDACTED] are sealed linoleum or vinyl flooring.
 - Walls: epoxy painted concrete block. Several rooms have vinyl sheeting on the walls to 4' above the floor. The rooms with troughs also have bumper rails to prevent equipment from rolling into the gutters. Stainless steel corner guards are in high impact locations.
 - Ceilings: epoxy painted plaster over metal mesh.

- Doors: gloss, alkyd enamel painted, steel metal doors, hung in metal frames and with no vision panel. Stainless steel door frame guards have been installed in high traffic areas.
 - Sanitization: easily sanitized.
5. **Engineering features used in hazardous agent containment:**
- [REDACTED]: Each room is equipped with a CFH and eyewash station for housing rodents in sterile ventilated or filtered SMI caging used in experiments involving chemical hazards.
 - [REDACTED]: Room is equipped with one Class 2 BSC and eyewash station for housing mice in sterile SMI caging used in experiments involving biohazardous materials.
 - [REDACTED]: Room is equipped with one Class 2 BSC and eyewash station for housing rats in SMI caging used in experiments involving biohazardous materials.
6. **Security features:** The building has perimeter electronic badge readers that are always activated with the exception of the loading dock and [REDACTED] (deactivated Monday-Friday during business hours). The [REDACTED] is located across three floors of [REDACTED]. Elevators located outside the [REDACTED] connects the three floors. Electronic badge access is required to enter each floor's animal housing area and [REDACTED] procedure space.
7. **Exterior windows:** none in animal housing rooms, but there are exterior windows in the hallways of [REDACTED] (no housing). Exterior windows are equipped with blinds to obscure sunlight and control temperature.
8. **Storage areas for flammable or hazardous agents and materials:**
- [REDACTED]: chemical disinfectant mixing station; epoxy painted cement floor; ceiling is epoxy coated plaster on wire mesh painted with alkyd enamel paint; walls are epoxy coated poured concrete cement with a cement plaster coat painted with high gloss alkyd enamel paint.
 - [REDACTED]: chemical storage for cage wash detergents and acids (30-55 gallon drums), cleaning products and flammable cabinet; epoxy painted cement floor; ceiling is epoxy coated plaster on wire mesh painted with alkyd enamel paint; walls are epoxy coated poured concrete cement with cement plaster coat painted with high gloss alkyd enamel paint.
- [REDACTED]
1. **General arrangement:** Conventional corridor arrangement with areas for animal housing, surgery, classroom instruction, instrument cleaning, an autoclave, x-ray, laundry room, gas cylinder storage, supply storage room, receiving area/loading dock (includes freezer for carcass storage), feed storage, dirty cage wash (manual cleaning of large caging; rodent caging is sanitized [REDACTED]), personnel lounge, offices for veterinary staff, and rest rooms with showers and lockers. Large animal species (cats, dogs, rabbits) are typically housed at [REDACTED] during the academic calendar year (September through May) with an average maximum period of stay less than 2 weeks. Mice and rats typically are housed for one month in June.
2. **Relationship to laboratories:** This building consists of one floor of housing rooms that are contiguous with the teaching laboratories.
3. **Types of available housing space:** Conventional.

4. Finishes:

- Floors: composite on concrete in corridors, animal holding, and support rooms.
- Walls: concrete block painted with gloss alkyd enamel painted with high gloss alkyd enamel paint.
- Ceilings: drywall painted with gloss alkyd enamel.
- Doors: metal steel painted with gloss alkyd enamel and have vision panels. The vision panels do not have light blocking/shading installed.
- Sanitization: easily sanitized.

5. Engineering features used in hazardous agent containment: No hazardous agents used in this facility.

6. Security features: The building has perimeter electronic badge readers that are always activated. The building consists of one floor of housing rooms that are contiguous with the teaching laboratories.

7. Exterior windows: None.

8. Storage areas for flammable or hazardous agents and materials:

- [REDACTED]: cage wash detergents; epoxy painted cement floor; ceiling is epoxy coated plaster on wire mesh painted with alkyd enamel paint; walls are epoxy coated poured concrete cement with a cement plaster coat painted with high gloss alkyd enamel paint.

1. General arrangement: Conventional corridor arrangement with animal housing rooms (rodent barrier), procedure rooms, specialized areas for use of biological (two rooms with BSCs), chemical (one room contains a CFH), and radiological agents, enclosed receiving area/loading dock (contains gas cylinder storage, chemical storage and one freezer for carcass storage), feed/bedding storage, cage storage, sterile cage prep, a clean and dirty side cage wash area (contains one tunnel washer, one rack washer, and two autoclaves), R/O water system room, necropsy room (contains one down draft table), laundry area, supply storage room, personnel lounge, LAMS office (cubicles for one supervisor and RVT), and rest rooms with showers and lockers.

2. Relationship to laboratories: The PIC is located on the ground floor directly across the hallway [REDACTED]. Additional IACUC-approved satellite procedure laboratories are located on the [REDACTED]. An elevator located in [REDACTED] connects the vivarium to [REDACTED].

3. Types of available housing space: Barrier, Isolation/quarantine, Hazard containment.

4. Finishes:

- Floors: epoxy resinous flooring with chemical resistant aggregates in corridors, animal holding, and support rooms. Cage wash has sealed grout floor tile.
- Walls: epoxy coated cement block and epoxy coated poured concrete with a cement plaster skim coat and painted with high gloss alkyd enamel paint. Aluminum crash rails and stainless steel corner guards protect the corridors.
- Ceilings: epoxy coated cement plaster over metal mesh and painted with high gloss alkyd enamel paint.
- Doors: gloss alkyd enamel painted, steel metal doors, metal door frames, no vision panel.
- Sanitization: easily sanitized.

5. Engineering features used in hazardous agent containment:

- [REDACTED] Rodents injected with a radiotracer and/or those imaged in the shared imaging core center located in the [REDACTED] are housed in one of three isolation cubicles in sterile filtered SMI caging.

- [REDACTED]: Procedure room is equipped with a CFH and eyewash station for conducting procedures or cage change of mice used in experiments involving chemical hazards.
 - [REDACTED]: Room is equipped with one Class 2 BSC and eyewash station for housing mice in sterile SMI caging used in experiments involving biohazardous materials.
6. **Security features:** The [REDACTED] has perimeter electronic badge readers on the main entrance level that are deactivated Monday-Friday 8am-5pm. All other times (weekends, holidays, snow days) these badge readers are activated. The [REDACTED] occupies part of the [REDACTED] of the building. Access to the [REDACTED] is via electronic badge readers through either the exterior [REDACTED] or the [REDACTED] laboratory elevator. Once on the ground level, the [REDACTED] has three electronic badge readers, two located at the south entrance and one located at the north entrance. The PIC on the [REDACTED] is located directly across the hallway [REDACTED]. Access to the PIC is via electronic badge reader.
7. **Exterior windows:** None.
8. **Storage areas for flammable or hazardous agents and materials:**
- [REDACTED]: chemical disinfectant mixing station.
 - [REDACTED]: chemical storage for cage wash detergents and acids in 30-55 gallon drums, various chemicals used for room sanitization and storage for CO₂ and O₂ tanks; floor is epoxy painted cement floor; ceiling is epoxy coated plaster on wire mesh painted with alkyd enamel paint; walls are epoxy coated poured concrete cement with a cement plaster coat painted with high gloss alkyd enamel paint.

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.

IACUC Policy #012 applies to all vertebrate species held in a satellite housing area. In accordance with PHS Policy and the USDA Animal Welfare Act (AWA) regulations, the IACUC defines satellite housing areas as: (1) any area in which USDA covered species (e.g., gerbils) are held over 12 hours, (2) any area in which non-USDA covered species (e.g., mice, rats, ectotherms) are held over 24 hours.

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.

The IACUC must review and approve all requests for satellite housing locations. Scientific justification to house animals outside of LAMS animal facilities must be provided. The PI must ensure both IACUC and LAMS have unrestricted independent access to the area. A 24 hour temperature alarm system which alerts LAMS of temperature excursions is

required. LAMS reviews trends regarding temperature and humidity changes. A LAMS satellite housing log must be maintained in the satellite housing area. The IACUC is required to inspect satellite housing areas at least once every six (6) months to monitor compliance with the requirements of the *Guide* and AWA regulations, if applicable. In addition, LAMS staff monitors all satellite housing areas to ensure the adequacy of veterinary care and husbandry. Principal Investigators must ensure compliance with IACUC Policy #012A “Requirements for Mammalian Satellite Housing” or Policy #012B “Requirements for Ectotherms Satellite Housing”.

AV access: the AV has unrestricted, independent access to all satellite housing locations.

Physical security: Building entrance is the same as described above for [REDACTED] building has perimeter electronic badge readers that are deactivated Monday-Thursday 7am-9pm, Friday 7am-6pm, and Saturday 8am-5pm. Students have perimeter access only during the following days/time: Monday-Friday 7am-10pm and Saturday-Sunday 8am-10pm. Within the building, the corridors have electronic badge readers. Corridor access is unrestricted Monday-Friday 8am-5pm. All other times (holidays, snow days), badge readers are activated.

Entrance into laboratories where animals are housed is via electronic badge reader access or key lock access doors.

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.

Availability of emergency power: The [REDACTED] is equipped with emergency power to provide uninterrupted operation to all ventilated racks, laminar flow hoods, lighting, and R/O water system. The remaining vivaria and satellite housing locations have emergency power and/or standby power supplied by diesel generators whose operations are essential for safety and critical devices/equipment. This includes all water R/O systems, identified emergency electrical outlets, critical freezers/coolers, and [REDACTED] HVAC system.

History of power failures: During business hours on September 18, 2018, the West Campus and most of the [REDACTED] lost power for approximately two hours due to a construction activity that damaged a major power grid supplying UC. Life support

emergency lighting and perimeter security (electronic badge readers) were active. LAMS staff was on site to monitor temperatures and animal health. No animal loss occurred as a result of outage. Temperatures remained within the range recommended in the *Guide*.

- 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).

None.

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.

██████████: The Inhalation Core Facility consists of ~200 sq. ft. of wet lab space, including a CFH, centrifuges, water baths, and incubators. The adjacent lab is equipped with 2 CFHs and a BSL2 tissue culture hood. The exposure equipment in the Inhalation Core Facility consists of an automated smoking machine capable of delivering primary or second hand smoke and exposure chambers (TE-10, Teague Enterprises, Woodland, CA), 0.32m3 animal (mice only) exposure chambers (3), Shandon cytocentrifuge, table-top clinical centrifuge, (2) microcentrifuge, Miltenyi VarioMacs Magnetic Cell Separation system, Nikon microscope and digital camera and appropriate software (e.g., MetaMorph, Photoshop) for analysis and documentation of histology and immunohistochemistry. The chambers are sprayed with 10% bleach, made fresh daily, at the end of each day. Once weekly the chambers are thoroughly cleaned with methanol to dissolve tar deposits, allowed to dry, and sprayed with 10% bleach. If cohorts of mice need to be separated, they are exposed in separate chambers. There is no cross airflow between chambers.

██████████: The ██████████ LAB performs animal hearing screening using brainstem auditory evoked testing, hearing assessment using otoscopy and otoacoustic emissions, tympanometry, acoustic imaging and hearing aid research. The laboratory facility consists of a suite of examination rooms, computer space, and a necropsy room. Currently, the facility is only used for hearing assessments of client-owned dogs. When testing is completed, the area is cleaned and disinfected (e.g., Roccal-D).

██████████: The UC ██████████ is a shared clinical and research resource utilizing a ██████████ MR System. Animal subjects include rodents and rabbits. Animals are transported in covered cages when the imaging area is clear of human patients (during off hours). The scanner and surrounding area is cleaned with a disinfectant after use.

██████████ The ██████████ lab provides a variety of services and expertise in high resolution NMR spectroscopy and magnetic resonance micro-imaging. The room and

equipment is currently being leased by Cincinnati Children's Hospital Medical Center through an MOU with UC.

██████████ The MMPC is a comprehensive resource for the phenotypic characterization of rodent models pertaining to the study of diabetes and its complications. MMPC provides analytical services for mice and rats from within UC as well as from extramural collaborators. Animals from non-approved vendor sources requiring housing during the study period are assigned a dedicated housing room inside LAMS ██████████. This area is maintained as last entry order to prevent cross-contamination. The equipment, laminar flow hood, cages and surrounding areas are cleaned with a disinfectant (e.g., Clidox) when testing is completed. Specialized or sensitive equipment is disinfected per manufacturers' instructions.

██████████ (chamber): To simulate the impact of strategic aeromedical evacuation following injury (e.g., burn, hemorrhagic shock, hepatic ischemia/reperfusion, traumatic brain injury), rodents are placed in an altitude chamber. The "flight" mimics standard aeromedical evacuation changes in altitude during ascent and descent, with a 5-hour "flight time" from sea level with rapid ascent to maximum altitude of 8800 feet and subsequent descent back to sea level. Equipment is disinfected per the manufacturer's instructions.

██████████ Irradiator: ██████████ irradiator is under the oversight of the RSO. Mice are transported to the irradiator for whole body exposure to prepare recipient mice for bone marrow or stem cell transplantation. Mice are contained within microisolators (e.g., RadDisk) during irradiation and transport. Animals are either returned to their animal housing room (when RadDisk is used and microisolator barrier technique is strictly employed) or placed in a post-procedure, last order entry return room to minimize potential for cross-contamination. RadDisks are disinfected and autoclaved after use.

██████████: The PIC is adjacent to the ██████████. Imaging modalities in the PIC include micro-CT, PET, and SPECT (Siemens system) and optical, fluorescence, bioluminescence, planar x-ray, and radioisotopic (Bruker system). Both systems include options for physiological monitoring (e.g., ECG, respiration, and temperature). The imaging systems are equipped with inhalation anesthesia. Other equipment in the PIC include a laminar flow hood and 3 rodent inhalation anesthesia set ups. Cages and surrounding areas are cleaned using disinfectants and methods for sanitation delineated in LAMS SOP(s) following each procedure. Specialized, sensitive, or hazard generating equipment, is disinfected per manufacturers' instructions and in accordance with approved radiation safety protocols. Animals requiring housing while research is being performed are assigned to one of three isolation cubicles located in the ██████████. The housing area is maintained as last order entry to prevent cross-contamination.

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

APPENDIX 1

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

Appendix 1: Glossary of Abbreviations and Acronyms

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

Abbreviation / Acronym	Definition
ABSL	Animal Biosafety Level
ACUP	Animal Care and Use Program
ADX	Adrenalectomy
AHC	Academic Health Center
AHN/R	Animal Health Notification Record
ATP	Adenosine Triphosphate
AU	Authorized User
AV	Attending Veterinarian
AVMA	American Veterinary Medical Association
AVTE	Association of Veterinary Technician Educators
AWA	Animal Welfare Act
AWR	Animal Welfare Regulations
BAS	Building Automated System
BPA	Bisphenol A
BSC	Biosafety Cabinet
BSL	Biosafety Level
BSO	Biosafety Officer
BSOf	Biosafety Office
CARB	Cilia-associated Respiratory Bacillus
CBC	Complete Blood Count
CBSP	Certified Biological Safety Professional
CE	Continuing Education
CEM	Certified Energy Manager
CFH	Chemical Fume Hood
CFM	Cubic Feet per Minute
CIH	Certified Industrial Hygienist
Clidox	Chlorine Dioxide
CMAR	Certified Manager of Animal Resources
COM	College of Medicine
CPIA	Certified Professional in IACUC Administration
CPIL	<i>Clostridium piliforme</i> (Tyzzer's Disease)
CT	Computerized Tomography
CVMA	Cincinnati Veterinary Medical Association
CVTA	Cincinnati Veterinary Technician Association
DEA	Drug Enforcement Agency
DMR	Designated Member Reviewer
DOD	Department of Defense
ECG	Electrocardiogram
ECUN	<i>Encephalitozoon cuniculi</i>
EDIM	Epizootic Diarrhea of Infant Mice (Mouse Rotavirus)
EH&S	Environmental Health and Safety

Appendix 1: Glossary of Abbreviations and Acronyms

Abbreviation / Acronym	Definition
FBR	Foundation for Biomedical Research
FCR	Full Committee Review
FelV	Feline Leukemia Virus
FETCHLAB	Facility for Education and Testing of Canine Hearing and Laboratory for Animal Bioacoustics
FIV	Feline Immunodeficiency Virus
GI	Gastrointestinal
Guide	<i>Guide for the Care and Use of Laboratory Animals</i> , 8 th Ed. (NRC, 2011)
HEPA	High Efficiency Particulate Air
HVAC	Heating, Ventilation and Air Conditioning
IACUC	Institutional Animal Care and Use Committee
IBC	Institutional Biosafety Committee
IC	Intracranial
ILAM	Institute for Laboratory Animal Management
IO	Institutional Official
IP	Intraperitoneal
I/R	Ischemia/Reperfusion
IVC	Individually Ventilated Cage
LAA	Laboratory Animal Aide
LAMS	Laboratory Animal Medical Services
LAT	Laboratory Animal Technician
LATG	Laboratory Animal Technologist
LCMV	Lymphocytic Choriomeningitis Virus
LDEV	Lactate Dehydrogenase Elevating Virus
████	████████████████████
MACS	Modular Animal Caging System
MCMV	Mouse Cytomegalovirus
MHV	Mouse Hepatitis Virus
MI	Myocardial Infarction
MMPC	Mouse Metabolic Phenotyping Center
MNV	Mouse Norovirus
MOU	Memorandum of Understanding
MPUL	<i>Mycoplasma pulmonis</i>
MPV	Mouse Parvovirus panel 1-5
MRI	Magnetic Resonance Imaging
████	████████████████████
MTLV/MTV	Mouse Thymic Virus
MVA	Mouse Adenovirus
MVM	Minute Virus of Mice
NABR	National Association for Biomedical Research
NMR	Nuclear Magnetic Resonance
OB	Oversight Body
OBP	Ohio Board of Pharmacy
OHS	Occupational Health and Safety
OHSP	Occupational Health and Safety Program
OLAW	Office of Laboratory Animal Welfare
OSHA	Occupational Safety and Health Administration

Appendix 1: Glossary of Abbreviations and Acronyms

Abbreviation / Acronym	Definition
OVX	Ovariectomy
PAM	Post-approval Monitoring
PAPR	Powered Air Purifying Respirator
PCR	Polymerase Chain Reaction
PCV	Packed Cell Volume
PET	Positron Emission Tomography
PHS	Public Health Service
PI	Principal Investigator
PIV	Pressurized Individually Ventilated
PIC	Preclinical Imaging Core
PPE	Personal Protective Equipment
PRIA	PCR Rodent Infectious Agent
PRIM&R	Public Responsibility in Medicine and Research
PVM	Pneumonia Virus of Mice
QA	Quality Assurance
QC	Quality Control
RAM	Radioactive Material
RAP	Research Administration Portal
REO-3	Reovirus 3
RG	Risk Group
RGE	Radiation Generating Equipment
R/O	Reverse Osmosis
RMV	Rat Minute Virus
RPV	Rat Parvovirus
RSC	Radiation Safety Committee
RSO	Radiation Safety Officer
RSOf	Radiation Safety Office
RTV	Rat Theilovirus
RVT	Registered Veterinary Technician
SA	Supplemental Appendix
SCAW	Scientists Center for Animal Welfare
SDAV/RCV	Sialodacryoadentitis Virus (Corona virus)
SMI	Static Microisolator
SOP	Standard Operating Procedure
SPECT	Single-photon Emission Computed Tomography
SPF	Specific Pathogen Free
SRT	Surgical Research Technician
SV	Sendai Virus
TAC	Transverse Aortic Coarctation
TCVM	Traditional Chinese Veterinary Medicine
TDDD	Terminal Distributor of Dangerous Drugs
TMEV/GD7	Theiler's virus
TP	Total Protein
UC	University of Cincinnati

Appendix 1: Glossary of Abbreviations and Acronyms

Abbreviation / Acronym	Definition
UCR	Urgent Committee Review
USDA	United States Department of Agriculture
UHS	University Health Services
UV	Ultraviolet
VNS-LAM	Veterinary Nurse Specialist Laboratory Animal Medicine
VTP	Veterinary Technology Program
VTs	Veterinary Technician Specialist

APPENDIX 2

SUMMARY OF ANIMAL HOUSING AND SUPPORT SITES

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
██████████	██████████	4,611	2,816	Guinea Pig, Mouse	Guinea Pig - 20 Mouse - 2,432	Charles Jeff Williams
██████████ ██████████	████	17,600	17,216	Gerbil, Mouse, Pig, Rabbit, Rat, <i>Xenopus</i>	Gerbil - 8 Mouse - 12,112 Pig - 3 Rabbit - 1 Rat - 476 <i>Xenopus</i> - 20	Charles Jeff Williams Michael Brandon Lay
██████████ ██████████ ██████████	██████████ ████	16,694	12,393	Mouse, Rat	Mouse - 8,064 Rat - 758	Tim Baechle
██████████ ██████████ ██████████ ██████████	██████████ ████	1,670	5,703	Cat, Dog, Mouse, Rabbit, Rat	Cat - 4 (fall/spring) Dog - 3 (fall/spring) Mouse – 40 (summer) Rabbit – 12 (summer) Rat–25 (summer)	Tim Baechle

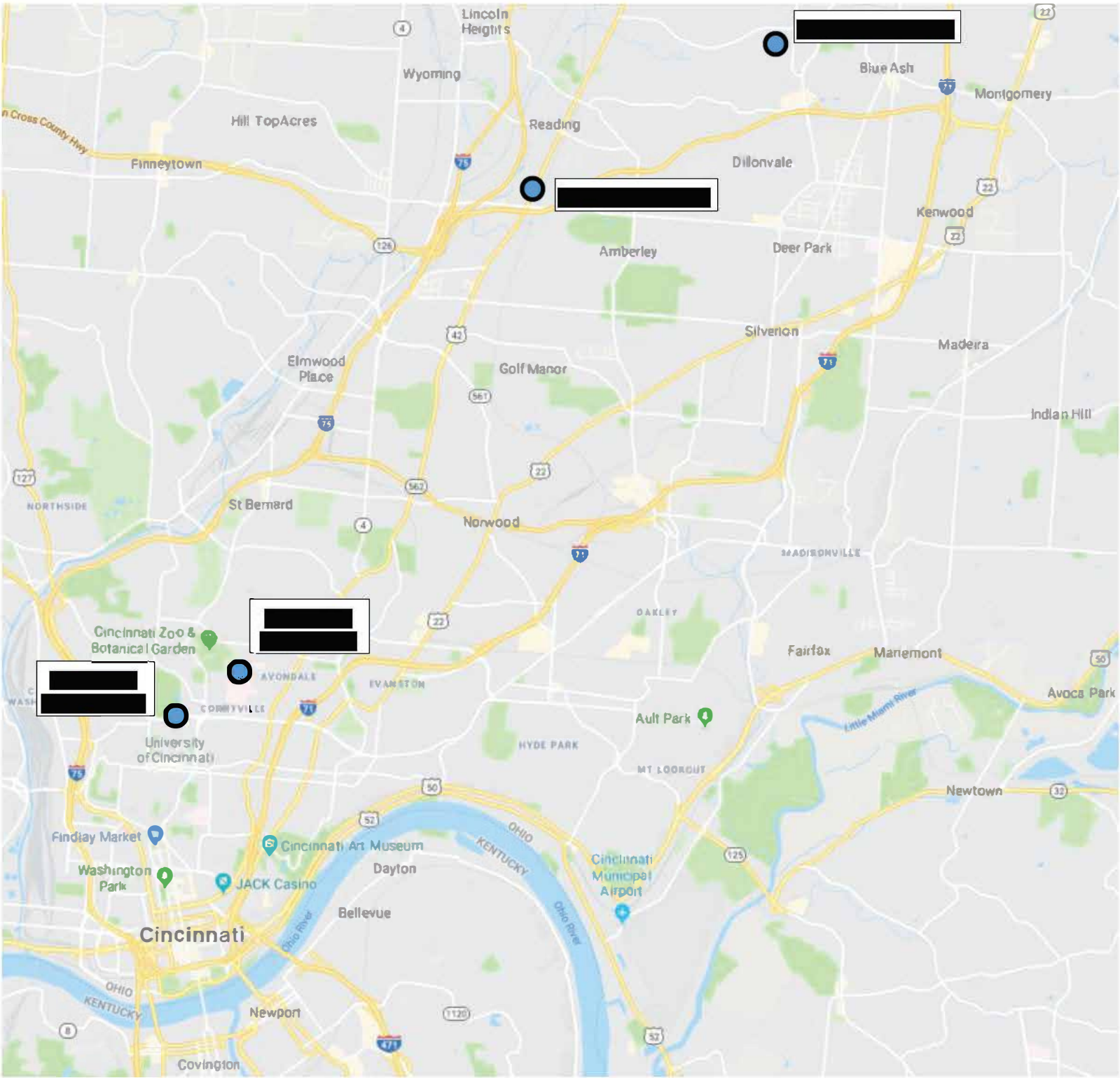
Animal Housing and Support Sites						
Location (building, site, farm name, etc. ^a)	Distance from main facility ^b	Approx. ft ² , m ² , or acreage for animal housing	Approx. ft ² , m ² , or acreage for support or procedures	Species housed	Approx. Daily Animal Census by species	Person in charge of site
██████████)	██████████ ██████	2,907	3,670	Mouse, Rat	Mouse - 4,400 Rat - 3	Michael Brandon Lay
██████ ██████ ██████████ ██████████ ██████		2,152	0			

Totals:	45,634	41,798	
Total animal housing and support space:	87,432 ft²		
	(please specify ft² or m²)		

APPENDIX 3

LINE DRAWINGS & MAPS

University of Cincinnati (UC)
Campus Locations City Map



UC

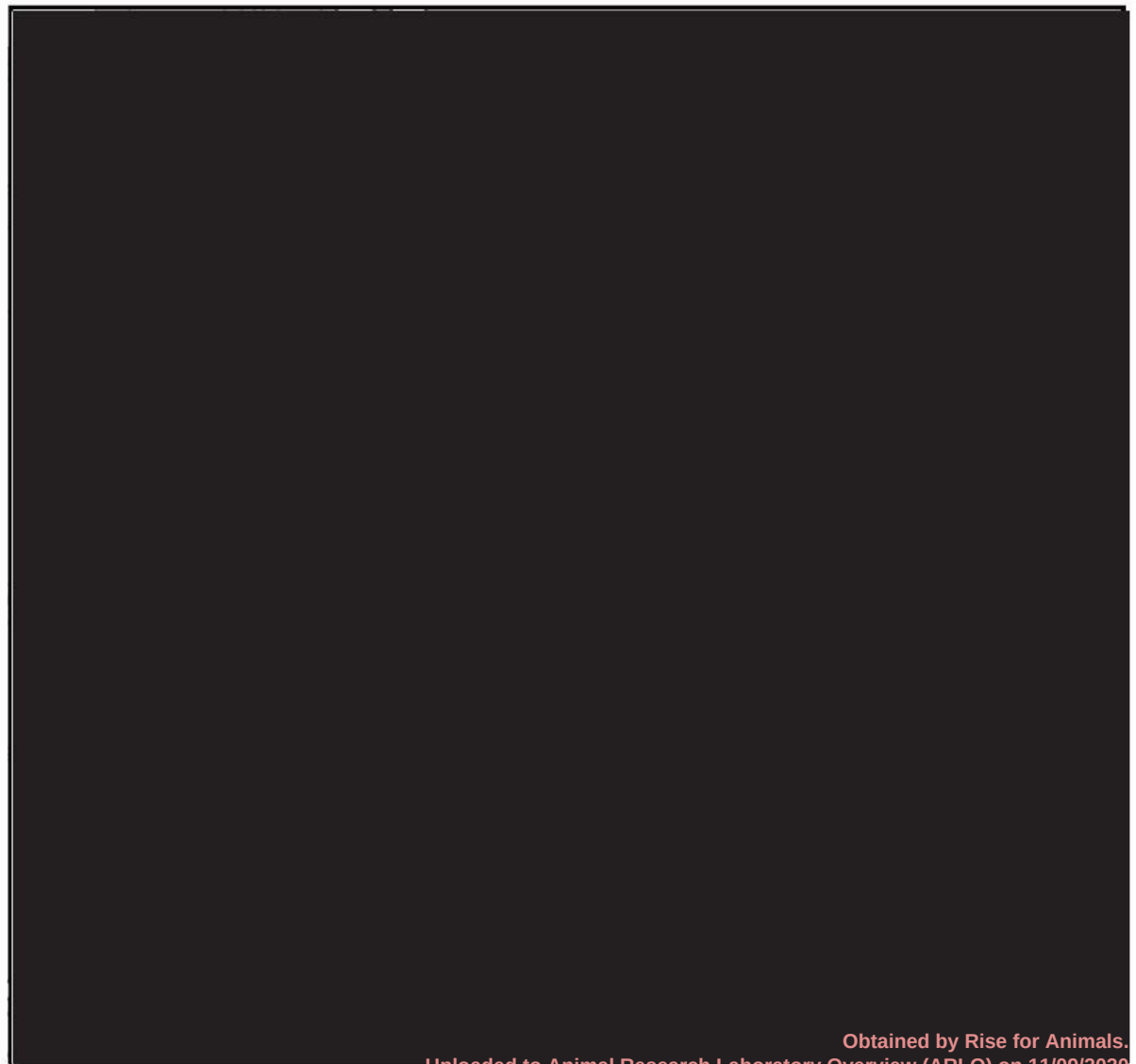
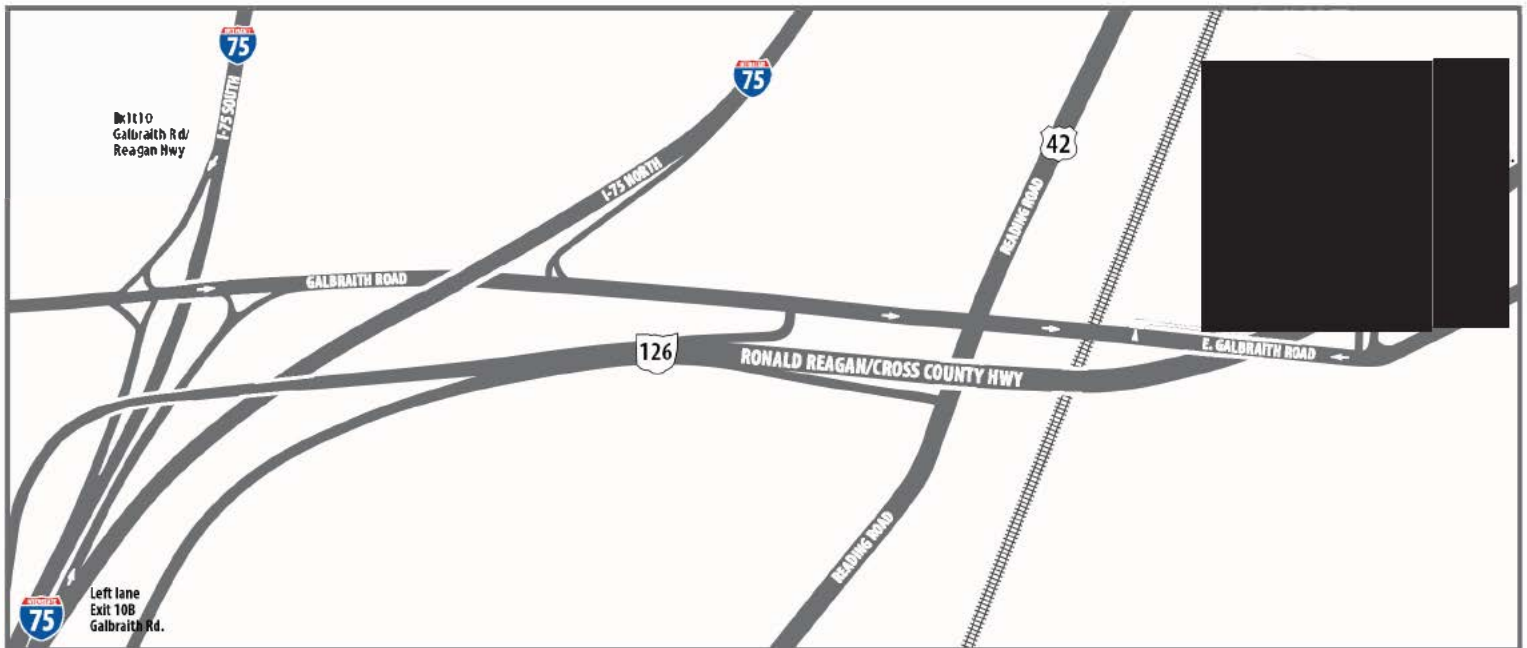
Campus Map 2018

Map Key

-  Information
-  Elevators
-  Restrooms
-  Café
-  Help Phones
-  Parking Lots
-  UC Shuttle Stop
-  Metro Stop



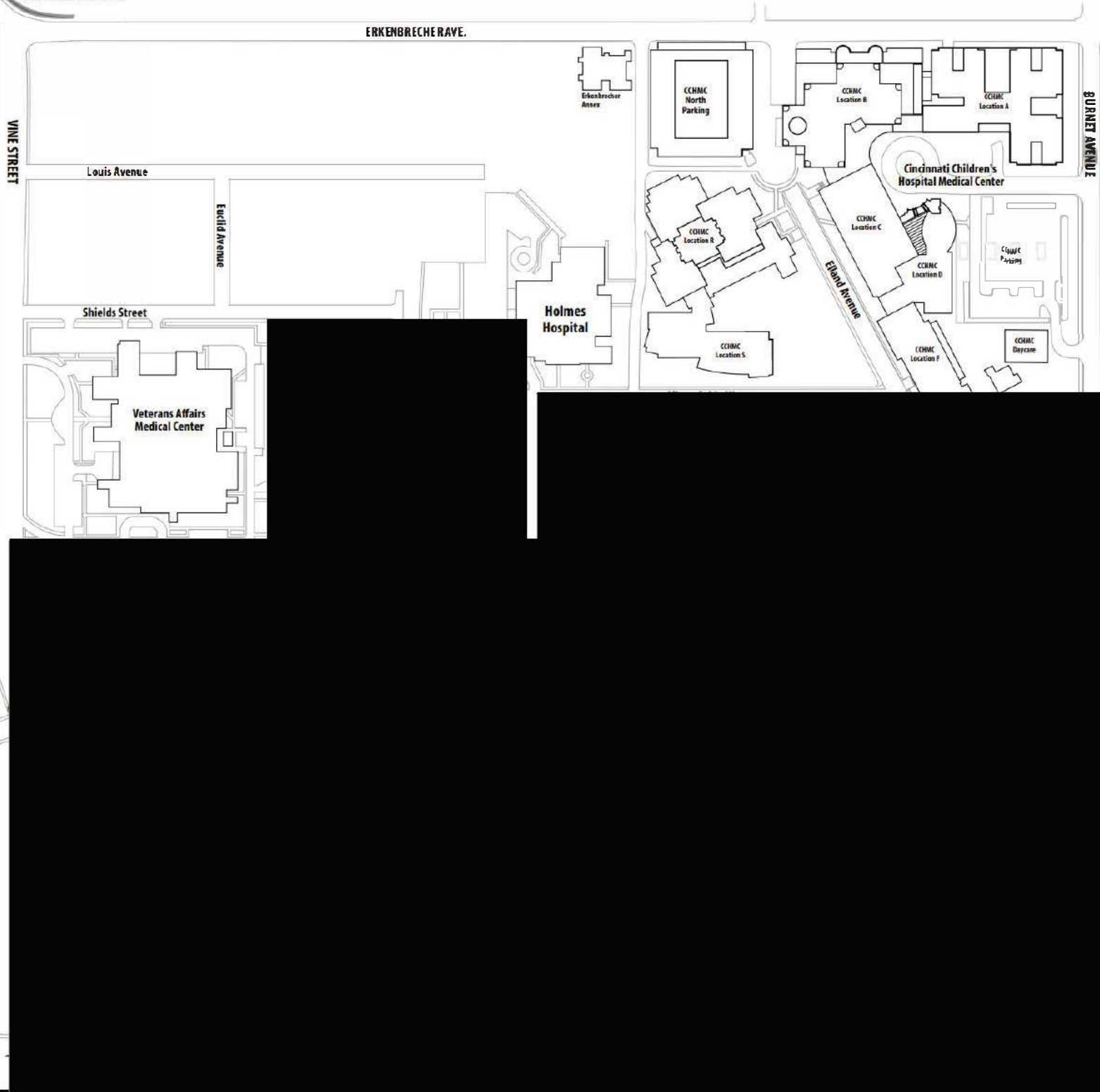








Cincinnati Zoo and Botanical Gardens



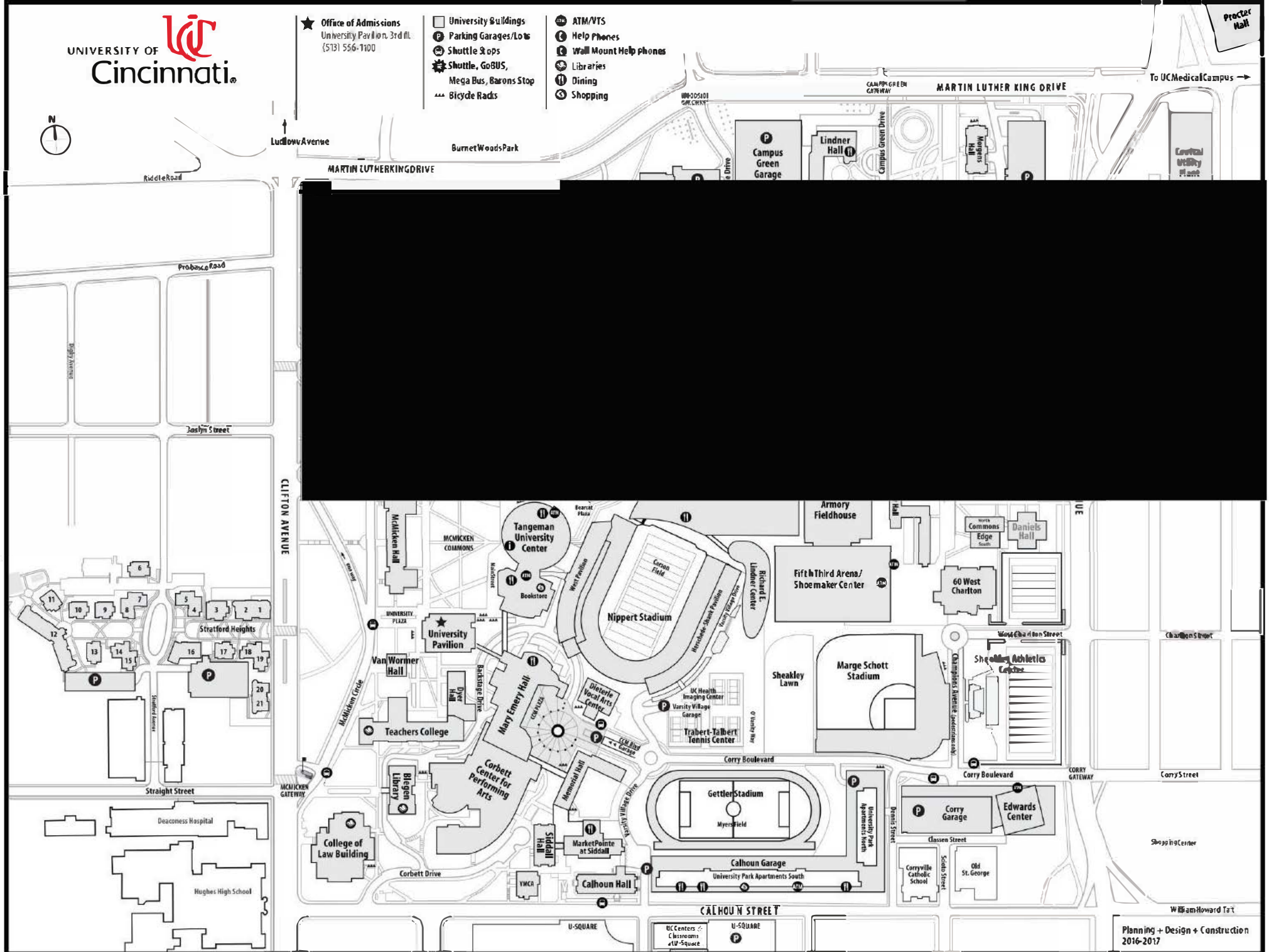




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University Pavilion, 3rd fl.
(513) 556-1100

- University Buildings
- P Parking Garages/Lots
- Ⓜ Shuttle Stops
- ⚙ Shuttle, GoBUS, Mega Bus, Barons Stop
- 🚲 Bicycle Racks

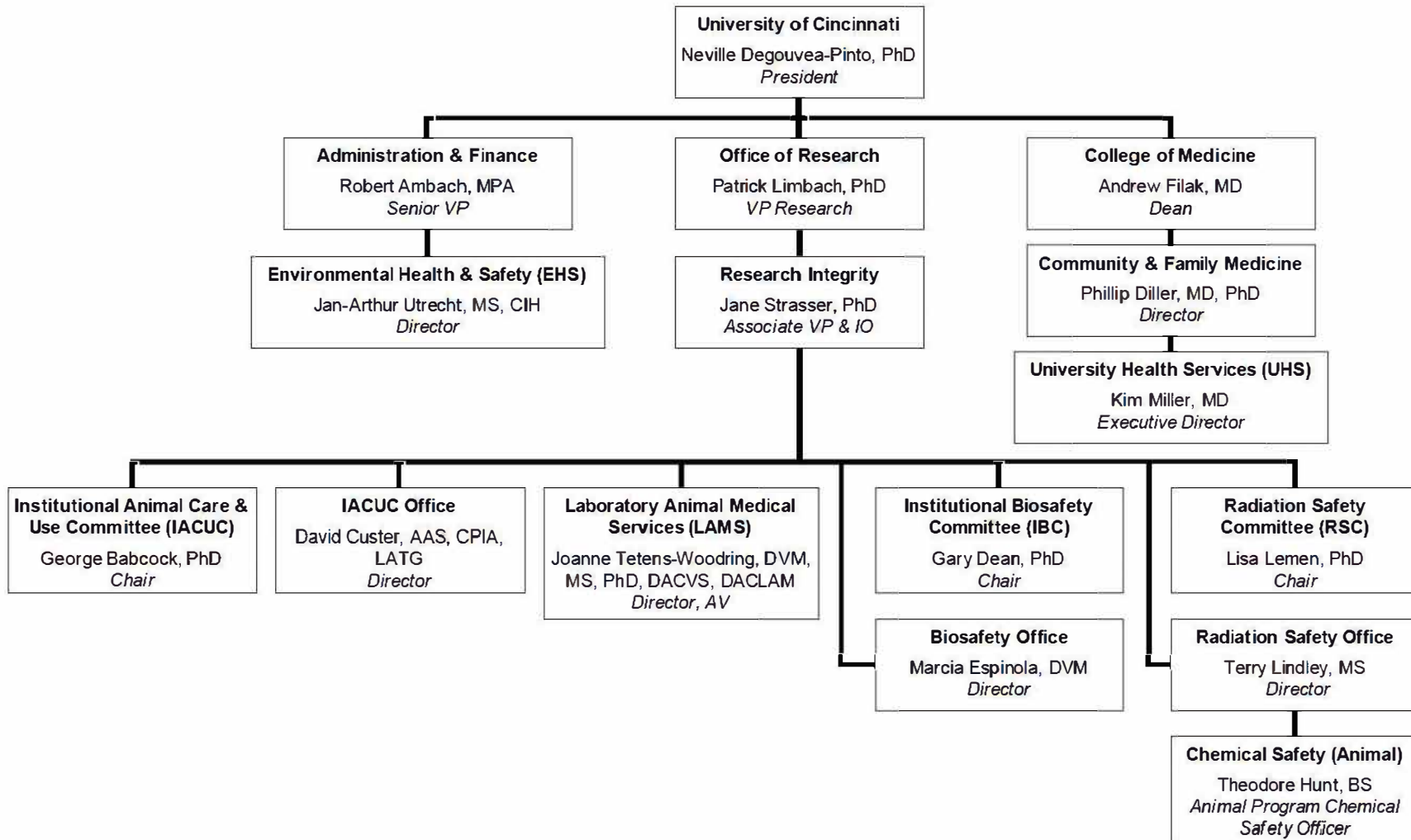
- 🏧 ATM/VTS
- 📞 Help Phones
- 📞 Wall Mount Help phones
- 📖 Libraries
- 🍽 Dining
- 🛍 Shopping



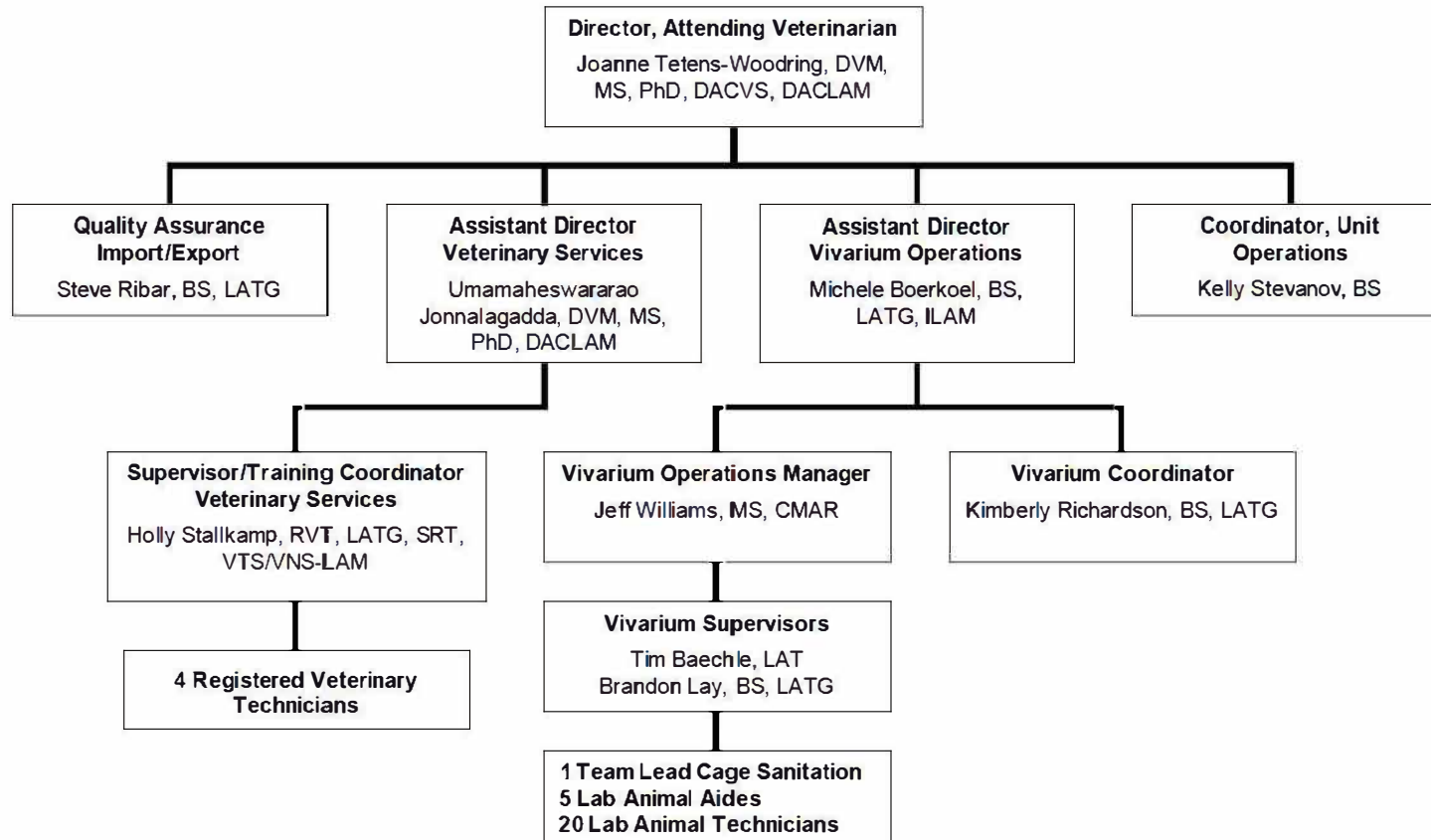
APPENDIX 4

ORGANIZATIONAL CHARTS

ANIMAL CARE & USE PROGRAM ORGANIZATIONAL CHART



LAMS ORGANIZATIONAL CHART



APPENDIX 5

ANIMAL USAGE

Protocol ID	Protocol Name	PI Name	Species	Animal numbers	Highest Pain	SS (2)	MMS (3)	FFR (4)	PR (5)	HAU (6)	NCF (7)
		Amlal, Hassane	Mouse, Rat	159024	E	X		X	X	X	
		Askew, David	Mouse	2500	E					X	
		Babcock, George	Mouse, Pig, Rat	4173	E	X				X	
		Babcock, George	Rat	2710	E	X					
		Baccei, Mark	Mouse Rat	7910	E	X	X			X	X
		Bahassi, El Mustafa	Mouse, Rat	1392	E	X				X	
		Balasubramaniam, Ambikaipakan	Mouse, Rat	12000	E	X		X		X	
		Ben-Jonathan, Nira	Mouse, Rat	973	E	X		X		X	
		Ben-Jonathan, Nira / Hugo, Eric	Mouse	210	D	X			X	X	X
		Benoit, Stephen	Mouse, Rat	3936	E	X		X		X	X
		Berta, Temugin	Mouse, Rat	22384	E	X	X			X	X

Protocol ID	Protocol Name	PI Name	Species	Animal numbers	Highest Pain	SS (2)	MMS (3)	FFR (4)	PR (5)	HAU (6)	NCF (7)
		Bogdanov, Vladimir	Mouse	10170	D	X				X	
		Booth, Michael	Fish	6300	E	X				X	X
		Borchers, Michael	Mouse	47560	E	X				X	X
		Buchholz, Daniel	Frog	261460	C			X	X	X	X
		Burns, Katie	Mouse	57024	E	X	X			X	X
		Caldwell, Charles	Mouse	15240	E	X	X			X	X
		Campos-Naciff, Begonia	Mouse	1224	E	X					
		Campos-Naciff, Begonia	Mouse	4800	D	X	X			X	
		Campos-Naciff, Begonia	Pig	1460	D	X		X		X	X
		Cunningham, Timothy	Mouse	22488	E					X	

Protocol ID	Protocol Name	PI Name	Species	Animal numbers	Highest Pain	SS (2)	MMS (3)	FFR (4)	PR (5)	HAU (6)	NCF (7)
		Cushion, Melanie	Mouse, Rat	2157	E	X				X	
		Czyzyk-Krzeska, Maria	Mouse	2080	E	X		X		X	X
		Davidson, Steve	Mouse, Rat	13936	E	X	X	X		X	X
		Deepe, George	Mouse	11218	E					X	X
		Deering, Barbara	Rat	69	D					X	X
		Desai, Pankaj	Rat	2880	E	X				X	X
		Dong, Zhongyun	Mouse	8272	D	X			X	X	X
		Driscoll, James	Mouse	762	E				X	X	
		Du, Chunying	Mouse	9480	E	X		X	X	X	X
		Earl, Brian	Gerbil	380	E	X				X	X
		Evanson, Nathan	Mouse, Rat	5539	E	X	X	X	X	X	X
		Fan, Guo-Chang	Mouse, Rat	81018	E	X	X	X	X	X	X
		Forbes, Jonathan	Rat	540	D					X	X

Protocol ID	Protocol Name	PI Name	Species	Animal numbers	Highest Pain	SS (2)	MMS (3)	FFR (4)	PR (5)	HAU (6)	NCF (7)
		Garrett, Joan	Mouse	135	D					X	
		Garrett, Joan	Mouse	160	C					X	
		Genter, Mary Beth	Mouse	544	D			X		X	
		Genter, Mary Beth	Mouse	374	D			X		X	
		Godar, Samuel	Mouse, Rat	21384	D	X			X	X	X
		Goodman, Michael	Pig	100	D			X		X	
		Goodman, Michael	Pig	50	D			X		X	
		Goodman, Michael	Pig	65	D			X		X	X
		Goodman, Michael	Pig	90	D					X	
		Goodman, Michael	Mouse, Pig	2225	E	X		X		X	X

Protocol ID	Protocol Name	PI Name	Species	Animal numbers	Highest Pain	SS (2)	MMS (3)	FFR (4)	PR (5)	HAU (6)	NCF (7)
		Goodman, Michael	Pig	26	D			X		X	
		Goodman, Michael	Mouse, Pig	432	D			X			X
		Grawe, Brian/ Lin, Chia-Ying	Rabbit	116	D	X	X			X	X
		Gross, Joshua	Fish	17384	C			X		X	X
		Guan, Jun-Lin	Mouse	21000	E	X		X		X	X
		Gudelsky, Gary	Mouse, Rat	1710	E	X		X		X	X
		Hao, Jiukuan	Mouse, Rat	30522	E	X				X	X
		Hartings, Jed	Pig	207	D	X		X		X	
		Hassett, Daniel	Mouse	84525	E					X	
		Heiny, Judith	Mouse	3100	D	X				X	X
		Herman, James	Mouse, Rat	50524	E	X	X	X	X	X	X
		Heyl, Judith	Pig	180	D			X		X	
		Heyl, Judith	Pig	96	D			X		X	
		Hong, Christian	Mouse	2340	C					X	

Protocol ID	Protocol Name	PI Name	Species	Animal numbers	Highest Pain	SS (2)	MMS (3)	FFR (4)	PR (5)	HAU (6)	NCF (7)
		Huaman Joo, Moises Arturo	Mouse	80	C					X	
		Hui, David	Mouse	195840	D	X		X		X	
		Hui, David	Mouse	5760	D	X		X		X	
		Hui, David	Mouse	93600	E	X		X		X	X
		Jayne, Bruce	Frogs, Lizard, Mouse, Rat, Salamander, Snake	1400	E					X	X
		Kadekaro, Ana Luisa	Mouse	108	D	X				X	X
		Kanisicak, Onar	Mouse, Rat	4158	E	X	X		X	X	X
		Kanisicak, Onar	Mouse	5772	D	X				X	
		Kao, Winston	Mouse, Pig, Rabbit	86580	E	X				X	
		Kao, Winston	Client-Dog	480	D					X	X
		Kasper, Susan	Mouse, Rat	15613	D	X				X	

Protocol ID	Protocol Name	PI Name	Species	Animal numbers	Highest Pain	SS (2)	MMS (3)	FFR (4)	PR (5)	HAU (6)	NCF (7)
		Khosla, Sid	Dog	40	C						
		Kim, Kyoungyun	Mouse	16500	E			X		X	
		Kleene, Nancy	Mouse	2055	D					X	
		Koch, Sheryl	Mouse, Rat	7159	D	X		X	X	X	X
		Kotagiri, Nalinikanth	Mouse	49284	E	X				X	X
		Kranias, Evangelia	Mouse, Rat	150270	E	X	X	X	X	X	X
		Lawson, Lucinda	Amphibi an, Bird, Lizard,	1200	C					X	X
		Lee, Joo-Youp	Mouse	2835	E	X		X		X	
		Lemen, Lisa	Gerbil, Mouse, Rat	3212	D			X	X	X	X
		Lentsch, Alex	Mouse, Rat	266532	E	X	X	X	X	X	X
		Li, Kevin	Mouse	600	C					X	
		Li, Kevin	Mouse	266	C					X	
		Lin, Chia-Ying	Rat	402	E	X		X		X	X
		Lindquist, Diane	Mouse	100	C					X	X

Protocol ID		PI Name	Species	Animal numbers	Highest Pain	SS (2)	MMS (3)	FFR (4)	PR (5)	HAU (6)	NCF (7)
		Lingrel, Jerry	Mouse	5536	E					X	X
		Lingrel, Jerry	Mouse	6504	D	X				X	X
		Liu, Min	Mouse, Rat	14040	E	X	X	X	X	X	X
		Lorenz, John	Mouse, Rat	4680	E	X	X	X	X	X	X
		Luo, Yu	Mouse	3032	E	X	X			X	X
		Luo, Yu	Mouse	1990	D	X				X	X
		Mackenzie, Bryan	Frog	102	D	X	X			X	X
		Mackenzie, Bryan	Mouse	4419	E			X		X	X
		MacLennan, A John	Mouse	41088	E	X				X	X
		Madan, Rajat	Mouse	13512	E	X		X		X	
		Makley, Amy	Pig	40	D			X		X	

Protocol ID	Protocol Name	PI Name	Species	Animal numbers	Highest Pain	SS (2)	MMS (3)	FFR (4)	PR (5)	HAU (6)	NCF (7)
		Matlib, Mohammed	Rat	30	D			X			
		McCormack, Francis	Mouse, Rat	22396	E	X			X	X	X
		McGuire, Jennifer	Rat	720	E	X		X	X	X	X
		McNamara, Robert	Rat	3740	E	X		X		X	
		Mercer, Carol	Mouse	7206	D	X		X	X	X	
		Miller, William	Mouse	2880	C				X	X	
		Monaco, John	Mouse	5888	C					X	
		Montrose, Marshall	Mouse	10300	D	X		X		X	X
		Morris, John	Mouse	684	D					X	
		Narmoneva, Daria	Pig	16	D	X		X		X	
		Ngwenya, Laura	Rat	390	D	X		X		X	X
		Norman, Andrew	Mouse, Rat	1503	E	X		X		X	X
		Owen, Patrick	Frog, Salamander	1791	C						X

Protocol ID	Protocol Name	PI Name	Species	Animal numbers	Highest Pain	SS (2)	MMS (3)	FFR (4)	PR (5)	HAU (6)	NCF (7)
		Owens, Phillip	Mouse	10144	E	X	X	X	X	X	X
		Park, Yoonjee	Rabbit	23	D					X	
		Parks, Ken/ DeMazumder, Deeptankar	Guinea Pig	1350	E	X	X			X	X
		Patel, Shailendra	Mouse, Rat	69580	E	X			X	X	
		Perez-Tilve, Diego	Mouse, Rat	41300	E	X	X	X	X	X	
		Phoenix, Timothy	Mouse	1717	D	X				X	
		Phoenix, Timothy	Mouse	183	D	X				X	
		Pixley, Sarah	Mouse, Rat	17712	D	X				X	
		Plas, David	Mouse	22444	E	X				X	X
		Pritts, Timothy	Mouse	2100	E	X				X	X
		Puga, Alvaro	Mouse	8448	C				X	X	X
		Qi, Xiaoyang	Mouse, Rat	6810	E	X				X	X

Protocol ID	Protocol Name	PI Name	Species	Animal numbers	Highest Pain	SS (2)	MMS (3)	FFR (4)	PR (5)	HAU (6)	NCF (7)
		Qi, Xiaoyang	Mouse	4800	D	X				X	
		Qualls, Joseph	Mouse	684	C					X	
		Reyes, Teresa	Mouse	23120	E	X		X	X	X	
		Ridgway, William	Mouse	4905	E					X	X
		Robson, Matthew	Mouse	20176	E	X				X	X
		Ross, Ashley	Mouse, Rat	610	C					X	X
		Rubinstein, Jack/ Koch, Sheryl	Guinea Pig, Pig	52	D	X		X			
		Sadayappan, Sakthivel	Mouse, Rat	19068	E	X	X	X	X	X	X
		Sah, Renu	Mouse, Rat	7451	E	X	X	X	X	X	X
		Sasaki, Atsuo	Mouse	7096	E	X	X		X	X	
		Satish, Latha	Mouse	1064	E	X				X	X
		Scaglioni, Pier Paolo	Mouse	2954	E					X	X
		Scheifele, Peter	Client-Bird, Client-Dog,	3440	C						X

			Client-Horse, Client-Reptile,								
Protocol ID	Protocol Name	PI Name	Species	Animal numbers	Highest Pain	SS (2)	MMS (3)	FFR (4)	PR (5)	HAU (6)	NCF (7)
		Scheifele, Peter	Client-Bird, Client-Dog, Lizard, Snake	9	C						X
		Schultz, Jo El	Mouse	33220	E	X	X		X	X	X
		Schultz, Jo El	Rat	17496	E	X	X			X	X
		Shao, Wenhai	Mouse	3606	E					X	X
		Shearn, Jason	Mouse	7728	D	X				X	
		Sheriff, Sulaiman	Mouse, Rat	8616	E	X		X		X	
		Shull, Gary	Mouse	5520	D	X				X	X
		Soleimani, Manoocher	Mouse, Rat	62448	D	X				X	
		Solomon, Matia	Mouse, Rat	21474	E	X	X	X	X	X	X
		Subramanian Vignesh, Kavitha	Mouse	29414	E					X	

Protocol ID	Protocol Name	PI Name	Species	Animal numbers	Highest Pain	SS (2)	MMS (3)	FFR (4)	PR (5)	HAU (6)	NCF (7)
		Supp, Dorothy	Mouse	1840	E	X				X	
		Takiar, Vinita	Mouse	767	D	X				X	
		Tam, Neville Ngai Chung	Mouse, Rat	76018	E	X		X		X	X
		Tetens-Woodring, Joanne	Frog, Mouse, Rat	9527	D	X			X	X	
		Tetens-Woodring, Joanne	Bird, Cat, Dog, Frog, Gerbil, Guinea Pig, Lizard, Mouse, Pig, Rabbit, Snake	22000	C					X	
		Tetens-Woodring, Joanne	Mouse, Rat	4560	C						
		Tetens-Woodring, Joanne	Pig	8	D			X		X	

Protocol ID	Protocol Name	PI Name	Species	Animal numbers	Highest Pain	SS (2)	MMS (3)	FFR (4)	PR (5)	HAU (6)	NCF (7)
		Thompson, Richard	Mouse	4507	E				X	X	
		Tranter, Michael	Mouse, rat	16376	E	X	X	X		X	X
		Tso, Patrick	Mouse, Rat	4496	E	X		X	X	X	X
		Tso, Patrick	Mouse, Rat	48723	E	X	X	X	X	X	X
		Ulrich-Lai, Yvonne	Mouse, Rat	13533	E	X	X	X	X	X	
		Waltz, Susan	Mouse, Rat	11636	E	X		X	X	X	X
		Waltz, Susan	Mouse	6454	E	X		X		X	X
		Wang, Hong-Sheng	Dog, Mouse, Rabbit, Rat	1679	C						X
		Wang, Yi-Gang	Mouse, Pig, Rat	18950	E	X	X			X	X
		Weber, Georg	Mouse	636	D					X	
		Wells, Jennifer	Sheep, Turtle, Client-Chinchillas, Client-Amphibian, Client-	5275	D	X		X	X	X	

			Sugar Glider, Client- Horse, Rabbits, Client- Gerbil, Client- Dogs, Rats, Client- Goats, Client- Bird, Client- Ferrets, Client- Cats, Mice, Client- Cows, Lizards, Hamster s, Guinea Pigs, Snakes, Birds								
Protocol ID	Protocol Name	PI Name	Species	Animal numbers	Highest Pain	SS (2)	MMS (3)	FFR (4)	PR (5)	HAU (6)	NCF (7)
		Wieczorek, David	Mouse	4800	C					X	X

Protocol ID	Protocol Name	PI Name	Species	Animal numbers	Highest Pain	SS (2)	MMS (3)	FFR (4)	PR (5)	HAU (6)	NCF (7)
		Wieczorek, David	Mouse Rat	4800	C					X	X
		Wohleb, Eric	Mouse	22386	E	X		X	X	X	X
		Woollett, Laura	Mouse	26315	D	X		X		X	X
		Xia, Ying	Mouse	88432	D	X				X	X
		Xu, Meifeng	Mouse, Rat	3684	E	X	X			X	X
		Yadav, Jagjit	Mouse, Rat	57041	E	X		X		X	X
		Yan, Bingfang	Mouse	1726	D	X		X		X	
		Yu, Jane	Mouse	2440	E	X				X	X
		Zavros, Yana	Gerbil, Mouse	75462	E	X	X	X	X	X	
		Zhang, Jun-Ming	Mouse, Rat	11654	E	X	X	X		X	X
		Zhang, Xiaoting	Mouse	2000	D	X				X	X
		Zhang, Yuhang	Mouse	8256	D	X				X	X

APPENDIX 6

PERSONNEL MEDICAL EVALUATION FORM

Compliance Home

Logout

My Account

Transcript

View Requirements

Administration

Technical Support

Feedback

Contact Us

Continuing Education
Program

University of Cincinnati
University Health Services

Animal Handler/Researcher Medical History Triennial Update

M#:

Name:

Date
of
Birth:

Phone:

Please review the [Notice of Protected Health Information Privacy Practices](#) then complete the items below. Note that you may opt out of providing the information in items 4 - 8 by checking the appropriate box below, but you are required to complete items 1 - 3, check the box affirming you were provided the HIPAA notice.

1. List the animals with which you may be working or which you may be exposed. (Please indicate whether or not you may be working with pregnant goats or pregnant sheep):

- | | |
|---|---|
| ☐ Birds | ☐ Mice (purpose bred) |
| ☐ Cats | ☐ Pigs |
| ☐ Calves | ☐ Rabbits |
| ☐ Dogs | ☐ Rats |
| ☐ Frogs | ☐ Salamanders |
| ☐ Gerbils | ☐ Sheep > ☐ Working with pregnant sheep |
| ☐ Goats > ☐ Working with pregnant goats | ☐ Snakes |
| ☐ Guinea Pigs | ☐ Toads |
| ☐ Hamsters | ☐ Turtles |
| ☐ Lungfish | ☐ Zebrafish/Medaka |
| ☐ Lizards | ☐ Other |

2. List all non-laboratory, wild-caught, or feral animals with which you may be working or which you may be exposed to:

- | | |
|-------------------------------------|---|
| ☐ Birds | ☐ Snakes |
| ☐ Lizards | ☐ Toads |
| ☐ Mice | ☐ Turtles |
| ☐ Salamander | ☐ Not applicable |

3. List all infectious agents or toxins which you may be working or to which you may be exposed:

- ☐ BSL-1 Agents
- ☐ Bacterial Toxins
- ☐ BSL-2 Agents
- ☐ None of the listed
- ☐ BSL-3 Agents
- ☐ Not applicable

4. Do you have any known allergies to animals or to objects contacted in an animal facility?

- ☐ No
- ☐ Yes
- ☒ Do not know

5. Do you regularly have any of these symptoms while working with or being exposed to animals? Check all that apply:

- ☐ Sneezing
- ☐ Shortness of breath
- ☐ Nasal congestion
- ☐ Skin rash
- ☐ Red, itchy, watery eyes
- ☐ Wheezing
- ☐ None of the above

6. Have you received pre or post-exposure rabies vaccine?

- ☐ No
- ☐ Yes
- ☒ Do not know

7. Do you have any symptoms not already listed that you are concerned may be associated with working with or having exposure to animals or an animal facility?

- ☐ No
- ☐ Yes
- ☒ Do not know

8. When did you have your last tetanus immunization?

- ☐ Do not know / Never received
- ☐ 1-4 Years
- ☐ 5-10 Years
- ☐ 10 or more years

Persons with immune deficiencies may be at increased risk of acquiring infectious illnesses. Please feel free to see a University Health Services physician or your personal physician to discuss any medical issues related to your work with animals.

☐ By enabling this check box, I understand that this action serves the same function as a personal signature. I also affirm I have recieved the [Notice of Protected Health Information Privacy Practices](#).

NOTE: IT IS IMPORTANT TO NOTIFY YOUR SUPERVISOR OF ANY WORK-RELATED INJURY/ILLNESS OR IF YOUR SUSPECT THERE IS A HEALTH HAZARD IN YOUR WORKPLACE.

Submit

APPENDIX 7

IACUC/OB MEMBERSHIP ROSTER



Jane Strasser, Ph.D.
Associate Vice President for Research
University of Cincinnati
PO Box 210663
51 Goodman Drive
540 University Hall
Cincinnati, OH 45221-0663

Phone: (513) 558-5034
Fax: (513) 558-0549
Jane.Strasser@uc.edu

June 29, 2018

RE: IACUC Membership Appointment

As the Institutional Official for the University of Cincinnati, I am pleased to appoint the following individuals to the Institutional Animal Care and Use Committee (IACUC) through July 1, 2019.

- George Babcock, PhD⁽¹⁾, Appointed IACUC Chair (Alternate Gary Dean, PhD⁽¹⁾)
- Michael Borchers, PhD⁽¹⁾, Appointed IACUC Vice-Chair (Alternate Jo El Schultz, PhD⁽¹⁾)
- Joanne Tetens-Woodring, DVM⁽²⁾, Attending Veterinarian (Alternate Mahesh Jonnalagadda, DVM⁽²⁾)
- Jennifer Wells, DVM⁽¹⁾, (Alternate Patrick Owen, PhD⁽¹⁾)
- Gary Shull, PhD⁽¹⁾, (Alternate John Lorenz, PhD⁽¹⁾)
- [REDACTED]^(4,5), (Alternate Lori Beth Derenski, BS⁽⁵⁾)
- Tiffany Grant, PhD⁽³⁾ (Alternate David Custer⁽³⁾)
- Chenran Wang, MD, PhD⁽¹⁾, (Alternate Yana Zavros, PhD⁽¹⁾)
- Vladimir Bogdanov, PhD⁽¹⁾, (Alternate, Peter Scheifele, PhD⁽¹⁾)
- Brian Earl, PhD⁽¹⁾, (Alternate Gary Gudelsky, PhD⁽¹⁾)
- Neville Tam, PhD⁽¹⁾, (Daniel Buchholz, PhD⁽¹⁾)
- Jun-Ming Zhang, MSc, MD⁽¹⁾, (Alternate Min Liu, PhD⁽¹⁾)

- (1) Scientist
(2) Veterinarian
(3) Member
(4) Non-Affiliated
(5) Nonscientist

Sincerely,

[REDACTED]
Jane E. Strasser, Ph.D.

cc. IACUC members
IACUC Office

APPENDIX 8

IACUC/OB MINUTES

University of Cincinnati
Institutional Animal Care and Use Committee
September 13, 2018 Minutes

Members in Attendance (7 members required for quorum): JA, MTB, BRE, TJG*, GES, NNT, JTW, CW & JAW

Alternate Members in Attendance (not counting towards quorum): DAC & MJ

Non-Members in Attendance: MLB, JLC, NCJ, ME, TAH, Kelly S., TL & JES

MTB convened the meeting at 12:59 pm

NCJ was introduced as the newly hired Assistant Director of Animal Regulatory Compliance in the IACUC Office.

Kelly S., was introduced as the newly hired Coordinator of Unit Operations in LAMS that was visiting the meeting as part of LAMS ongoing educational effort to develop their facility personnel.

I. Items for Approval

1. IACUC Meeting Minutes

The August 9, 2018 minutes were reviewed. A motion was made to approve the minutes as written. The motion was seconded and unanimously approved.

*TJG arrived at 1:07 pm. Quorum was not affected by this arrival.

Dr. GCF was invited into the meeting room at 1:12 pm to present his corrective action plan for a recent non-compliance incident (♦ see Section III -- Compliance Report for complete details).

2. Protocol Actions Appendices

Appendix 1 – Annual Progress Reports

All future annual reports will have notices and DMR reviews sent via RAP-IACUC.

Appendix 2 – Full Review (4 Protocols)

JAW presented the new protocol proposal that studies the potential of nano-particles to enhance drug delivery for cases of known resistance treatments for some cancers.

The Ethical Cost Benefit was reviewed and deemed justified.

A motion was made to approve the protocol pending two minor administrative corrections. The motion was seconded and unanimously approved.

The Addendum A was reviewed and a motion was made to approve. The motion was seconded and unanimously approved.

[REDACTED]

BRE presented the amendment that studies traumatic brain injury and how resulting optic system pathology, stress and the quality of the restorative environment affects functional recovery.

The Ethical Cost Benefit was reviewed and deemed justified.

A motion was made to approve the protocol amendment with the noted request that the PI contact the veterinarians before the initiation of a specific survival surgery. The motion was seconded and unanimously approved.

The Satellite Procedure Location request was reviewed and a motion was made to approve. The motion was seconded and unanimously approved.

[REDACTED]

GES presented the triennial renewal that studies gastrointestinal inflammation caused by *H. pylori* and how the subsequent molecular expression, cellular hyper-proliferation, glandular morphology and excretion can progress to cancer in the stomach.

The Ethical Cost Benefit was reviewed and deemed justified.

A motion was made to approve the triennial renewal as written. The motion was seconded and unanimously approved.

The Addendum B was reviewed and a motion was made to approve. The motion was seconded and unanimously approved.

[REDACTED]

DAC presented the triennial renewal that studies how gastrointestinal absorption/transport of nutrients in the lymphatic system, and portal circulation, as well as lipid metabolism in the small intestine, and how GI environmental challenges can affect brain development.

The Ethical Cost Benefit was reviewed and deemed justified.

A motion was made to vote the protocol and all associated documents (ADD A, ADD B, EX POL, SAT HOUS, SAT PROC, & DIET STOR) to DMR to obtain clarification for a number of remaining issues to secure approval.

III. Compliance Report

1) IACUC Protocol Deficiency – Analgesics not provided as described in protocol – Reported by Vet Staff

On July 17, 2018 during a routine PAM audit conducted by the vet staff, five mice that had survival surgery (myocardial infarction) on July 12, 2018 were found dead. The veterinarian noted that typically some mortality is an expected outcome for MI surgical techniques. The veterinary staff contacted the lab to inquire if the responsible researcher(s) could come and discuss the dead mice and post-surgical recovery care with the veterinarian. The veterinarian on inquiry discovered that the analgesics were not being given as described in the protocol

Response To-Date:

- ◆ This incident was first discussed at the August 9, 2018 meeting. The IACUC made a number of deliberations at that time, one of which was to request the presence of the PI at the September 13, 2018 meeting.
- ◆ Dr. GCF addressed the Committee at the September 13, 2018 meeting by explaining his list of corrective actions that he felt would prevent the likelihood of future non-compliance in his lab. The committee asked several questions/comments to clarify his intent with implementing the plan. Dr. GCF was thanked for addressing the Committee and was dismissed. MTB led a lengthy discussion about the action plan. A motion was made and the committee voted to accept Dr. GCF's five major points of corrective action with two additional mandates to place some level of ongoing oversight for the lab. The motion was seconded and unanimously approved.

2) Mouse found in Dirty Cage Wash – Reported by Attending Veterinarian

On August 16, 2018 two approximately 7 day old mouse pups were found alive in the middle of a stack of cages on a housing room change-out rack. Under these circumstances LAMS management suspected that one of LAMS LAT's to be the responsible party. The mice appeared in good condition having recently been delivered to cage wash. The veterinary staff immediately euthanized the pups when discovered.

Response To-Date:

LAMS management identified the LAT responsible for the incident. LAMS indicated that a meeting had occurred with the responsible LAT to communicate the concern and did not anticipate any further incidents to occur.

IV. New Business

None

V. Old Business

None

VI. Educational and Miscellaneous

"Getting personal with the "reproducibility crisis": interviews in the animal research community."

The Committee discussed this short correspondence article concerning some of the issues that are deemed to be responsible for the difficulty in reproducing other researcher's data and what is now perceived to be somewhat prevalent in research today. Scientists, regulators, and administrators from academia, government and industry weighed in with their opinions on where the research enterprise needs to go to improve this important aspect of science.

The meeting adjourned at 2:25 pm.



11/8/18

Michael T. Borchers, PhD
IACUC Vice-Chair

Minutes

University of Cincinnati
Institutional Animal Care and Use Committee
October 11, 2018 Minutes

Members in Attendance (7 members required for quorum): JA, GFB, TJG, MJ, GES, CW, JAW & JMZ

Alternate Members in Attendance (not counting towards quorum): DAC

Non-Members in Attendance: MLB, JLC, NCJ, ME, TAH, TL & JES

GFB convened the meeting at 12:56 pm

I. Items for Approval

1. IACUC Meeting Minutes

The September 13, 2018 minutes were reviewed. A motion was made to approve the minutes as written. The motion was seconded and unanimously approved.

2. Protocol Actions Appendices

Appendix 1 – Annual Progress Reports

All future annual reports will have notices and DMR reviews sent via RAP-IACUC.

Appendix 2 – Full Review (5 Protocols)

MJ presented the triennial renewal proposal that studies the pathological and immune response mechanisms of microbial infections/toxicoses and environmental exposures to toxicants.

The Ethical Cost Benefit was reviewed and deemed justified.

The document was reviewed and a motion was made to approve the protocol as written. The motion was seconded and unanimously approved.

The Addendum A was reviewed and a motion was made to approve. The motion was seconded and unanimously approved.

The satellite animal procedure location request was reviewed and a motion was made to approve. The motion was seconded and unanimously approved.

An exception to policy for the limited use of wire bar flooring was reviewed and a motion was made to approve. The motion was seconded and unanimously approved.

[REDACTED]

MJ presented the triennial renewal proposal that studies the genetics of host resistance during pathological bacterial infections to determine novel targets for therapeutic interventions.

The Ethical Cost Benefit was reviewed and deemed justified.

The document was reviewed and a motion was made to approve the protocol as written. The motion was seconded and unanimously approved.

The Addendum B was reviewed and a motion was made to approve. The motion was seconded and unanimously approved.

[REDACTED]

GFB presented the triennial renewal proposal that studies the involvement of GTP-Metabolism in the involvement of cell growth for the mechanisms that control the cell cycle progression.

The Ethical Cost Benefit was reviewed and deemed justified.

A motion was made to approve the triennial renewal as written. The motion was seconded and unanimously approved.

The Addendum B was reviewed and a motion was made to approve. The motion was seconded and unanimously approved.

[REDACTED]

TJG presented the triennial renewal proposal that studies the functional role of cardioprotective proteins/exosomes and microRNA in the regulation of contractility and growth of endothelial cells under basal and disease conditions.

The Ethical Cost Benefit was reviewed and deemed justified.

A motion was made to approve the triennial renewal as written. The motion was seconded and unanimously approved.

The various satellite animal procedure location requests were reviewed and a motion was made to approve. The motion was seconded and unanimously approved.

[REDACTED]

GFB presented the triennial renewal proposal that studies how adverse environmental challenges such as, nutrition, microbial infection or exposure to chemotherapeutic agents during critical periods of development can affect brain development.

The Ethical Cost Benefit was reviewed and deemed justified.

The protocol was reviewed and a motion was made to approve the document as written. The motion was seconded and unanimously approved.

The Addendum B was reviewed and was voted to DMR to allow the PI to add a number of applicable use drugs/compounds. The motion was seconded and unanimously approved.

III. Compliance Report

1) IACUC Policy Deficiency – Use of expired medical materials – Reported by the PI

[REDACTED]

On September 24, 2018 the use of an expired skin biopsy punch tool was discovered by the research team following the procedure.

Response To-Date:

The PI reported that a new box of punches was been received and the formerly expired punch were re-sterilized to be held as back-up in case of an emergency. The IACUC discussed the deficiency and deliberated that since the PI and research group has an excellent compliance record and the incident served as a teachable moment no further action was deemed necessary.

IV. New Business

Update of IACUC Policy #014 Document Submission (NCJ)

The revisions of the policy were discussed by the committee. The revisions describe changes to the submission process for annual reviews and triennial reviews now that these are functions that are being handled in the RAP protocol database. The committee approved the changes and requested the document be send out to investigators in the research community for comment or concerns.

V. Old Business

None

VI. Educational and Miscellaneous

None

The meeting adjourned at 1:55 pm.

[REDACTED]

George F. Babcock, PhD
IACUC Chair

APPENDIX 9A

BLANK IACUC/OB PROTOCOL FORM (NEW ELECTRONIC VERSION)



Date: Tuesday, October 30, 2018 3:42:35 PM

Print

Close

View: SF: Basic Information_UC

Basic Information

1. * Select research team:

2. * Title of protocol:

3. * Short title:

4. * Summary of research:

5. * Principal investigator:

6. * What is the intention of the animal protocol?

Experimental Research

View: SF: Funding Sources_UC

Funding Sources

1. * Identify each organization supplying funding for the protocol:

Funding Organization	Sponsor's Funding ID	Grants Office ID	Documents
View	UC		

View: SF: Animal Justification_UC

Animal Justification

1. * Click Update to adjust the number of animals to be used or produced for this protocol:

- The "Adjusted Animal Count" column cannot be "null"/left blank
- If no adjustment is required, the values in the "Animals Identified in Experiments" and "Adjusted Animal Count" columns must be the same number.
- Click Update in each Pain Category row to input the matching value
- "0" is an acceptable value in the "Adjusted Animal Count"

USDA Species Covered Species	Pain Category	Animals Identified in Experiments	Adjusted Animal Count
no	Pain Category B	0	0
no	Pain Category C	1	1
no	Pain Category D	0	0
no	Pain Category E	0	0

2. If you adjusted the number of animals for this protocol, explain why:

3. * Pain Alleviation: If the animal will experience more than momentary unrelieved pain and/or distress, justify. Otherwise state "NO".

View: SF: Duplication_UC

Duplication

1. * **Please affirm this protocol will not unnecessarily duplicate other animal research:** ☒ Yes ☐ No

View: Create and Edit_UC

Experiments Appendix:

1. * Experiment name:

2. * Species:

3. Describe the experiment (please read help text before proceeding):

4. Justify the purpose of this experiment (please read help text before proceeding):

5. Select procedures:

Name	Type	Version	Scope
------	------	---------	-------

There are no items to display

6. Describe the maximum number of procedures an animal will experience:

7. Describe any variations to the selected procedures:

8. If the overall (cumulative) experimental symptoms/removal criteria differ from the individual procedures symptoms/removal criteria, please describe:

9. * Total number of animals used in this experiment: (including all the animals to be produced)

1

10. Number of animals by pain category (non-USDA covered species: identify highest pain category for each species on the protocol and place all animals in the highest highest category, USDA covered species: list by individual pain category):

B: 0

C: 1

D: 0

E: 0

11. Identify husbandry exceptions:

Exception Type	Description and Justification
----------------	-------------------------------

There are no items to display



Date: Wednesday, October 31, 2018 11:26:58 AM



View: SF: Procedure Identification_UC

Procedure Identification

: X

1. * Name of the procedure or surgery:

x

2. * Select procedure type: Non-Surgical

3. * Species:

4. * Will administering this procedure cause any more than momentary pain and distress?

☐ Yes ☒ No

View: SF: Non-Surgical Procedures_UC

Non-Surgical Procedures

1. Describe the procedure, including length and frequency of sessions:
2. Describe any apparatus you will use, and provide the details of sanitation between uses:
3. Indicate how animals will be monitored for stress during the procedure, include any criteria for prematurely ending the session:
4. Select the substance administration used (include anesthesia and analgesia):

Name	Type	Version	Scope
------	------	---------	-------

There are no items to display

Alternatively, if you cannot find the procedures in the list above, enter the information here:

Describe each substance and the step-by-step procedure to be used:

(include route, dose, volume, concentration, and whether substance is pharmaceutical grade)

5. Describe post-procedural care and monitoring:



Date: Wednesday, October 31, 2018 11:28:31 AM



View: SF: Procedure Identification_UC

Procedure Identification

: y

1. * Name of the procedure or surgery:

y

2. * Select procedure type: Survival Surgery

3. * Species:

4. * Will administering this procedure cause any more than momentary pain and distress?

☒ Yes ☐ No

View: SF: Survival Surgery__UC

Survival Surgery

1. * **Surgery type:**
2. * **Describe the surgical procedure:**
3. * **Describe how the animal, surgeon and instruments will be prepared for aseptic surgery (See Help Text):**
4. **Select the substance administration procedures used (include anesthesia and analgesia):**

Name	Type	Version	Scope
------	------	---------	-------

There are no items to display

Alternatively, if you cannot find the procedures in the list above, enter the information here:

Describe each substance and the step-by-step procedure to be used:

(include route, dose, volume, concentration, and whether substance is pharmaceutical grade)

5. **Describe post-operative care and monitoring:** (immediate post-operative and daily thereafter)

Procedure Documents

1. Supporting documents:

Document Name	Date Modified
---------------	---------------

There are no items to display



Date: Wednesday, October 31, 2018 11:29:40 AM

View: SF: Procedure Identification_UC

Procedure Identification

: C

1. * Name of the procedure or surgery:

C

2. * Select procedure type: Euthanasia

3. * Species:

4. * Will administering this procedure cause any more than momentary pain and distress?

☒ Yes ☐ No

View: SF: Euthanasia_UC

Euthanasia

1. * Method of euthanasia:
2. Describe procedure:
3. Describe how death will be confirmed:
4. Select the substance administration used (include anesthesia and analgesia):

There are no items to display

Alternatively, if you cannot find the procedures in the list above, enter the information here:

Describe each substance and the step-by-step procedure to be used:

(include route, dose, volume, concentration, and whether substance is pharmaceutical grade)

Procedure Documents

1. Supporting documents:

Document Name

Date Modified

There are no items to display



Date: Wednesday, October 31, 2018 11:31:01 AM



View: SF: Procedure Identification_UC

Procedure Identification

:a

1. * **Name of the procedure or surgery:**
2. * **Select procedure type:** Behavioral
3. * **Species:**
4. * **Will administering this procedure cause any more than momentary pain and distress?**
☐ Yes ☒ No

View: SF: Behavioral Procedures_UC

Behavioral Procedures

1. * Describe the procedure, including length and frequency of sessions:
2. Describe any apparatus you will use, and provide the details of sanitation between uses:
3. Indicate how animals will be monitored for stress during the procedure, include any criteria for prematurely ending the session:
4. Select the substance administration used (include anesthesia and analgesia):

Name	Type	Version	Scope
------	------	---------	-------

There are no items to display

Alternatively, if you cannot find the procedures in the list above, enter the information here:

Describe each substance and the step-by-step procedure to be used:

(include route, dose, volume, concentration, and whether substance is pharmaceutical grade)

5. Describe post-procedural care and monitoring:

Procedure Documents

1. Supporting documents:

Document Name	Date Modified
---------------	---------------

There are no items to display



Date: Wednesday, October 31, 2018 11:32:07 AM



View: SF: Procedure Identification_UC

Procedure Identification

: S

1. * Name of the procedure or surgery:

S

2. * Select procedure type: Food or Fluid Restriction

3. * Species:

4. * Will administering this procedure cause any more than momentary pain and distress?

☒ Yes ☐ No

View: SF: Food or Fluid Restriction

Food or Fluid Restriction

1. * Restrictions:

There are no items to display

2. * How many hours will the food/fluid be restricted:

3. * Describe the procedure for providing food/fluid including schedules and amounts:

4. * Describe criteria for monitoring the health of animals while on food/fluid restriction:

5. * Provide justification for restricting food/fluid to the extent defined:

6. Describe what will happen if animals fail to meet selected health criteria:

Procedure Documents

1. Supporting documents:

Document Name

Date Modified

There are no items to display



Date: Wednesday, October 31, 2018 11:33:28 AM



View: SF: Procedure Identification_UC

Procedure Identification

: d

1. * Name of the procedure or surgery:

2. * Select procedure type: Physical Restraint

3. * Species:

4. * Will administering this procedure cause any more than momentary pain and distress?

☒ Yes ☐ No

View: SF: Prolonged Physical Restraint_UC

Prolonged Physical Restraint

1. * **Describe the restraint devices and how they will be used:**
2. * **Justify the use of the restraint:**
3. **Describe the acclimation procedure:** (include plan for identifying acclimation and handling failure to acclimate)
4. **Describe the monitoring frequency during restraint, including weekends and holidays:**
5. **Select the substance administration used (include anesthesia and analgesia):**

Name	Type	Version	Scope
------	------	---------	-------

There are no items to display

Alternatively, if you cannot find the procedures in the list above, enter the information here:

Describe each substance and the step-by-step procedure to be used:
(include route, dose, volume, concentration, and whether substance is pharmaceutical grade)

6. **Describe post-procedural care and monitoring:**

Procedure Documents

1. **Supporting documents:**

Document Name	Date Modified
---------------	---------------

There are no items to display



Date: Wednesday, October 31, 2018 11:34:22 AM



View: SF: Procedure Identification__UC

Procedure Identification

: f

1. * Name of the procedure or surgery:

f

2. * Select procedure type: Substance Administration

3. * Species:

4. * Will administering this procedure cause any more than momentary pain and distress?

☒ Yes ☐ No

View: SF: Administration of Substances_UC

Administration of Substances

1. * Substances:

Substance	Substance Scope	Route	Dose	Frequency	Maximum Volume
-----------	-----------------	-------	------	-----------	----------------

There are no items to display

2. * Describe step-by-step the procedure for administering the substance:

3. Describe any anticipated adverse reactions to administering the substances:

4. * Are all substances being administered in this procedure of pharmaceutical grade?

☐ Yes

☐ No

5. Select the anesthesia and analgesia procedures to be used:

There are no items to display

Alternatively, if you cannot find the procedures in the list above, enter the information here:

Describe each substance and the step-by-step procedure to be used:

(include route, dose, volume, concentration, and whether substance is pharmaceutical grade)

6. Describe the monitoring of the animal during the procedure:

7. Describe post-procedural care and monitoring:

Procedure Documents

1. Supporting documents:

Document Name	Date Modified
---------------	---------------

There are no items to display



Date: Wednesday, October 31, 2018 11:35:45 AM



View: SF: Substance Information

Substance Information

1. * Name:

2. * Substance types: (select all that apply)

Biological
Chemical
Radiologic
Standard Housing Area
Biocontainment Room – During inoculation & necropsy
Biocontainment Area - 72 hours after administration
Biocontainment Room - Housing for entire study
Chemical Containment– During administration & necropsy
Chemical Use Room - 72 hours after administration
Chemical Use Room - Housing for entire study
Chemical: See Special Safety Use Advisory
Controlled Substance
Radiation Commissioned Room
Biocontainment Room – During inoculation
Anesthetic
Biocontainment Area - ABSL-3
Analgesic
Paralytic Agent

3. * Is this a hazardous agent:

☒ Yes ☐ No

4. Supporting documents:

Document Name	Date Modified
---------------	---------------

There are no items to display



Date: Wednesday, October 31, 2018 11:07:51 AM

View: SF: Annual Review Introduction

Annual Review Introduction

No other annual or triennial reviews may be active during an annual review.

Active follow-on submissions for this protocol:

ID	Name	Date Modified	State
----	------	---------------	-------

There are no items to display

An annual review enables the IACUC to re-evaluate and extend approval of your animal research. At the time of annual review, investigators should review all protocol information (e.g., team members, funding source(s), activities, and approved and used animal numbers) and submit any needed amendments immediately. If an amendment is already in-review, wait until the first amendment is processed.

If the protocol contains outdated procedures or team procedures which have been promoted to standard procedures, those procedures must be replaced before the triennial review can be submitted.

To complete your annual review:

1. Click **Continue** and fill out the requested information.
2. Click **Finish**.
3. Click **Submit**.

To request protocol closure instead:

1. Click the **Back** button to exit this form.
2. Click **Request Closure** and fill out the form.

Annual Review

1. Describe any unanticipated results involving animal health:



Date: Wednesday, October 31, 2018 11:00:21 AM



View: SF: Triennial Review Introduction

Triennial Review Introduction

No other follow-on submissions may be active during a triennial review.

Active follow-on submissions for this protocol:

ID	Name	Date Modified	State
----	------	---------------	-------

There are no items to display

Triennial review is a complete (de novo) review of the protocol by the IACUC that is required every three years to receive continued approval of the protocol.

If the protocol contains outdated procedures or team procedures which have been promoted to standard procedures, those procedures must be replaced before the triennial review can be submitted.

To submit the triennial review:

1. Click **Continue** and summarize the progress made in the research.
2. Click **Continue** again and view the complete protocol details.
3. Make changes to the protocol as appropriate.
4. Submit your triennial review for IACUC review.

To request protocol closure instead:

1. Click the Back button to exit this form.
2. Click **Request Closure** and fill out the form.



Date: Wednesday, October 31, 2018 11:06:32 AM

View: SF: Triennial Review Summary

Triennial Review Summary

1. * Progress made over the past 3 years:
2. * Summary of changes to the project for the next 3 years:
3. Describe any unanticipated results involving animal health:

Amendment Summary

Only one amendment can be active at one time.

Active follow-on submissions for this protocol:

ID	Name	Date Modified	State
----	------	---------------	-------

There are no items to display

1. * Amendment short title:
2. * Describe the changes:
3. * Describe the rationale for changes:

APPENDIX 9B

BLANK IACUC/OB PROTOCOL FORM (OLD PAPER VERSION)

ANIMAL USE PROTOCOL FORM

(Version: January 2004)

General Instructions

Abbreviations	If using abbreviations or acronyms, define the term the first time it appears. Not all protocol reviewers will be familiar with abbreviations or acronyms common to your area of specialty.
Attachments	Except where instructed to attach a document, do not say “see attached”, enter information where indicated.
Definitions	Green , underlined text indicates that the term is further defined in the Glossary of Terms.
Endorsement	Leave the page break in place so that the Endorsement page remains a separate page. After completing the fields on the page, print the page and obtain signatures. Only the PI and Department Chair/Director’s Endorsement need to be obtained prior to submission to IACUC.
Entering Information	Enter information where indicated by grey shading (). Click on the grey box, it will change to black, and begin typing. The space will expand as you type.
Expand Table	To add an additional row to a table, place the cursor in the bottom right hand box and press the Tab key. Repeat as needed to add additional rows.
Links	Blue , underlined text indicates a link to a document on a website. Note: To access the links, double-click on the underlined text.
Not Applicable	Do not leave blanks – if not applicable, enter N/A.
Protocol Approval	The process for having a protocol approved is described in the following document: Protocol Processing Flowchart
References	If information is referenced, attach copies of the referenced material.
Using Check Boxes	Place the cursor on the empty check box and click. To remove the mark, place the cursor over the box and click again.
Using Spell Check	This form is locked to preserve the content. Due to the form being locked, not all sections permit using spell check. The sections of the form that require significant input have been unlocked to allow you to use this feature. Questions 6, 7, 15, 16, and tables are unlocked. <i>Note: In unlocked sections, the text field gray shading will not be visible on screen as it is in sections of the form that are protected.</i>

Glossary of Terms

New Protocol	A new protocol is one where the activities have not yet started.
Updated Protocol	An updated protocol is the 3 year renewal of an existing protocol.
Protocol Modification	A protocol modification is a written description of changes to a previously approved protocol during the initial 3 year approval period. <i>Note: Protocol modifications do not extend the expiration date.</i>

ANIMAL USE PROTOCOL FORM

(Revised August 2003)

Administrative Information

1) A. Protocol Number:

B. Title of Project:

C. Protocol Action Requested: ☐ [New protocol](#) ☐ [Updated protocol](#) ☐ [Modification](#)

2) A. Principal Investigator:

B. Department:

C. Mail Location:

D. PI's Office Phone Number:

E. PI's Lab Phone Number:

F. PI's Emergency Phone and/or Pager Number(s):

G. PI's Fax Number:

H. PI's E-mail Address:

3) A. Other Contact Person(s):

B. Other Contact Person's Phone Number(s):

C. Other Contact Person's Emergency Phone and/or Pager Number(s):

D. Other Contact Person's Fax Number(s):

E. Other Contact Person's E-mail Address:

Reminder: Complete an [Addition of Personnel - Form P01](#) for each person on the protocol including the PI. To follow the link, double-click on the blue, underlined text.

4) Source of Funds:

Scientific Rationale

5) Describe in non-technical terms, the scientific or educational aims of the project and why animals must be used. Justify the project in terms of its potential value in obtaining or establishing significant information relevant to the understanding of humans or animals, maintenance and improvement of human or animal health and welfare, improvement of animal management or production, or achievement of educational objectives.

ANIMAL USE PROTOCOL FORM

(Revised August 2003)

6) Provide your rationale for the selection of each species in terms of relevance to the system you are studying:

7) Literature Search for Refinement, Replacement, and Reduction

Perform a literature search looking for alternatives to using animals, ways to reduce the pain or distress, and methods to reduce the number of animals needed for the study.

To connect to UC's Academic Information Technology and Libraries, double-click here:

[UC Literature Search Databases](#)

A. Databases used (use a minimum of two different databases, e.g., MEDLINE, AGRICOLA):

B. Years searched (yyyy): From To

C. Date the most recent literature search was performed (mm/dd/yyyy):

D. State the key words and search strategy used. Terms should include animal welfare, animal testing alternative, pain assessment, in-vitro methods. For information on how to conduct the literature search, double-click here: [Literature Search for Alternatives Worksheet Instructions](#)

E. Were changes implemented as a result of your search?

☐ No- Alternatives, refinement, replacement, or reduction methods were not found.

☐ Yes (list):

F. Other sources of information used to refine the protocol:

Husbandry Information

8) Animal Use Locations

A. Housing location (overnight or over 12 hours):

☐ LAMS

☐ [REDACTED]

☐ Other (complete [Satellite Housing Request Form F-02](#))

B. Procedure

☐ LAMS

☐ [REDACTED]

☐ Other (complete [Satellite Procedure Location Request Form F-01](#))

C. Survival Surgery

☐ Not applicable

ANIMAL USE PROTOCOL FORM

(Revised August 2003)

- ☐ LAMS
☐ [REDACTED]
☐ Other (complete [Satellite Procedure Location Request Form F-01](#))

Note: Satellite areas may NOT be used until forms are submitted to and approved by IACUC.

If there will be any exceptions to IACUC Policies #12 [Policy on Housing Animals in Laboratories](#) and/or #21 [Specifications for Satellite Animal Procedure Areas](#), submit [Request for Exception to IACUC Policy Form P-04](#).

9) Will LAMS staff provide any non-standard husbandry needs?

- ☐ No
☐ Yes (list):

10) If you want to use any tumors, cell lines, or biologicals in rodents, will they be tested for rodent pathogens before administration to the animals?

- ☐ Not applicable
☐ Yes
☐ No (provide justification):

11) Will the animals be acclimated to the facility less than the LAMS standard 48 hours?

- ☐ No
☐ Yes (describe):

12) Complete the following table for each specie. List number used for 3 year period for each pain classification.

Species (List each specie once – use common name)	Breed/ Strain/Stock (List all that apply)	Age/ Weight Range	Sex	Pain Class C	Pain Class D	Pain Class E

Note: For additional information on Pain Classification, click here [Pain Classification Tips](#)

Indicate the source(s) of the animals:

- ☐ LAMS Approved Vendor
☐ In-house Breeding
☐ Other UC Investigators (completion of LAMS transfer form required)
☐ Other, as approved by LAMS (list source):

Note: If specific pathogen free (SPF) rodents are not being used, contact LAMS veterinary staff.

Study Design

ANIMAL USE PROTOCOL FORM

(Revised August 2003)

13) Based on the total in question #12, provide your rationale for the number of animals to be used (complete A and B below) ``

Note: For additional information on power analysis or quantitative justification, click here [Justifying the Number of Animals Used Tip](#)

A Study Design

For each study, list the number of animals per group, the number of groups per study, and provide an outline of the procedures/manipulations performed on each group.

B. Justify each group size based on power analysis, quantity of tissue used, and/or need for Pilot Study:

14) Provide a detailed description of all procedures/manipulations performed on animals outlined in Question #13:

15) If animals will be anesthetized as part of this study complete table and answer questions A and B below.

☐ Not applicable

Anesthetic	Dose Range	Route	Time Anesthetized	Supplemental Dose

A. If using gas anesthetics please indicate method of use.

- ☐ Vaporizer with scavenger system
- ☐ Drop box method in chemical fume hood
- ☐ Other (describe):

B. How will the depth of anesthesia be monitored? Check all that apply.

- ☐ Positive Toe Pinch
- ☐ Respiration Rate
- ☐ Corneal Reflex
- ☐ Mucous Membrane Color/Capillary Refill Time
- ☐ Blood Pressure
- ☐ Pulse Oximeter
- ☐ Muscle Relaxation
- ☐ Other (describe):

ANIMAL USE PROTOCOL FORM

(Revised August 2003)

Note: If there will be any exceptions to IACUC Policy #20 "Post Operative and Procedural Care Policy" (IACUC Policy 20), submit [Request for Exception to IACUC Policy Form P-04](#).

C. What supportive care will be provided?

- ☐ Supplemental heat (describe):
- ☐ Fluid therapy (describe): Type- ; Route- ; Dose-
- ☐ Other (describe):
- ☐ Not applicable

16) Will animals have surgery as part of this project?

- ☐ No
- ☐ Yes (complete A – H below)

A. Will animals recover after surgery?

- ☐ Yes
- ☐ No

B. What type of surgery will be performed?

- ☐ Major
- ☐ Minor
- ☐ Both

C. Will multiple major recovery surgeries be performed?

- ☐ No
- ☐ Yes (list surgical combinations and provide scientific justification):

D. How will the surgical sites be prepared?

- ☐ Standard surgical scrub (Hair removal followed by alternate scrubs of iodophor/chlorhexidine and 70% alcohol repeated 3 times)
- ☐ Hair Removal Only for non-survival surgery
- ☐ Other:

E. If survival surgery is performed, which sterilization methods will be used?

- ☐ Steam autoclave sterilization
- ☐ Gas sterilization (Ethylene Oxide)
- ☐ Chemical sterilant (must adhere to manufacturer's recommendations for contact time)
- ☐ Sterile from manufacturer
- ☐ Other (describe):
- ☐ Not applicable, non-survival

F. If "batch surgeries" will be performed, how will instruments be sterilized between animals?

- ☐ Instruments not reused between animals
- ☐ Glass bead sterilization
- ☐ Other (describe):
- ☐ Not applicable, non-survival

ANIMAL USE PROTOCOL FORM

(Revised August 2003)

- G. Specify which suture materials or other closure devices will be used and identify the location on the animal where used.

Suture Material	Location
☐ Absorbable suture (e.g., Vicryl, Gut, or Maxon)	
☐ Non-absorbable suture (e.g., Prolene, Silk, or Braunamid)	
☐ Surgical wound clips	
☐ Tissue glue (e.g., Nexaband or Vetbond)	
☐ Other (describe):	

- H. Will the skin sutures or staples be removed within 14 days?

- ☐ Yes
☐ No (justify):
☐ Not applicable, survival less than 14 days

17) Analgesic Use

- A. Will pre-emptive analgesics be used?

- ☐ Yes (complete table below)
☐ No (justify)

- B. Will post operative analgesics be used?

- ☐ Yes, for a specified duration. Insert duration here and complete table below.
☐ Yes, on an as needed basis (complete table below)
☐ No (justify)

Analgesic	Dose Range	Route	Frequency

- C. How will the animal's pain/distress be monitored to ensure that the analgesic is effective?

- | | |
|---|---|
| ☐ Guarding (protecting painful area) | ☐ Licking, biting, scratching, or shaking the painful area |
| ☐ Restlessness | ☐ Lack of normal interest in surroundings |
| ☐ Failure to groom | ☐ Abnormal postures |
| ☐ Lack of mobility | ☐ Other: |

- 18) Will other experimental, prophylactic, or therapeutic drugs, chemicals or agents be administered to live animals? List all that apply, except anesthetics or analgesics previously listed in the protocol.

- ☐ No

ANIMAL USE PROTOCOL FORM

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☐ Yes (complete table)

Drug/Agent/Compound Class	Purpose of Use	Dose Range	Route	Frequency

19) Clinical Symptoms and Endpoints

A. Describe adverse events that will be allowed to persist for purposes of the research. Check all symptoms that apply and specify the point at which the animal will be euthanized.

Symptom	Describe endpoint
☐ Weight loss	
☐ Tumor	
☐ Dehydration	
☐ Neurological abnormalities	
☐ Inability to defecate or urinate	
☐ Respiratory distress	
☐ Ocular abnormalities	
☐ Impaired ambulation	
☐ Other:	
☐ None, animal will be euthanized if any adverse events are noted.	

B. Are there any other clinical symptoms which commonly occur in this species or type of research that will assist the LAMS Veterinary Staff in evaluation the health of your animals?

☐ No

☐ Yes (describe):

Note: Any adverse clinical symptoms or deaths must be reported to LAMS Veterinary Staff immediately regardless if they are expected, unexpected, or the result of anesthesia/surgical error.

20) Will food or water be withheld as part of this study?

☐ No

☐ Yes, food (complete A-C below)

☐ Yes, water (complete A-C below)

A. Justification for withholding food and/or water:

B. How long will food and/or water be withheld?

C. How will the animals be monitored and at what frequency to ensure that they do not become dehydrated or malnourished?

ANIMAL USE PROTOCOL FORM

(Revised August 2003)

21) Will the animals be used for multiple blood/tissue collections?

☐ No

☐ Yes (complete table)

Collection Method	Volume	Total # of Collections	Interval Between Collections

22) Will the animals be restrained as part of this project (excludes manual restraint such as that used for an injection)?

☐ No

☐ Yes (justify and complete table)

Restraint Method	Duration	Total # of Restraints	Interval Between Restraints

23) Euthanasia

Note: Consult the [2000 Report of the AVMA Panel on Euthanasia](#) for more information.

A. How will the animals be euthanized?

☐ Carbon Dioxide (compressed gas must be used)

☐ Anesthetic Overdose (list drug, route, and dose)

☐ Perfusion with fixative under anesthesia

☐ Physical method

Note: For Physical Methods LAMS Veterinary Staff must train or observe personnel on the procedures listed below to ensure proficiency.

☐ Decapitation and/or ☐ Cervical dislocation

Note: Decapitation requires a maintenance log for blade sharpening.

☐ Use anesthesia as described in Question 16 above.

☐ Use different anesthesia (list drug, route and dose)

☐ No anesthesia (justify)

☐ Other method (describe):

B. What physical method will be used to ensure the animal does not recover?

ANIMAL USE PROTOCOL FORM

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Check all that apply:

- ☐ Not Applicable- Physical Method Selected in 23A
- ☐ Decapitation
- ☐ Cervical Dislocation
- ☐ Bilateral Pneumothorax or Cutting Diaphragm
- ☐ Removal of Vital Organ
- ☐ Perfusion with a fixative
- ☐ Other (describe):

Protocol Hazards

24) Does this protocol require the use of any of the following hazardous agents or procedures in living animals? Check all that apply, then complete questions A and B for each.

- ☐ Biological
- ☐ Chemical/Physical
- ☐ Radiological
- ☐ None of the above

A. List hazardous agents administered to living animals.

Agent	Route	Dose Range	Frequency	Interval	Time on study (post initial exposure)

For descriptions of hazardous agents consult the [Institutional Biosafety Committee web page](#) or the [Environmental Health and Safety web page](#). The Material Safety Data Sheets (MSDS) on any hazardous chemicals being used should be reviewed. Sources of this information include: [EHP 10th Report on Carcinogens](#), [Laboratory Chemical Safety Summaries](#), [NIH Safety Data Sheets](#)

B. Have you established a safety program to determine what safeguards are needed for the safe conduct of the research?

- ☐ Yes
- ☐ No (If no, consult with Institutional Biosafety, Environmental Health and Safety, and/or Radiation Safety for help in establishing your program.)

ANIMAL USE PROTOCOL FORM

(Revised August 2003)

Endorsement Information

Principal Investigator's Endorsement

I believe that this project is an appropriate use of animals, that the scientific methods described are valid, and that the goals of the project are reasonable and appropriate.

I understand that I am responsible to ensure that this project is carried out as described in this protocol. I understand that changes in the experimental design or procedures must be approved by IACUC before they are implemented and that failure to abide by the protocol may result in suspension of my animal use privileges.

I understand that all personnel must read and understand the procedures described in the protocol and be trained in the specific procedures that they will perform. Additionally, all personnel must have ready access to the protocol.

As required by federal regulations, I certify that all grant-funded animal related activities have been submitted to the IACUC for approval. I understand that should I modify any animal procedures, that I must notify both the IACUC and the granting agency.

I have also determined that this proposal does not unnecessarily duplicate previously reported research work or that duplication is necessary for teaching purposes.

Type Name:

Signature

Date

Co-Principal Investigator's Endorsement (if applicable)

Type Name:

Signature

Date

Department Director's Endorsement

I have reviewed this protocol and endorse its submission. I believe that this project is an appropriate use of animals, that the scientific methods described are valid, and that the goals of the project are reasonable and appropriate.

As required by federal regulations, I certify that all grant-funded animal related activities have been submitted to the IACUC for approval.

Type Name:

Signature

Date

Veterinarian's Endorsement

I have reviewed and agree with the pain and distress classification listed in this protocol

The pain and distress relieving measures described are appropriate for the species and procedures listed.

☐ Not applicable

If appropriate pain relieving measures will not be used, I agree with the scientific justification.

☐ Not applicable

Type Name:

Signature

Date

Reminder: Once you have completed the Endorsement information, print this page and obtain the required signatures. Submit page with original signatures with the protocol.

Addendum B: Use of Non-Pharmaceutical Grade Compounds

Form Instructions

❖ General Information

- List the protocol number, principal investigator, species, etc.

❖ Drug/Class

- List each individual drug or class of drugs you wish to use in non-pharmaceutical grade formulation

❖ Source or Purity

- Examples: Reagent grade, experimental compound, etc.

❖ Sterilization Method

- List the method of sterilization when constituting non-pharmaceutical grade compounds:
 - .22F**= .22µm syringe filter
 - .45F**= .45µm syringe filter
 - A**= Autoclave Sterilization
 - If another sterilization method is used, please list in the table**

❖ Storage Method

- List the method in which non-pharmaceutical grade compounds will be stored:
 - F**= Refrigeration Storage
 - R**= Room Temperature Storage
 - If another storage method is used, please list it in the table**
 - Please note: The storage method will directly affect shelf life*

❖ Shelf Life

- List the expected shelf life of the reconstituted/prepared drug:
 - e.g. 2 weeks, 8 weeks, 6 months, etc.

❖ Justification

- Provide justification for the use of non-pharmaceutical grade compounds:
 - N**= Not Available: The drug you wish to use is an experimental compound and/or is not available in pharmaceutical grade
 - I**=Incorrect Formulation: The drug you wish to use is the incorrect concentrate, contains confounding additives, etc.
 - O**= Other: If there is another reason you wish to use a non-pharmaceutical grade compound, please list 'O' in the box and describe in the **Supplementary Justification Page**

Addendum B: Use of Non-Pharmaceutical Grade Compounds

GENERAL INFORMATION	
Date:	Department:
Principal Investigator:	Contact Name:
Protocol Number:	Contact Phone Number:
Species:	Mail Location:

Drug/Class	Source or Purity	Sterilization Method (.22F, .45F, A) ⁽¹⁾	Storage Method (F, R) ⁽²⁾	Shelf Life (weeks/months)	Justification (N, I, O) ⁽³⁾

(1) .22F= 22µm syringe filter .45F= .45µm syringe filter A= Autoclave Sterilization

(2) F= Refrigeration Storage R= Room Temperature Storage

(3) N = Not Available I = Incorrect Formulation O = Other (Please attach justification)

Principal Investigator or co-Principal Investigator's Endorsement:

The request is based on scientific justification necessary to conduct the studies in my approved IACUC protocol. I will ensure all approved personnel listed on my protocol are notified of this addendum.

Signature: _____

Date: _____

Addendum B: Use of Non-Pharmaceutical Grade Compounds

Supplementary Justification Page

GENERAL INFORMATION	
Principal Investigator:	Protocol Number:

Additional justification for use of non-pharmaceutical grade compounds:

**University of Cincinnati
Institutional Animal Care & Use Committee**

Request for Exception to IACUC Policy/Regulations

Date:

Principal Investigator: Protocol Number:

Department: Mail Location:

Please check the policy you are requesting an exception to (NOTE ONLY ONE MAY BE SELECTED):

- ☐ Policy #001- Non-Traditional Procurement
- ☐ Policy #002- Identification and Genotyping
- ☐ Policy #003- Animal Transportation
- ☐ Policy #004- Use of Expired Medical Materials in Animals
- ☐ Policy #005- Animal Adoption
- ☐ Policy #007- Euthanasia of Rodents with CO₂
- ☐ Policy #008- Cage Identification
- ☐ Policy #010- Anesthesia Requirement for Retro-orbital Blood Collection of Rodents
- ☐ Policy #012- Policy on Housing Animals in Laboratories
- ☐ Policy #012A- Requirements for Mammalian Satellite Housing
- ☐ Policy #012B- Requirements for Ectothermic Satellite Housing
- ☐ Policy #016A- Rodent Survival Surgery
- ☐ Policy #016B- Non-Rodent USDA Regulated Animal Survival Surgery
- ☐ Policy #016C- Ectotherm Survival Surgery and Frog Oocyte Collection
- ☐ Policy #017- Labeling and Storage Requirements for Secondary Containers
- ☐ Policy #020- Use of Analgesics
- ☐ Policy #021- Specifications for Satellite Animal Procedure Areas
- ☐ Other:
- ☐ The Guide for Care and Use of Laboratory Animals:

Provide scientific justification for the requested exception:

Principal Investigator or co-Principal Investigator's Endorsement:

The requested policy exception is based on scientific justification necessary to conduct the studies in my approved IACUC protocol. I will ensure all approved personnel listed on my protocol are notified of this policy exception.

Signature: _____ Date: _____

FOR IACUC OFFICE USE ONLY
Orientation: _____
Surv Surg: _____
Species-Specific:
Required _____
Facility Orient _____
Skills Assessment _____
Approval Emailed: _____

University of Cincinnati
Institutional Animal Care & Use Committee

Addition of Personnel

ALL PERSONNEL WORKING WITH ANIMALS MUST HAVE A CURRENT TEST DATE ON FILE WITHIN THE PAST 3 YEARS. PLEASE SUBMIT ONE FORM PER PROTOCOL. HANDWRITTEN FORMS WILL BE RETURNED.

Date: _____

Principal Investigator: _____ Protocol Number: _____

Legal Name/Name on Visa (First, Middle Initial, Last): _____ SSN: _____ (last four digits of SSN)

Date of Birth (mm/dd/yyyy): _____

This research team member will not be entering a LAMS facility? ☐ (Check here to confirm)

With which species will he/she be working? ☐ Mouse ☐ Rat ☐ Rabbit ☐ Frog ☐ Other: _____

Does he/she have experience with this species and the procedures he/she will be performing? ☐ Yes ☐ No

If yes, please describe in detail, including source & duration of experience: _____

Who will be responsible for training him/her in the specific procedures listed on the protocol? _____

Name (First, Middle Initial, Last): _____ SSN: _____ (last four digits of SSN)

Principal Investigator or co-Principal Investigator's Endorsement:

I choose to add this person to my approved IACUC protocol. I will ensure he/she reads the referenced protocol, understands the procedures described in the protocol, and is properly trained in the procedures he/she will be performing.

Signature: _____ Date: _____

Personnel's Endorsement:

I will read the protocol under which I will be working prior to working with animals. I will perform only those procedures listed on the approved protocol with the species listed on the protocol.

Signature: _____ Date: _____

**University of Cincinnati
Institutional Animal Care & Use Committee**

Satellite Housing Request

SCIENTIFIC JUSTIFICATION IS REQUIRED TO HOUSE ANIMALS IN AREAS OUTSIDE OF A VIVARIUM. PRIOR IACUC INSPECTION AND APPROVAL IS REQUIRED. PLEASE REFERENCE IACUC POLICY #026 TO DETERMINE IF YOUR AREA IS CONSIDERED SATELLITE HOUSING. THE AREA MUST COMPLY WITH IACUC POLICY #012.

- ONLY ONE ROOM MAY BE LISTED ON THE FORM.
- ONLY ONE PROTOCOL MAY BE LISTED ON THE FORM.
- HANDWRITTEN FORMS WILL NOT BE ACCEPTED.

LAMS staff must observe animals in the satellite housing area at least once a week. Charges may be incurred for this service. Prior arrangements must be made with LAMS if LAMS staff is to provide services beyond weekly observation, such as changing cages or sanitizing the area. Both LAMS and IACUC must have independent access to the area referenced prior to approval.

Date:

Principal Investigator:

Protocol Number:

Area where animals will be housed: Building-

Room-

What species will be housed in this area?

Please provide scientific justification why animals must be housed outside of a vivarium:

The area must maintain temperature and humidity in accordance with the *Guide for the Care and Use of Laboratory Animals*. The acceptable range of relative humidity is 30 to 70%. Recommended temperature ranges by species are noted on page 32. If the area cannot maintain temperature and humidity within the acceptable ranges on a daily basis, please explain. The University's Attending Veterinarian must then evaluate this environmental exception to determine if it should have any detrimental affect the health of the animals.

☐ Not applicable, area maintains recommended temperature and humidity

☐ Area does not maintain recommended temperature and humidity on a daily basis (explain):

Attending Veterinarian's Endorsement (not required if area maintains temperature and humidity):

I have evaluated the environmental conditions of this area and determined it should not have any detrimental affect to the health of the animals. This will be monitored on a continual basis.

Signature: _____ Date: _____

Principal Investigator's Endorsement:

I understand that IACUC approval must be gained prior to housing animals overnight in the area referenced above. I have ensured both LAMS and IACUC have independent access to the area referenced above. I understand that LAMS staff will check the animals in this area at least once a week and a charge may be incurred. I will ensure daily observations of animals held in this area are documented in the daily log every day, including the day animals are removed from the area.

Signature: _____ Date: _____

Satellite Housing Specifications

Principal Investigator:

Protocol Number:

Area where animals will be housed: Building-

Room-

Name of Emergency Contact:

Emergency Phone Number or Pager:

Maximum time period a given animal will be housed in this area:

☐ Colony will be permanently maintained in this area ☐ Overnight one night only ☐ Other:

Maximum number of cages that will be held in this area (cages may not be stacked, shelving must be used):

The following information is required for the University's AAALAC Program Description. Please contact the IACUC office if you need assistance. Review LAMS standard husbandry SOPs for species-specific recommendations.

Light measurement in foot candles:

Description of Primary Enclosure (e.g. shoebox cage):

Dimension of Primary Enclosure in inches:

Frequency of Cleaning Primary Enclosure:

☐ Not applicable, overnight housing only

Description of Food: Type-

Source-

Description of Bedding: Type-

Source-

Description of Secondary Enclosure (e.g. chemical fume hood):

Description of Sanitization of Secondary Enclosure: Frequency-

Method-

Air Source: ☐ 100% Fresh Air ☐ Recirculated- Rate:Air treatment system: ☐ None ☐ HEPA ☐ Coarse filter or charcoal

Air changes per hour:

Air pressure differential to room or hall: ☐ Positive☐ NegativeAre humidity controls utilized in this area? ☐ No ☐ Yes (describe):

**University of Cincinnati
Institutional Animal Care & Use Committee**

Satellite Procedure Location Request

JUSTIFICATION IS REQUIRED IF A LIVE VERTEBRATE ANIMAL MUST BE MANIPULATED IN AREAS OUTSIDE OF LAMS CORE FACILITIES. PRIOR IACUC INSPECTION AND APPROVAL IS REQUIRED IF SURVIVAL SURGERY WILL BE PERFORMED IN THE ROOM. THIS FORM MAY NOT BE USED TO REQUEST SATELLITE HOUSING (USE FORM #F-02). WHILE MULTIPLE ROOMS MAY BE LISTED, PLEASE SUBMIT ONE FORM PER PROTOCOL. HANDWRITTEN FORMS WILL NOT BE ACCEPTED.

ALL PERSONNEL EXPOSED TO ANIMALS MUST BE ENROLLED IN THE UNIVERSITY'S OCCUPATIONAL HEALTH AND SAFETY PROGRAM. PLEASE ATTACH A LIST OF ALL PERSONNEL THAT MAY BE EXPOSED TO ANIMALS. NOTE IN AREAS THAT ARE NOT CONTAINED (I.E. AREAS THAT DO NOT HAVE DOORS) ALL PERSONNEL IN THE AREA MUST BE LISTED. THIS MAY INCLUDE PERSONNEL THAT ARE NOT WORKING WITH ANIMALS. FOR EXAMPLE, IF LIVE VERTEBRATE ANIMALS WILL BE MANIPULATED IN [REDACTED] [REDACTED] ALL PERSONNEL THAT ACCESS THAT AREA MUST BE LISTED.

Date:

Principal Investigator: Protocol Number:

Department: Mail Location:

Area(s) where live animals will be manipulated (Building and Room Number):

NOTE: IF WORKING IN THE [REDACTED], PLEASE LIST EACH SPECIFIC BENCH NUMBERS.

Please check all species that may be manipulated in this area:

☐ Mice ☐ Rats ☐ Hamsters ☐ Frogs, salamanders, etc. ☐ Other:

Please provide justification why live vertebrates animals must be removed from LAMS core facilities:

Will survival surgery be performed in any of the above-mentioned rooms? ☐ No ☐ Yes

If yes, which room(s)?

Principal Investigator or co-Principal Investigator's Endorsement:

If overnight housing will occur in any of the rooms listed above, I ensure form #F-02 has been submitted. I ensure that all personnel who could be exposed to animals in this area are in the attached list.

Signature: _____ Date: _____

**University of Cincinnati
Institutional Animal Care & Use Committee**

Storage of Diets Outside LAMS

PLEASE USE THIS FORM FOR APPROVAL TO STORE DIETS OUTSIDE LAMS (See IACUC Policy #33 Storage of Diets Outside LAMS).

PLEASE SUBMIT ONE FORM PER PROTOCOL PER LOCATION. HANDWRITTEN FORMS WILL NOT BE ACCEPTED.

Date:

Principal Investigator: **Protocol Number:**

Department: **Mail Location:**

Area where the diet(s) will be stored: Building: **Room:**

Storage Conditions: Is temperature monitored daily? Yes ☐ No ☐

Room Temp (< 21°C) ☐

Refrigeration (4°C to 8°C) ☐

Freezer (-18°C to -22°C) ☐

Walk-in Cooler/Freezer ☐ Conventional Freezer/Refrigerator ☐

Emergency Contact: **Emergency Contact Telephone:**

Storage Conditions:

- ✓ **Custom diets expire 6 months after date of manufacture and should be promptly discarded when the expiration date is reached.**
- ✓ **Diets must be stored off of the floor on pallets, racks, or carts.**
- ✓ **Area must be cleaned regularly and free from clutter**
- ✓ **Diets must be tightly sealed in original shipping container or stored in a sealed vermin proof container.**
- ✓ **Diets must not be stored in refrigerators/freezers or rooms with any type of chemicals or biological agents.**

Principal Investigator or co-Principal Investigator's Endorsement:

This disclosure for diet storage location is based on scientific best practices for the preservation of nutritional ingredients or test substance compounds in conjunction with manufacturer's suggested storage conditions.

Signature: _____ **Date:** _____

APPENDIX 10

IACUC/OB PERIODIC REPORT

From: [Strasser, Jane \(strassie\)](#)
To: [Custer, David \(custerda\)](#)
Subject: 2018-2 Semi-Annual Inspection Review and Acceptance
Date: Wednesday, November 14, 2018 8:30:08 AM
Attachments: [2018-2 Semi-Annual Inspection Report.pdf](#)

Dave,
I have reviewed the attached compilation of semi-annual inspection reports including the program review and find it acceptable.
Thank you for your efforts to ensure the highest level of animal care and compliance.
Jane

Jane E. Strasser, Ph.D.
Associate Vice President for Research
Research Integrity Officer
University of Cincinnati

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

From: [Custer, David \(custerda\)](#)
To: [Strasser, Jane \(strassie\)](#)
Subject: 2018-2 Semi-Annual Inspection Review and Acceptance
Date: Friday, November 09, 2018 5:42:07 PM

Hi Jane,

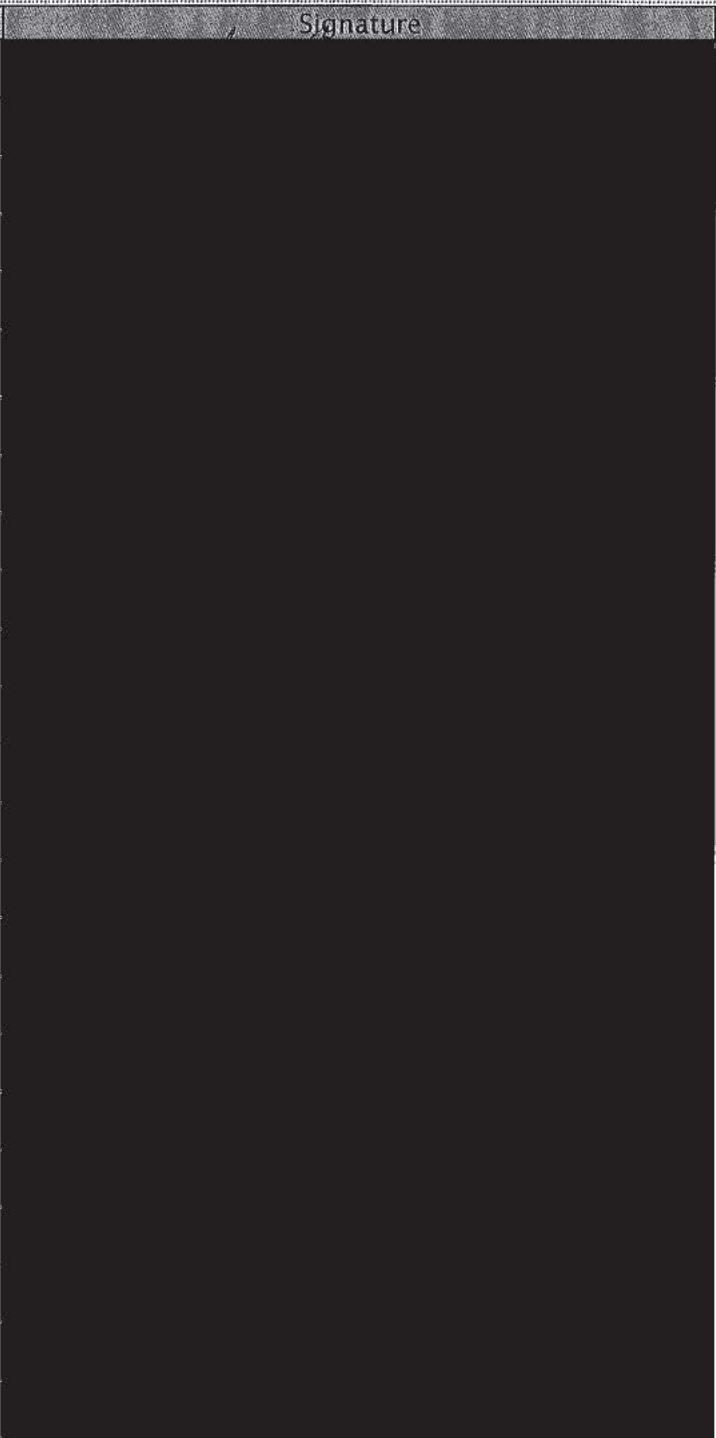
Please see the attached Semi-Annual Inspection Report approved by the IACUC at the November 8, 2018 meeting.

Dave

David A. Custer
Interim-Director, Animal Regulatory Compliance
IACUC Office
Office of Research Integrity
University of Cincinnati



Institutional Animal Care and Use Committee
Semiannual Inspection Reports
2018 - 2

Member	Signature
George F. Babcock, PhD, Chair ¹	
Michael T. Borchers, PhD, V. Chair ²	
	
Vladimir Bogdanov, PhD ⁶	
Daniel Buchholz, PhD, Alternate ⁹	
David A. Custer, Alternate ⁵	
Lori Beth Derenski, BS, Alternate ³	
Gary E. Dean, PhD, Alternate ¹	
Brian R. Earl, PhD ⁴	
Gary A. Gudelsky, PhD, Alternate ⁴	
Tiffany Grant, PhD ⁵	
Mahesh Jonnalagadda, DVM, Alternate ¹⁰	
Min Liu, PhD, Alternate ¹²	
John N. Lorenz, PhD, Alternate ⁸	
Patrick C. Owen, PhD, Alternate ¹¹	
Peter M. Scheifele, PhD, Alternate ⁶	
Jo El J. Schultz, PhD, Alternate ²	
Gary E. Shull, PhD ⁸	
Neville N. Tam, PhD ⁹	
Chenran Wang, MD, PhD ⁷	
Joanne Tetens-Woodring, DVM, AV ¹⁰	
Jennifer A. Wells, DVM ¹¹	
Jun-Ming Zhang, MSc, MD ¹²	
Yana Zavros, PhD, Alternate ⁷	

To be completed by IACUC Chair after the inspection Report is approved by the committee

Minority Reports to attach

Y ☒ N ☐

Number of Minority Reports

0



George F. Babcock, IACUC Chair

Date

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semiannual Facilities Inspection

Inspection Team: TJG & YAZ
Veterinarian: N/A
Safety Representative: Sandy G.
Date Inspected: September 11, 2018

Zone 1: LAMS Facility
LAMS Management: Jeff W.
IACUC Office: DAC & NCJ
Last Inspected: March 13, 2018

LAMS Facility					
*A = acceptable; M = minor deficiency; S = significant deficiency (is/may be a threat to animal health/safety)					
Room	Use	A	M	S	Comments
	Office	X			
	Office	X			
	Office	X			
	Training/Conf	X			
	Supply/Storage	X			
	Work Room	X			
	Break Room	X			
	Gowning Area	X			
	Animal Housing		X		(LAMS) One broken electrical outlet cover on side wall over the change-out hood. Resolution: The Facility Supervisor responded by email on October 12, 2018 indicating the outlet cover was restored to full functionality on October 10, 2018.
	Animal Housing	X			
	Animal Housing	X			
	Women's Toilet ♀	X			
	Women's Locker Rm ♀	X			
	Women's Shower ♀	X			
	Women's Shoeing ♀	X			
	Storage Area	X			
	Procedure Rm PI Assigned		X		(Kao) Floor of the procedure room needs to be swept of cage bedding and other debris. Resolution: A senior member of the lab responded by email on October 10, 2018 stating the floor of the procedure room was swept and mopped on October 8, 2018.
	Storage Area	X			
	Procedure Rm	X			AVMA Compliant CO ₂ inhalation apparatus located in this area.
	Procedure Rm	X			
	Men's Toilet ♂	X			
	Men's Locker Rm ♂	X			
	Men's Shower ♂	X			

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semiannual Facilities Inspection

Inspection Team: TJG & YAZ
Veterinarian: N/A
Safety Representative: Sandy G.
Date Inspected: September 11, 2018

Zone 1: LAMS Facility
LAMS Management: Jeff W.
IACUC Office: DAC & NCJ
Last Inspected: March 13, 2018

Men's Shoeing ♂	X			
Animal Housing	X			
Animal Housing	X			
Animal Housing	X			
Chemical Animal Housing	X			AVMA Compliant CO ₂ inhalation apparatus located in this area.
Animal Housing	X			
Animal Housing Procedure Rm	X			
Animal Housing	X			
Animal Housing	X			
UV H ₂ O Recirc		X		(LAMS) Three month treated water micro-filter change was missed in August. Resolution: The Facility Supervisor responded by email on October 12, 2018 indicating filter was changed on October 11, 2018 and will be monitored on a quarterly basis (once every 3 months).
Storage	X			
Animal Housing	X			
Animal Housing	X			
Animal Housing	X			
██████	X			AVMA Compliant CO ₂ inhalation apparatus located in this area.
Procedure Rm		X		(Yu) One spray bottle containing ETOH needed a better label to identify contents. Resolution: A senior member of the lab responded by email on October 11, 2018 indicating that the bottle of alcohol was properly labeled on October 11, 2018.
Storage Area	X			
Procedure Rm	X			
Procedure Rm	X			AVMA Compliant CO ₂ inhalation apparatus located in this area.
Storage Area	X			

**University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semiannual Facilities Inspection**

Inspection Team: TJG & YAZ
Veterinarian: N/A
Safety Representative: Sandy G.
Date Inspected: September 11, 2018

Zone 1: LAMS Facility
LAMS Management: Jeff W.
IACUC Office: DAC & NCJ
Last Inspected: March 13, 2018

	Procedure Rm		X	(Supp) Three blister packs containing scissors, forceps and Coban® bandage tape were six months past expiration.. Resolution: <i>The PI responded by email on October 11, 2018 stating the instruments were placed in new blister packs awaiting future sterilization on October 11, 2018.</i>
	Storage	X		
	Storage		X	(LAMS) One electrical outlet cover broken, Resolution: <i>The Facility Supervisor responded by email on October 12, 2018 indicating a new outlet cover was installed on October 10, 2018.</i>
Comment: none				

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semiannual Facilities Inspection

Inspection Team: MTB & CW
LAMS Veterinarian: N/A
Safety Representative: N/A
Date Inspected: September 11, 2018

Zone 2: LAMS Facility
LAMS Management: Jeff W.
IACUC Office: DAC
Last Inspected: March 13, 2018

LAMS <u> </u> Facility					
*A = acceptable; M = minor deficiency; S = significant deficiency (is/may be a threat to animal health/safety)					
Room	Use	A	M	S	Comments
	Necropsy	X			AVMA Compliant CO ₂ inhalation apparatus located in this area.
	Carcass Storage	X			
	Clinical Lab	X			
	Drug Storage	X			
	Sterile Process	X			
	Animal Outside Rtn	X			
	Animal Housing Outside Rtn	X			
	Animal Housing Outside Rtn	X			
	Storage Rm	X			
	Storage Rm	X			
	Clean Cage Wash	X			
	Animal Housing Frog	X			
	Animal Housing Survival Sx	X			
	Surgery Rm	X			
	Procedure Rm	X			AVMA Compliant CO ₂ inhalation apparatus located in this area.
	Dirty Cage Wash	X			
	Animal Housing <u> </u>	X			AVMA Compliant CO ₂ inhalation apparatus located in this area.
	Animal Housing	X			
	Animal Housing	X			

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semiannual Facilities Inspection

Inspection Team: MTB & CW
LAMS Veterinarian: N/A
Safety Representative: N/A
Date Inspected: September 11, 2018

Zone 2: LAMS [REDACTED] Facility
LAMS Management: Jeff W.
IACUC Office: DAC
Last Inspected: March 13, 2018

	Animal Housing Lrg Animal	X			
	Animal Housing	X			AVMA Compliant CO ₂ inhalation apparatus located in this area.
	Storage Rm	X			
	Feed/Bedding Storage	X			
	Rec Dock	X			
	Cylinder Storage	X			
	Toilet ♀ / ♂	X			
	Men's ♂ Toilet	X			
	Women's ♀ Toilet	X			
	Animal Housing Lrg Animal	X			
	Animal Housing Lrg Animal	X			
	Lrg Animal Procedure Rm	X			
	Rodent Procedure Rm	X			
	Animal Housing Lrg Animal	X			
	Animal Housing Outside Return Holding Rm	X			
	Animal Housing	X			
	Animal Housing Lrg Animal	X			
	Animal Housing Lrg Animal	X			
Laundry Rm	X				

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semiannual Facilities Inspection

Inspection Team: MTB & CW
LAMS Veterinarian: N/A
Safety Representative: N/A
Date Inspected: September 11, 2018

Zone 2: LAMS Facility
LAMS Management: Jeff W.
IACUC Office: DAC
Last Inspected: March 13, 2018

	Storage Rm	X			
	Common Dock	X			
Comments:					

Surgical Suite					
*A = acceptable; M = minor deficiency; S = significant deficiency (is/may be a threat to animal health/safety)					
Room	Use	A	M	S	Comments
	Non-Surv Surgery	X			
	Office Drug Storage	X			
	Cylinder Storage	X			
	Animal Prep	X			
	Survival & Non-Surv Surgery	X			
Comments:					

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semi-Annual Facilities Inspection

Inspection Team: DRB & TJG
LAMS Veterinarian: N/A
Safety Representative: Sandra G.
Date Inspected: September 10, 2018

Zone 3:
Contacts: BRE
IACUC Office: DAC & NCJ
Last Inspected: March 12, 2018

- PI Controlled Satellite Procedure Locations							
*A = acceptable; M = minor deficiency; S = significant deficiency (is/may be a threat to animal health/safety)							
Room	PI	Species	Use	A	M	S	Comments
	Scheifele	Birds Dogs Lizards Snakes	Classroom	X			
	Earl	Gerbils	Necropsy Storage		X		(Earl) Numerous packets of sterile disposable surgical towels were expired (> 6 months past sterilization date). Resolution: The PI of the lab area was present at the time discarded all the expired towel packets at the time of the inspection on September 10, 2018.
	Earl	Gerbils	Procedure Sx Surgery		X		(Earl) One vial of xylazine expired 8/2018. Resolution: The PI of the lab area was present at the time properly disposed the expired vial at the time of the inspection on September 10, 2018.
	Scheifele	Dogs Ferrets Lizards Snakes	Procedure	X			
	Scheifele	Dogs Ferrets Lizards Snakes	Procedure		X		(Scheifele) One box of alcohol prep pads was expired 4/2014. Resolution: The PI responded by email on October 10, 2018 stating the box of alcohol prep pads was discarded on October 10, 2018. (Scheifele) One spray bottle was not adequately labeled. Resolution: The PI responded by email on October 10, 2018 stating the spray bottle was removed from the room on October 10, 2018.
	Scheifele	Birds Dogs Lizards Snakes	Classroom	X			

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semi-Annual Facilities Inspection

Inspection Team: DRB & TJG
LAMS Veterinarian: N/A
Safety Representative: Sandy G.
Date Inspected: September 10, 2018

Zone 4:
Contacts: N/A
IACUC Office: DAC
Last Inspected: March 12, 2018

- PI Controlled Satellite Procedure Locations							
Room	PI	Species	Use	A	M	S	Comments
	Yadav	Drug Storage Area		X			
	Yadav	Mice Rats	Procedure	X			
	Ho Burns	Diet Cold Storage Walk-In Refrigerator			X		(Tam) One box of Open-Source® D10012 AIN-93 irradiated rodent diet was expired. Resolution: The PI responded by email on October 18, 2018 with an attached letter from the diet manufacturer indicating that some researchers use irradiated diets past the industry standard (6 mo. expiration) depending on the components. The PI will tape the letter with the proposed expiration on any diet cartons that have passed the 6 month expiration (in this case December 30, 2018) and into the future.
	Tam	Mice Rats	Procedure	X			
	Xia	Mice	Procedure	X			AVMA compliant CO ₂ inhalation apparatus located in this area.

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semi-Annual Facilities Inspection

Inspection Team: GFB & GAG
LAMS Veterinarian: N/A
Safety Representative: Sandy G.
Date Inspected: September 19, 2018

Zone 5:
Contacts: Lab PI
IACUC Office: DAC
Last Inspected: March 20, 2018

I PI Satellite Housing & Procedure Areas							
Room	PI	Species	Use	A	M	S	Comments
	Buchholz	Frog Tadpoles	Housing Procedure	X			
	Gross	Fish	Procedure	X			
	Gross	Fish	Procedure	X			
	Buchholz	Frogs Tadpoles	Housing	X			
	Gross	Fish	Housing	X			
	Gross	Fish	Procedure	X			
	Buchholz	Frogs	Procedure	X			
	Jayne	Snakes Lizards	Procedure	X			
	Jayne	Lizards Snakes Frogs Salamanders	Procedure Housing	X			
	Jayne	Lizards Snakes Frogs Salamanders	Housing	X			
	Ante/Hall	N/A	Access	X			
	Jayne	Lizards Snakes	Housing	X			
Comments:							

Satellite Procedure Area							
Room	PI	Species	Use	A	M	S	Comments
	Ross	Rat	Procedure	X			

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semi-Annual Facilities Inspection

Inspection Team: **NNT & CW**
LAMS Veterinarian: **N/A**
Safety Representative: **N/A**
Date Inspected: **September 14, 2018**

Zone 6: **[REDACTED]**
LAMS Supervisor: **Jeff W. & Kim R.**
IACUC Office: **DAC**
Last Inspected: **March 15, 2018**

[REDACTED] Facility					
*A = acceptable; M = minor deficiency; S = significant deficiency (is/may be a threat to animal health/safety)					
Room	Use	A	M	S	Comments
[REDACTED]	Autoclave Prep	X			
[REDACTED]	Locker Room	X			
[REDACTED]	Locker Room	X			
[REDACTED]	Laundry		X		(LAMS) Chair in gowning area has a tear in the seat cushion. Resolution: The Facility Supervisor responded by email on October 12, 2018 stating the chair seat cushion was repaired on September 27, 2018.
[REDACTED]	Cage Wash, Clean		X		(LAMS) One month treated water micro-filter cartridge change missed in August. Resolution: The Facility Supervisor responded by email on October 12, 2018 stating that the flush station is no longer in use. The filter canister was disassembled and labeled - will be reactivated starting with the next rack sterilization cycle.
[REDACTED]	Autoclave Staging	X			
[REDACTED]	Feed Storage	X			
[REDACTED]	Vet Tech Office	X			
[REDACTED]	Break Room	X			
[REDACTED]	RA Office	X			
[REDACTED]	Storage Rm	X			
[REDACTED]	H ₂ O Recirculate	X			
[REDACTED]	Custodial	X			
[REDACTED]	Animal Housing	X			
[REDACTED]	Animal Housing	X			
[REDACTED]	Procedure Room		X		(Parks) One tube of artificial teas was expired 7/2018. Resolution: The senior member of the lab responded by email on October 22, 2018 stating the two expired tubes were discarded on October 11, 2018.
[REDACTED]	Animal Housing	X			
[REDACTED]	Animal Housing	X			

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semi-Annual Facilities Inspection

Inspection Team: NNT & CW
LAMS Veterinarian: N/A
Safety Representative: N/A
Date Inspected: September 14, 2018

Zone 6: [REDACTED]
LAMS Supervisor: Jeff W. & Kim R.
IACUC Office: DAC
Last Inspected: March 15, 2018

	Procedure Room	X			
	Animal Housing	X			
	Procedure Room	X			
	Animal Housing	X			
	Animal Housing	X			
	Animal Housing	X			
	Necropsy	X			AVMA Compliant CO ₂ apparatus located in this area.
	Cage Wash, Dirty	X			
	Rack Washer	X			
Comments: none					

University of Cincinnati
Institutional Animal Care and Use Committee
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Inspection Team: LBD & BRE
LAMS Veterinarian: N/A
Safety Representative: Sandy G.
Date: September 14, 2018

Zone 7:
LAMS Rep: N/A
IACUC Office: DAC & NCJ
Last Performed: March 15, 2018

[REDACTED] – PI Controlled Satellite Locations							
*A = acceptable; M = minor deficiency; S = significant deficiency (is/may be a threat to animal health/safety)							
Room	PI	Species	Use	A	M	S	Concerns / Comments
	Kanisacek	Mice Rats	Procedure		X		(Kanisacek) One box of suture on over-bench shelf was expired 4/2014. Resolution: The PI responded by email on October 11, 2018 stating the box of expired suture was discarded on October 10, 2018. (Kanisacek) One bottle of Betadine® solution on over-bench shelf was expired 2/2002. Resolution: The PI responded by email on October 11, 2017 stating the bottle of expired iodophor solution was discarded on October 10, 2018.
	Wang	Diet Storage Walk-In Refrigerator			X		(Wang) One box of Teklad® TD 140644 tamoxifen diet was expired 10/2016. Resolution: A senior member of the lab responded by email on October 26, 2018 explaining that the special diet containing tamoxifen was picked up by EH&S for hazardous waste disposal on October 26, 2018.
	Kanisacek	Mice Rats	Neonate Procedure		X		(Kanisacek) Two vials of sterile injectable saline were expired 10/2016. Resolution: The PI responded by email on October 11, 2017 stating the two vials of expired saline were discarded on October 10, 2018.
	Fan* Lorenz Wang, Y* Xu, M*	Mice Rats*	Procedure Survival Sx*	X			
	Fan Kanisacek Lorenz Wang Xu, M	Mice Rats	Procedure	X			
	Kanisacek	Mice Rats	Survival Sx	X			

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semi-Annual Facilities Inspection

Inspection Team: LBD & BRE
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Zone 7:
LAMS Rep: N/A
IACUC Office: DAC & NCJ
Last Performed: March 15, 2018

Wang Xu	Mice Rats	Survival Sx Procedure		X		(Xu) One box of 4-0 Perma-Hand silk ligature was expired 7/2018. <u>Resolution:</u> A senior member of the lab responded by email on October 11, 2018 stating the ligature material was discarded after the inspection on September 14, 2018. (Xu) One box of 6-0 Perma-Hand silk ligature was expired 7/2017. <u>Resolution:</u> A senior member of the lab responded by email on October 11, 2018 stating the ligature material was discarded after the inspection on September 14, 2018. (Xu) Two tubes of artificial tears eye lubricant was expired 4/2018. <u>Resolution:</u> A senior member of the lab responded by email on October 11, 2018 stating the tubes of eye lubricant were discarded after the inspection on September 14, 2018.
Xu, M	Mice Rats	Procedure		X		(Xu) Full sharps container. <u>Resolution:</u> A senior member of the lab responded by email on October 11, 2018 stating the sharps container was discarded as hazardous and replaced with a new one after the inspection on September 14, 2018.
Lingrel	Diet Storage	Conv. Freezer	X			
Wieczorek	Mice	Procedure	X			
Shull Lingrel	Mice	Procedure	X			An AVMA compliant CO₂ inhalation apparatus located in this area.
Lorenz Koch* Kranias* Owens Puga Schultz Tranter	Mice Rats*	Procedure Survival Sx		X		(Koch) One full Hydrogel® container was expired 12/2017. <u>Resolution:</u> The PI responded by email on October 19, 2018 stating the expired container of Hydrogel® was discarded on September 17, 2018. An AVMA compliant CO₂ inhalation apparatus located in this area.
Parks	Guinea Pigs	Procedure	X			
Parks	Guinea Pigs	Procedure	X			

University of Cincinnati
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Sadayappan	Mice	Procedure		X		(Sadayappan) Label on anesthesia machine vaporizer indicated calibration service due 3/2018. Resolution: A senior member of the lab responded by email on October 23, 2018 stating the vaporizer was serviced and the next service due date was labeled as 10/2019. (Sadayappan) Anesthesia scavenger canister was saturated when weighed at time of inspection. Resolution: A senior member of the lab responded by email on October 23, 2018 stating the canister was replaced by one that was labeled with the initial weight and dated on October 19, 2018.
Owens Peairs	Mice	Procedure		X		(Owen) One cloth covered chair present at animal use bench. Resolution: A senior member of the lab responded by email on October 16, 2018 stating that the cloth chair had been removed and replaced with one with sanitizable surfaces and a label indicating it for use only in the animal procedure area on October 16, 2018. (Owen) The diets in conventional freezer inconsistently labeled. Resolution: A senior member of the lab responded by email on October 16, 2018 stating that the identity and expiration dates were placed on all the diets present on October 16, 2018.
Borchers	Mice	Procedure	X			
McCormack* Borchers	Mice Rats*	Procedure	X			
McCormack	Diet Storage Walk-In Refrigerator		X			
Norman	Mice Rats	Survival Sx	X			
Fan Kranias	Mice Rats	Procedure	X			
Fan Kranias	Mice Rats	Drug Storage	X			
Fan Kranias	Mice Rats	Procedure	X			

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semi-Annual Facilities Inspection

Inspection Team: NNT & YAZ
LAMS Veterinarian: N/A
Safety Representative: Sandy G.
Date: September 12, 2018

Zone 8:
Contacts: Lab PI
IACUC Office: DAC & NCJ
Last Performed: March 14, 2018

PI Controlled Satellite Procedure Locations							
*A = acceptable; M = minor deficiency; S = significant deficiency (is/may be a threat to animal health/safety)							
Room	PI	Species	Use	A	M	S	Comments
	Soleimani	Diet Storage Walk-in Refrigerator		X			
	Lentsch Caldwell Makley	Mice Rats	Procedure Survival Sx		X		(Lentsch) Tracking use of diluted anesthetics. Resolution: A senior member of the lab responded by email on October 17, 2018 stating from this time forward the diluted vials of anesthetic in secondary containers will have the use volumes tracked on separate forms from the original manufacturer container tracking sheet. (Lentsch) Surgical pad appeared soiled. Resolution: A senior member of the lab responded by email on October 17, 2018 explaining that the warming pad was scrubbed with abrasive cleanser on October 15, 2018. Barrier pads will be used more extensively to prevent future staining. Several unprotected sharps on procedure bench. Resolution: A senior member of the lab responded by email on October 17, 2018 stating that all the sharps on the benchtop were properly disposed on October 15, 2018. In the future fresh sharps will be used for each occasion and immediately disposed.
	Lentsch	Mice	Procedure		X		(Lentsch) The anesthesia inhalation chamber had feces on bottom. Resolution: A senior member of the lab responded by email on October 17, 2018 stating the floor surface of the inhalation chamber was cleaned and disinfected on October 15, 2018 (Lentsch) The passive waste gas canister was over the 50 gm limit when weighed. . Resolution: A senior member of the lab responded by email on October 17, 2018 stating the waste gas canister was disposed on October 15, 2018 and replaced with a newly weighed and dated unit. Additionally, the same maintenance was performed on the large evacuated charcoal waste gas canister on October 15, 2018.
	Lentsch Caldwell Makley	Mice	Procedure Survival Sx	X			

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Zone 8: [REDACTED]
Contacts: Lab PI
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	Lentsch	Rats Mice	Procedure			X	(Lentsch) Cork board work surface was stained with blood. Resolution: A senior member of the lab responded by email on October 17, 2018 stating that the cork board was discarded on October 15, 2018. In the future barrier covers will be used to prevent this staining. (Lentsch) Shelf across from aisle 466 needed to be labeled for in-vitro use for items. Resolution: A senior member of the lab responded by email on October 17, 2018 stating the shelves were labeled for "in-vitro use only" to properly identify the supplies being stored there on October 15, 2018.
	Caldwell Fan Lentsch Makley	Mice	Housing Procedure				(Caldwell) Charcoal waste gas canister was over the 50 gm saturation weight. Resolution: A senior member of the lab responded by email on October 16, 2018 stating the waste gas canister was replaced with a newly weighed and dated unit on October 16, 2018. AVMA compliant CO₂ inhalation apparatus located in this area.

University of Cincinnati
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Zone 8: [REDACTED]
Contacts: Lab PI
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	Burns	Mice	Procedure				One cloth covered chair in procedure room. Resolution: A senior member of the lab responded by email on October 15, 2018 stating the cloth covered chair was removed from the procedure lab on October 15, 2018. One bag of microtainer tubes expired 4/2017. Resolution: A senior member of the lab responded by email on October 15, 2018 stating the bag of microtainer tubes was labeled for in-vitro use only on October 15, 2018. Several ceiling tiles had water staining. Resolution: A senior member of the lab responded by email on October 15, 2018 indicating a work request (#226559) was placed with FM on October 15, 2018. Replace vent grill in ceiling. Resolution: A senior member of the lab responded by email on October 15, 2018 indicating a work request (#226559) was placed with FM on October 15, 2018. AVMA compliant CO₂ inhalation apparatus located in this area.
	Robson	Mice	Procedure	X			
	Robson	Mice	Procedure	X			
	Luo	Mice	Procedure		X		Cloth covered chair in procedure room. Resolution: The PI responded by email on October 26, 2018 stating that the cloth covered chair was removed from the animal procedure area on October 25, 2018.
	Forbes Deering	Rats	Procedure	X			
	Montrose	Mice	Procedure	X			
	Montrose	Mice	Procedure	X			
	Montrose	Mice	Procedure	X			
	Montrose	Mice	Procedure	X			
	Montrose	Mice	Procedure	X			

**University of Cincinnati
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Inspection Team: NNT & YAZ
LAMS Veterinarian: N/A
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Zone 8: [REDACTED]
Contacts: Lab PI
IACUC Office: DAC & NCJ
Last Performed: March 14, 2018

[REDACTED]	Hao	Mice	Procedure Survival Sx		X		Vaporizer in anesthesia machine did not have next service due date labeled on the side. Resolution: A senior member of the lab responded by email on October 23, 2018 stating that the new vaporizer was labeled for new service due on (1/2021) on October 23, 2018.
	Gudelsky	Mice Rats	Procedure	X			
	Zhang	Mice Rats	Procedure	X			

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semi-Annual Facilities Inspection

Inspection Team: MTB & VYB
LAMS Veterinarian: N/A
Safety Representative: Sandy G.
Date Inspected: September 12, 2018

Zone 9:
Contacts: Lab PI / Staff
IACUC Office: DAC & NCJ
Last Inspected: March 14, 2018

PI Controlled Satellite Procedure Locations							
*A = acceptable; M = minor deficiency; S = significant deficiency (is/may be a threat to animal health/safety)							
Room	PI	Species	Use	A	M	S	Comments
	Lorenz Habeebah Lingrel Koch Kranias McCormack Norman Schultz Shull Tranter	Mice Rats	Housing Procedure	X			
	Lorenz	Mice	Ante Room	X			
	Lorenz Habeebah Koch Kranias McCormack Norman Schultz Shull Tranter	Mice	Procedures Survival Sx	X			
	Lorenz Habeebah Koch Kranias McCormack Norman Schultz Shull Tranter	Mice	Procedure	X			
	Lorenz Habeebah Lingrel Koch Kranias McCormack Norman Schultz Shull	Mice	Procedure	X			

University of Cincinnati
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2018-2 Semi-Annual Facilities Inspection

Inspection Team: MTB & VYB
LAMS Veterinarian: N/A
Safety Representative: Sandy G.
Date Inspected: September 12, 2018

Zone 9: XXXXXXXXXX
Contacts: Lab PI / Staff
IACUC Office: DAC & NCJ
Last Inspected: March 14, 2018

	Lorenz Habeebah Koch Kranias McCormack Norman Schultz Tranter	Mice	Procedure	X			
	Mackenzie	Mice Rats Frogs*	Procedure Survival Sx*	X			One cloth covered chair present at procedure bench. Resolution: A senior member of the lab responded by email on October 19, 2018 stating the chair was moved away from the procedure bench area on October 18, 2018. One box of 4-0 silk suture expired 9/1996. Resolution: A senior member of the lab responded by email on October 19, 2018 stating the expired suture was discarded on October 18, 2018.
	MacLennan	Mice	Procedure	X			
	MacLennan	Mice	Procedure Survival Sx		X		Cart next to surgery area needed a fresh cover on the deck. Resolution: The IACUC Office re-inspected this area to look at the drug storage records and noted that the cart had a fresh disposable protective cover on October 23, 2018. One box of 9-0 silk suture was thought to be expired based on the aged condition of the box and no printed expiration seen. Resolution: The IACUC Office re-inspected this area to look at the drug storage records and verified that the expired suture was disposed on October 23, 2018.
	Heiny	Mice	Procedure	X			
	Heiny	Mice	Procedure	X			
	Norman	Mice Rats	Procedure		X		One box of Millipore® sterile syringe filters were expired 7/2005. Resolution: A senior member of the lab responded by email on October 17, 2018 stating the expired filters were disposed and replaced with new in-date material on October 17, 2018.

**University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semi-Annual Facilities Inspection**

Inspection Team: MTB & VYB

LAMS Veterinarian: N/A

Safety Representative: Sandy G.

Date Inspected: September 12, 2018

Zone 9: [REDACTED]

Contacts: Lab PI / Staff

IACUC Office: DAC & NCJ

Last Inspected: March 14, 2018

[REDACTED]	McGuire Ngwenya	Rats	Procedure	X			
	McGuire Ngwenya	Rats	Procedure	X			
	Parks	Guinea Pigs	Procedure	X			
	Parks	Drug Storage		X			

University of Cincinnati
Institutional Animal Care & Use Committee
2018-2 Semi-Annual Program Review

Evaluation Team: GFB, GES
LAMS Veterinarian: JTW

Evaluation Date: September 25, 2018

Zone 10a: UC Program Review
LAMS Rep: MLB
IACUC Office: DAC & NCJ
Last Evaluated: March 26, 2018

A – Acceptable M – Minor Deficiency S – Significant Deficiency C – Change in Program NA – Not Applicable					
1. Animal Care and Use Program					
	A	M	S	C	NA
a Responsibility for animal well-being is assumed by all members of the program	X				
b IO has authority to allocate needed resources	X				
c Resources necessary to manage program of veterinary care	X				
d Sufficient resources are available to manage the program, including training of personnel in accord with regulations and the <i>Guide</i>	X				
e Program needs are regularly communicated to IO by AV and/or IACUC	X				
f Responsibilities for daily animal care and facility management are assigned to specific individual(s) when a full-time veterinarian is not available on site					X
g Inter-institutional collaborations are described in formal written agreements	X				
h Written agreements address responsibilities, animal ownership, and IACUC oversight	X				
2. Disaster Planning and Emergency Preparedness					
	A	M	S	C	NA
a Disaster plans for each facility to include satellite locations are in place	X				
b Plans include provisions for euthanasia	X				
c Plans include triage plans to meet institutional and investigator's need	X				
d Plans define actions to prevent animal injury or death due to HVAC or other failures	X				
e Plans describe preservation of critical or irreplaceable animals	X				
f Plans include essential personnel and their training	X				
g Animal facility plans are approved by the institution and incorporated into overall response plan	X				
h Law enforcement and emergency personnel are provided a copy and integration with overall plan is in place	X				
3. IACUC					
	A	M	S	C	NA
a Meets as necessary to fulfill responsibilities	X				
b IACUC Members named in protocols or with conflicts recuse themselves from protocol decisions	X				
c Continuing IACUC oversight after initial protocol approval is in place	X				
d IACUC evaluates the effectiveness of training programs	X				
4. IACUC Protocol Review - Special Considerations					
	A	M	S	C	NA
a Humane endpoints are established for studies that involve tumor models, infectious diseases, vaccine challenge, pain modeling, trauma, production of monoclonal antibodies, assessment of toxicologic effects, organ or system failure, and models of cardiovascular shock	X				
b For pilot studies, a system to communicate with the IACUC is in place	X				
c For genetically modified animals, enhanced monitoring and reporting is in place	X				
d Restraint devices are justified in the animal use protocols	X				
e Alternatives to physical restraint are considered	X				

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f	Period of restraint is the minimum to meet scientific objectives	X				
g	Training of animals to adapt to restraint is provided	X				
h	Animals that fail to adapt are removed from study	X				
i	Appropriate observation intervals of restrained animals are provided	X				
j	Veterinary care is provided if lesions or illness result from restraint	X				
k	Explanations of purpose and duration of restraint are provided to study personnel	X				
l	Multiple surgical procedures on a single animal are justified and outcomes evaluated	X				
m	Major versus minor surgical procedures are evaluated on a case-by-case basis	X				
n	Multiple survival procedure justifications in non-regulated species conform to regulated species standards	X				
o	Animals on food/fluid restriction are monitored to ensure nutritional needs are met	X				
p	Body weights for food/fluid restricted animals are recorded at least weekly	X				
q	Daily written records are maintained for food/fluid restricted animal	X				
r	Pharmaceutical grade chemicals are used , when available, for animal-related procedures	X				
s	Non-pharmaceutical grade chemicals are described, justified, and approved by IACUC	X				
t	Investigators conducting field studies know zoonotic diseases, safety issues, laws and regulations applicable in study area	X				
u	Disposition plans are considered for species removed from the wild	X				
v	Toe-clipping only used when no alternative, performed aseptically and with pain relief	X				

5. IACUC Membership and Functions

		A	M	S	C	NA
a	IACUC is comprised of at least 5 members, appointed by CEO	X				
b	Members include a veterinarian, a scientist, a nonscientist, and a nonaffiliated non-lab animal user	X				
c	IACUC authority and resources for oversight and evaluation of institution's program are provided	X				
d	IACUC conducts semi-annual evaluations of institutional animal care and use program	X				
e	Conducts semi-annual inspections of institutional animal facilities	X				
f	IACUC organizationally reports to the Institutional Official	X				
g	Methods for reporting and investigating animal welfare concerns are in place	X				
h	Reviews and investigates concerns about animal care and use at institution	X				
i	Procedures are in place for review, approval, and suspension of animal activities	X				
j	Procedures are in place for review and approval of significant changes to approved activities	X				
k	Policies are in place for special procedures (e.g., genetically modified animals, restraint, multiple survival surgery, food and fluid regulation, field investigations, agricultural animals)	X				
l	Requests for exemptions from major survival surgical procedure restrictions are made to USDA/APHIS	X				

6. IACUC Training

A M S C NA

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a All IACUC members should receive:					
i Formal orientation to institution's program	X				
ii Training on legislation, regulations, guidelines, and policies	X				
iii Training on how to inspect facilities and labs where animal use or housing occurs	X				
iv Training on how to review protocols as well as evaluate the program	X				
v Ongoing training/education	X				
7. IACUC Records and Reporting Requirementsⁱ					
	A	M	S	C	NA
a Semiannual report to the IO					
i Submitted to IO every 6 months	X				
ii Compiles program review and facility inspection(s) results (includes all program and facility deficiencies)	X				
iii Includes minority IACUC views	X				
iv Describes IACUC-approved departures from the <i>Guide</i> or PHS Policy and the reasons for each departure	X				
v Distinguishes significant from minor deficiencies	X				
vi Includes a plan and schedule for correction for each deficiency identified	X				
b Reports to OLAW					
i Annual report to OLAW documents program changes, dates of the semiannual program reviews and facility inspections and includes any minority views	X				
ii Promptly advises OLAW of serious/ongoing <i>Guide</i> deviations or PHS Policy noncompliance	X				
iii Institute must promptly advise OLAW of any suspension of an animal activity by the IACUC	X				
c Reports to U.S. Department of Agriculture (USDA) or Federal funding agency					
i Annual report to USDA contains required information including all exceptions/exemptions	X				
ii Reporting mechanism to USDA is in place for IACUC-approved exceptions to the regulations and standards	X				
iii Reports are filed within 15 days for failures to adhere to timetable for correction of significant deficiencies	X				
iv Promptly reports suspensions of activities by the IACUC to USDA and any Federal funding agency	X				
d Records					
i IACUC meeting minutes and semiannual reports to the IO are maintained for 3 years	X				
ii Records of IACUC reviews of animal activities include all required information	X				
iii Records of IACUC reviews are maintained for 3 years after the completion of the study	X				
8. Veterinary Care (See also 10c - Veterinary Care)					
	A	M	S	C	NA
a An arrangement for veterinarian(s) with training or experience in lab animal medicine is in place including backup veterinary care	X				

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b	Veterinary access to all animals is provided	X				
c	Direct or delegated authority is given to the veterinarian to oversee all aspects of animal care and use	X				
d	Veterinarian provides consultation when pain and distress exceeds anticipated level in protocol	X				
e	Veterinarian provides consultation when interventional control is not possible	X				
f	If part time /consulting veterinarian, visits meet programmatic needs					X
g	Regular communication occurs between veterinarian and IACUC	X				
h	Veterinarian(s) have experience and training in species used	X				
i	Veterinarian(s) have experience in facility administration/management	X				
9. Personnel Qualifications and Training		A	M	S	C	NA
a	All personnel are adequately educated, trained, and/or qualified in basic principles of laboratory animal science. Personnel included:					
i	Veterinary/other professional staff	X				
ii	IACUC members	X				
iii	Animal care personnel	X				
iv	Research investigators, instructors, technicians, trainees, and students	X				
b	Continuing education for program and research staff provided to ensure high quality care and reinforce training	X				
c	Training is available prior to starting animal activity	X				
d	Training is documented	X				
i	Methods for reporting concerns	X				
ii	Humane practices of animal care (e.g., housing, husbandry, handling)	X				
iii	Humane practices of animal use (e.g., research procedures, use of anesthesia, pre- and post-operative care, aseptic surgical techniques and euthanasia)	X				
iv	Research/testing methods that minimize numbers necessary to obtain valid results	X				
v	Research/testing methods that minimize animal pain or distress	X				
vi	Use of hazardous agents, including access to OSHA chemical hazard notices where applicable	X				
vii	Animal care and use legislation	X				
viii	IACUC function	X				
ix	Ethics of animal use and Three R's	X				
10. Occupational Health and Safety of Personnel		A	M	S	C	NA
a	Program is in place and is consistent with federal, state, and local regulations	X				
b	Program covers all personnel who work in laboratory animal facilities	X				

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c Changing, washing, and showering facilities are available as appropriate	X				
d Hazardous facilities are separated from other areas and identified as limited access	X				
e Personnel training is provided based on risk (e.g., zoonoses, hazards, personal hygiene, special precautions, animal allergies)	X				
f Personal hygiene procedures are in place (e.g., work clothing, eating/drinking/smoking policies)	X				
g Procedures for use, storage, and disposal of hazardous biologic, chemical, and physical agents are in place	X				
h Personal Protective Equipment for the work area is appropriate and available	X				
i Program for medical evaluation and preventive medicine for personnel includes:					
i Pre-employment evaluation including health history	X				
ii Immunizations as appropriate (e.g., rabies, tetanus) and tests as appropriate	X				
iii Zoonosis surveillance as appropriate (e.g., Q-fever, tularemia, Hantavirus, plague)	X				
iv Procedures for reporting and treating injuries, including accidents, bites, allergies, etc.	X				
v Promotes early diagnosis of allergies including preexisting conditions	X				
vi Considers confidentiality and other legal factors as required by federal, state and local regulations	X				
vii If serum samples are collected, the purpose is consistent with federal and state laws	X				
j Waste anesthetic gases are scavenged	X				
k Hearing protection is provided in high noise areas	X				
l Respiratory protection is available when performing airborne particulate work	X				
m Special precautions for personnel who work with nonhuman primates, their tissues or body fluids include:					
i Tuberculosis screening provided for all exposed personnel					X
ii Training and implementation of procedures for bites, scratches, or injuries associated with macaques					X
iii PPE is provided including gloves, arm protection, face masks, face shields, or goggles					X
iv Injuries associated with macaques are carefully evaluated and treatment implemented					X
n Occupational safety and health of field studies is reviewed by OSH committee or office	X				
11. Personnel Security	A	M	S	C	NA
a Preventive measures in place include pre-employment screening, and physical and IT security	X				
12. Investigating & Reporting Animal Welfare Concerns	A	M	S	C	NA
a Methods for investigating and reporting animal welfare concerns are established	X				
b Reported concerns and corrective actions are documented	X				
c Mechanisms for reporting concerns are posted in facility and at applicable website with instructions	X				

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i Includes multiple contacts	X				
ii Includes anonymity, whistle blower policy, nondiscrimination and reprisal protection	X				

Legend

A = acceptable
M = minor deficiency
S = significant deficiency (is or may be a threat to animal health or safety)
C = change in program (PHS Policy - include in semiannual report to IO and in annual report to OLAW)
NA = not applicable

Notes: none

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Zone 10b: Departures from Guide
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Departures from “*The Guide*” 2018-1 Semi-Annual Inspection

Un-Approved Departures from “*The Guide*”

PI & Protocol Number	Guide Reference	Species	Protocol Description
none	N/A	N/A	N/A

IACUC Approved Departures from “*The Guide*”

PI & Protocol Number	Guide Reference	Species	Protocol Description
	<u>Illumination</u> pp. 47-49	fish	<u>Approved Departure:</u> The IACUC approved motion studies monitored by infrared light beams conducted in a dark environment for up to 3 days.
	time controlled lighting system should be used to provide diurnal cycle	rat / mouse	<u>Approved Departure:</u> The IACUC approved light cycle changes for controlled energy homeostasis. Approval allowed the light/dark cycle to be altered for up to 20 dark hours a day, 20 light hours a day, or constant darkness for up to three weeks. Daily observations in constant dark are performed using dim red illumination.
	<u>Temperature & Humidity</u> pp. 43-45 should be housed within temperature and humidity ranges appropriate for species	rat / mouse	<u>Approved Departure:</u> The IACUC approved rodents to be held in cold environments maintained at or slightly above 4°C (40°F) between 1 and 30 hours. Longer exposures are monitored every two to six hours for signs of hypothermia. If hypothermia occurs the animal will be removed from study.

<i>Space p. 55</i> <i>should have sufficient space to express species specific behaviors and postural adjustments</i>	pig pig pig rabbit dog-cat-rabbit	Approved Departure: <i>The IACUC approved singly housed pig enclosures for short-term pig surgical studies.</i> Approved Departure: <i>The IACUC approved singly housed enclosures to protect surgical incisions and implanted catheters.</i> Approved Departure: <i>The IACUC approved singly housed enclosures to allow for post-surgical recovery and accurate administration of critical treatments.</i> Approved Departure: <i>The IACUC approved singly housed rabbits for 6 weeks following joint surgery to mimic conditions in human clinical practice where limited movement facilitates reduced or no immobilization of the joint during recovery.</i> Approved Departure: <i>The IACUC approved singly housed enclosures for client owned animals for short-term residency at facility to prevent animal aggression, disease transmission, and to support post-operative care.</i>

	rat / mouse	Approved Departure: <i>The IACUC approved singly housed rodents for a variety of scientific justifications (e.g. metabolic studies, surgical incision protection, food and water intake measurements, treatment delivery, telemetry data collection, adaptive thermogenecity studies, exercise/physical activity studies, and use of aging male mice – male aggression, cross-contamination of treatments, physical interaction testing.</i>
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	rat / mouse	<u>Approved Departure:</u> The IACUC approved either singly housed or overcrowded cages as a mild chronic or for dominance social interaction studies.
	mouse	<u>Approved Departure:</u> The IACUC approved to allow pregnant females to be housed singly for up to 35 days to properly to allow uterine electroporation to be performed.
<u>Space</u> p. 55 should have sufficient space to express species specific behaviors and postural adjustments	rat / mouse	<u>Approved Departure:</u> The IACUC approved smaller than standard size caging for rodents while undergoing metabolic evaluation in calorimetric chambers.
	rat	<u>Approved Departure:</u> The IACUC approved housing of pygmy rats in cages that have lower than standard wall height following thermal injury procedures for ease of access to diet.
<u>Surveillance,</u> <u>Diagnosis, Treatment</u>		

<i>and Control of Disease,</i> <i>p. 112</i> <i>should be observed for signs of illness injury or abnormal behavior</i>	fish	Approved Departure: The IACUC approved the suspension of daily animal observations while conducting dark environment studies for up to 72 hours. Published literature indicates that similar fish are not stressed by not receiving diet for 72 hours or longer.
<i>Floors pp. 137-138</i> <i>should be moisture resistant, nonabsorbent, smooth and impact resistant</i>	dog	Approved Departure: The IACUC approved carpeted floors in the satellite procedure location. Rubber floor mats are placed over a carpeted floor in order to protect a non-moisture resistant surface. The carpet is critical to maintaining an acoustical environment for collecting accurate electronic auditory brainstem measurements.
<i>Terrestrial Housing Microenvironment pp. 51-52</i> <i>should be solid with adequate bedding /substrate for resting and sleeping</i>	rat / mouse	Approved Departure: The IACUC approved the use wire bar flooring in cages to allow accurate assessment of food consumption, to prevent non-nutritive substance intake, and fecal boli or urine measurements for up to 3 months. In other instances, wire mesh flooring is used to keep bedding material out of food dispensers for periods of up to 14 days.
<i>Terrestrial Housing Microenvironment pp. 52</i> <i>should provide adequate bedding /substrate for resting and sleeping</i>	mouse / rat hamster	Approved Departure: The IACUC approved the use wire cage bottoms when housing animals after injections of radionuclides to separate and reduce reintroduction contamination exposure to the animals from "hot" urine and feces.
<i>Terrestrial Housing Microenvironment pp. 52</i> <i>should provide adequate bedding /substrate for resting and sleeping</i>	rat / mouse	Approved Departure: The IACUC approved singly housed rodents without contact bedding while in calorimetric chambers to prevent the absorption of CO₂, a critical measurement of animal metabolism or to prevent ingestion of bedding during food restriction studies.

	<i>Environmental Enrichment</i> pp. 52-54 should be provided to enhance animal well-being	frog rat / mouse	Approved Departure: The IACUC approved withholding enrichment for aquatic environments to prevent the introduction of plastic based endocrine disrupters from interfering with developmental endocrinology studies. Approved Departure: The IACUC approved no enrichment for some chronic variable stress studies. For other instances withholding enrichment while rodents are in metabolic chambers to prevent material from interfering with CO₂ measurements or the collection of feces and urine.

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Veterinary Care

Date: **September 10 - 25, 2018**

1. Clinical Care and Management	A	M	S	C	NA
• Veterinary program offers high quality of care and ethical standards (<i>Guide, p 105</i>) [must]	X				
• Veterinarian provides guidance to all personnel to ensure appropriate husbandry, handling, treatment, anesthesia, analgesia, and euthanasia (<i>Guide, p 106</i>)	X				
• Veterinarian provides oversight to surgery and perioperative care (<i>Guide, p 106</i>)	X				
• Veterinary care program is appropriate for program requirements (<i>Guide, pp 113-114</i>)	X				
• Veterinarian(s) is familiar with species and use of animals and has access to medical and experimental treatment records (<i>Guide, p 114</i>)	X				
• Procedures to triage and prioritize incident reports are in place (<i>Guide, p 114</i>)	X				
• Procedures are in place to address:					
o Problems with experiments to determine course of treatment in consultation with investigator (<i>Guide, p 114</i>)	X				
o Recurrent or significant health problems with the IACUC and documentation of treatments and outcomes (<i>Guide, p 114</i>)	X				
o Veterinary review and oversight of medical and animal use records (<i>Guide, p 115</i>)	X				
• Procedures established for timely reporting of animal injury, illness, or disease (<i>Guide, p 114</i>) [must]	X				
• Procedures established for veterinary assessment, treatment, or euthanasia (<i>Guide, p 114</i>) [must]	X				
• Veterinarian is authorized to treat, relieve pain, and/or euthanize (<i>Guide, p 114</i>) [must]	X				
2. Animal Procurement and Transportation/Preventive Medicine	A	M	S	C	NA
• Procedures for lawful animal procurement are in place (<i>Guide, p 106</i>) [must]	X				
• Sufficient facilities and expertise are confirmed prior to procurement (<i>Guide, p 106</i>)	X				
• Procurement is linked to IACUC review and approval (<i>Guide, p 106</i>)	X				
• Random source dogs and cats are inspected for identification (<i>Guide, p 106</i>)					X
• Population status of wildlife species is considered prior to procurement (<i>Guide, p 106</i>)	X				
• Appropriate records are maintained on animal acquisition (<i>Guide, p 106</i>)	X				
• Animal vendors are evaluated to meet program needs and quality (<i>Guide, p 106</i>)	X				
• Breeding colonies are based on need and managed to minimize numbers (<i>Guide, p 107</i>)	X				
• Procedures for compliance with animal transportation regulations, including international requirements, are in place (<i>Guide, p 107</i>) [must]	X				
• Transportation is planned to ensure safety, security and minimize risk (<i>Guide, p 107</i>)	X				
• Movement of animals is planned to minimize transit time and deliveries are planned to ensure receiving personnel are available (<i>Guide, pp 107-108</i>)	X				
• Appropriate loading and unloading facilities are available (<i>Guide, p 109</i>)	X				
• Environment at receiving site is appropriate (<i>Guide, p 109</i>)	X				

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• Policies in place on separation by species, source, and health status (<i>Guide</i> , pp 109, 111-112)	X				
• Procedures in place for quarantine to include zoonoses prevention (<i>Guide</i> , p 110)	X				
• Quarantined animals from different shipments are handled separately or physically separated (<i>Guide</i> , p 110)	X				
• Procedures in place for stabilization/acclimation (<i>Guide</i> , pp 110-111)	X				
• Policies in place for isolation of sick animals (<i>Guide</i> , p 112)	X				
• Program is in place for surveillance, diagnosis, treatment and control of disease to include daily observation (<i>Guide</i> , p 112)	X				
• Diagnostic resources are available for preventive health program (<i>Guide</i> , p 112)	X				

3. Surgery

	A	M	S	C	NA
• Surgical outcomes are assessed and corrective changes instituted (<i>Guide</i> , p 115)	X				
• Researchers have appropriate training to ensure good technique (<i>Guide</i> , p 115) [must]	X				
• Pre-surgical plans are developed and include veterinary input (e.g., location, supplies, anesthetic and analgesic use, peri-operative care, recordkeeping) (<i>Guide</i> , p 116)	X				
• Aseptic surgery is conducted in dedicated facilities or spaces, unless exception justified and IACUC approved (<i>Guide</i> , p 116)	X				
• Surgical procedures including laparoscopic procedures are categorized as major or minor (<i>Guide</i> , pp 117-118)	X				
• For non-survival surgery, the site is clipped, gloves are worn and instruments and area are clean (<i>Guide</i> , p 118)	X				
• Aseptic technique is followed for survival surgical procedures (<i>Guide</i> , pp 118-119)	X				
• Effective procedures for sterilizing instruments and monitoring expiration dates on sterile packs are in place (<i>Guide</i> , p 119)	X				
• Procedures for monitoring surgical anesthesia and analgesia are in place (<i>Guide</i> , p 119)	X				
• For aquatic species, skin surfaces are kept moist during surgical procedures (<i>Guide</i> , p 119)	X				
• Post-operative monitoring and care are provided by trained personnel and documented (e.g., thermoregulation, physiologic function, analgesia, infection, removal of skin closures) (<i>Guide</i> , pp 119-120)	X				

4. Pain, Distress, Anesthesia and Analgesia

	A	M	S	C	NA
• Guidelines for assessment and categorization of pain, distress and animal wellbeing are provided during training (<i>Guide</i> , p 121)	X				
• Selection of analgesics and anesthetics is based on professional veterinary judgment (<i>Guide</i> , p 121)	X				
• Painful procedures are monitored to ensure appropriate analgesic management (<i>Guide</i> , p 122)	X				
• Nonpharmacologic control of pain is considered as an element of post-procedural care (<i>Guide</i> , p 122)	X				
• Procedures are in place to assure antinociception before surgery begins (<i>Guide</i> , p 122) [must]	X				
• Guidelines for selection and use of analgesics and anesthetics are in place and regularly reviewed and updated (<i>Guide</i> , p 122)	X				

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• Special precautions for the use of paralytics are in place to ensure anesthesia ⁱ (<i>Guide</i> , p 123)	X				
5. Euthanasia	A	M	S	C	NA
• Methods are consistent with AVMA Guidelines on Euthanasia unless approved by the IACUC (<i>Guide</i> , p 123)	X				
• Standardized methods are developed and approved by the veterinarian and IACUC that avoid distress and consider animal age and species (<i>Guide</i> , pp 123-124)	X				
• Training is provided on appropriate methods for each species and considers psychological stress to personnel (<i>Guide</i> , p 124)	X				
• Procedures and training are in place to ensure death is confirmed (<i>Guide</i> , p 124) [must]	X				
6. Drug Storage and Control	A	M	S	C	NA
• Program complies with federal regulations for human and veterinary drugs (<i>Guide</i> , p 115) [must]	X				
• Drug records and storage procedures are reviewed during facility inspections (<i>Guide</i> , p 115) <i>Reminded several labs about keeping a drug inventory sheet that is active for a Minimum of two years.</i>	X				
• Procedures are in place to ensure analgesics and anesthetics are used within expiration date (<i>Guide</i> , p 122) [must]	X				
• Anesthetics and analgesics are acquired, stored, and their use and disposal are recorded legally and safely (<i>Guide</i> , p 122)	X				

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NA = not applicable

NOTES: none

I. Semiannual Facility Inspection Checklist

Terrestrial Animal Housing and Support Areas

Date: **September 11, 14, 17, 18, 19, 20, & 24 2018**

Location: **All Areas (except where noted)**

					NA
• Location:					
○ animal areas separate from personnel areas (<i>Guide</i> , p 134)	X				
○ separation of species (<i>Guide</i> , p 111)	X				
○ separation by disease status (<i>Guide</i> , p 111)	X				
○ security and access control (<i>Guide</i> , p 151)	X				
• Construction:					

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○ corridors (<i>Guide</i> , p 136)	X				
○ animal room doors (<i>Guide</i> , p 137)	X				
○ exterior windows (<i>Guide</i> , p 137)	X				
○ floors (<i>Guide</i> , p 137)	X				
○ drainage (<i>Guide</i> , p 138)	X				
○ walls and ceilings (<i>Guide</i> , p 138)	X				
○ heating ventilation and air conditioning (<i>Guide</i> , p 139)	X				
○ power and lighting (<i>Guide</i> , p 141)	X				
○ noise control (<i>Guide</i> , p 142)	X				
○ vibration control (<i>Guide</i> , p 142)	X				
○ environmental monitoring (<i>Guide</i> , p 143)	X				
• Room/Cage:					
○ temperature and humidity (<i>Guide</i> , p 43)	X				
○ ventilation and air quality (<i>Guide</i> , p 45)	X				
○ illumination (<i>Guide</i> , p 47)	X				
○ noise and vibration (<i>Guide</i> , p 49)	X				
• Primary Enclosure:					
○ space meets physiologic, behavioral ⁱⁱ , and social ⁱⁱⁱ needs (<i>Guide</i> , pp 51, 55-63) several rodent protocols have approved exceptions for smaller than standard space as an experimental stressor variable	X				
○ secure environment provided (<i>Guide</i> , p 51)	X				
○ durable, nontoxic materials in good repair and no risk of injury (<i>Guide</i> , p 51)	X				
○ flooring is safe and appropriate for species (<i>Guide</i> , p 51)	X				
○ adequate bedding and structures for resting, sleeping, breeding (<i>Guide</i> , p 52)	X				
○ objective assessments of housing and management are made (<i>Guide</i> , p 52)	X				
○ procedures for routine husbandry are documented (<i>Guide</i> , p 52)	X				
○ socially housed animals can escape or hide to avoid aggression (<i>Guide</i> , p 55)	X				
○ cage height provides adequate clearance (<i>Guide</i> , p 56)	X				
○ animals express natural postures, can turn around, access food and water, and rest away from urine and feces (<i>Guide</i> , p 56) [must]	X				
○ rationale ^{iv} for <i>Guide</i> /USDA space exceptions approved by IACUC and based on performance indices (<i>Guide</i> , p 56)	X				
○ dogs and cats allowed to exercise and provided human interaction (<i>Guide</i> , p 58)	x				
○ nonhuman primates are socially housed except for scientific, veterinary or behavior reasons (<i>Guide</i> , pp 58-59)					X
○ single housing of nonhuman primates is for shortest duration possible (<i>Guide</i> , p 60)					X

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o opportunities for release into larger enclosures is considered for single caged nonhuman primates (<i>Guide</i> , p 60)					X
o agricultural animals are housed socially (<i>Guide</i> , p 60)	X				
o food troughs and water devices for agricultural animals allow access for all animals (<i>Guide</i> , p 60)	X				
• Environmental Enrichment, Behavioral and Social Management:					
o structures and resources promote species typical behavior (<i>Guide</i> , pp 52-54)	X				
o novelty of enrichment is considered (<i>Guide</i> , p 53)	X				
o species specific plans for housing including enrichment, behavior and activity are developed and reviewed regularly by IACUC, researchers and veterinarian (<i>Guide</i> , pp 53, 58, 60, 63)	X				
o animal care personnel receive training to identify abnormal animal behaviors (<i>Guide</i> , p 53)	X				
o stability of pairs or groups is monitored for incompatibility (<i>Guide</i> , p 64)	X				
o single housing is justified for social species (<i>Guide</i> , p 64)	X				
o single housing is limited to the minimum period necessary (<i>Guide</i> , p 64)	X				
o additional enrichment for single housed animals is provided (<i>Guide</i> , p 64)	X				
o single housing is reviewed regularly by IACUC and veterinarian (<i>Guide</i> , p 64)	X				
o habituation to routine procedures is part of enrichment program (<i>Guide</i> , p 64)	X				
• Sheltered or Outdoor Housing: (e.g., barns, corrals, pastures, islands)					
o weather protection and opportunity for retreat (<i>Guide</i> , p 54) [must]					X
o appropriate size (<i>Guide</i> , p 54)					X
o ventilation and sanitation of shelter (no waste/moisture build-up) (<i>Guide</i> , p 54)					X
o animal acclimation (<i>Guide</i> , p 55)					X
o social compatibility (<i>Guide</i> , p 55)					X
o roundup/restraint procedures (<i>Guide</i> , p 55)					X
o appropriate security (<i>Guide</i> , p 55)					X
• Naturalistic Environments:					
o animals added /removed with consideration of effect on group (<i>Guide</i> , p 55)					X
o adequate food, fresh water, and shelter ensured (<i>Guide</i> , p 55)					X
• Food:					
o feeding schedule and procedures including caloric intake management (<i>Guide</i> , pp 65-67)	X				
o contamination prevention (<i>Guide</i> , p 65)	X				
o vendor quality control (<i>Guide</i> , p 66)	X				
o storage in sealed containers (<i>Guide</i> , p 66)	X				
o expiration date labeling (<i>Guide</i> , p 66)	X				

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o vermin control (<i>Guide, p 66</i>)	X				
o rotation of stocks (<i>Guide, p 66</i>)	X				
• Water:					
o ad libitum unless justified (<i>Guide, pp 67-68</i>)	X				
o QC procedures (<i>Guide, pp 67-68</i>)	X				
• Bedding and Nesting Materials:					
o species appropriate (<i>Guide, pp 68-69</i>)	X				
o keeps animals dry (<i>Guide, pp 68-69</i>)	X				
o QC procedures (<i>Guide, pp 68-69</i>)	X				
o minimizes scientific variables (<i>Guide, pp 68-69</i>)	X				
• Sanitation:					
o frequency of bedding/substrate change (<i>Guide, p 70</i>)	X				
o cleaning and disinfection of microenvironment (<i>Guide, pp 70-71</i>)	X				
o cleaning and disinfection of macro-environment (<i>Guide, p 72</i>)	X				
o assessing effectiveness (<i>Guide, p 73</i>)	X				
• Waste Disposal:					
o procedures for collection (<i>Guide, pp 73-74</i>)	X				
o procedures for storage and disposal (<i>Guide, pp 73-74</i>)	X				
o hazardous wastes are rendered safe before removal from facility (<i>Guide, pp 73-74</i>) [must]	X				
o animal carcasses (<i>Guide, pp 73-74</i>)	X				
• Pest Control:					
o regularly scheduled (<i>Guide, p 74</i>)	X				
o documented program including control of rodent pests and insecticide use (<i>Guide, p 74</i>)	X				
• Emergency, Weekend, and Holiday Animal Care:					
o care provided by qualified personnel every day (<i>Guide, p 74</i>)	X				
o provision for accessible contact information (<i>Guide, p 74</i>)	X				
o monitoring of backup systems (<i>Guide, p 143</i>)	X				
o veterinary care available after hours, weekends, and holidays (<i>Guide, pp 74, 114</i>) [must]	X				
o a disaster plan that takes into account both personnel and animals (<i>Guide, p 75</i>)	X				
• Identification:					
o cage/rack cards contain required information (<i>Guide, p 75</i>)	X				
o genotype information included and standardized nomenclature used when applicable (<i>Guide, p 75</i>)	X				

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Recordkeeping:					
clinical records accessible and contain appropriate information (<i>Guide, pp 75-76</i>)	X				
records are provided when animals are transferred between institutions (<i>Guide, p 75</i>)	X				
Breeding Genetics and Nomenclature:					
appropriate genetic records, management and monitoring procedures (<i>Guide, p 76</i>)	X				
phenotypes that affect wellbeing are reported to IACUC and effectively managed (<i>Guide, p 77</i>)	X				
Storage:					
adequate space for equipment, supplies, food, bedding and refuse (<i>Guide, p 141</i>)	X				
bedding in vermin-free area and protected from contamination (<i>Guide, p 141</i>)	X				
food in vermin-free, temperature and humidity controlled area and protected from contamination (<i>Guide, p 141</i>)	X				
refuse storage is separate (<i>Guide, p 141</i>)	X				
carcass and animal tissue storage is separate, refrigerated below 7°C and cleanable (<i>Guide, p 141</i>)	X				
Personnel:					
adequate space for locker rooms, administration and training (<i>Guide, p 135</i>)	X				

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NA = not applicable

NOTES: none

Special Facilities: Aseptic Surgery

Date: **September 11, 2018**

Location: [REDACTED]

	A	M	S	C	NA
General Considerations:					
location minimizes traffic/contamination (<i>Guide, p 144</i>)	X				
functional components (surgical support, animal preparation, surgeon scrub, operating room, postoperative recovery) are designed and separated (physically or otherwise) (<i>Guide, p 144</i>)	X				
appropriate drug storage, control, expiration date monitoring (<i>Guide, pp 115, 122</i>)	X				
safe sharps disposal system (<i>Guide, p 74</i>)	X				
adequate records of anesthesia and perioperative care (<i>Guide, p 122</i>)	X				

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• aseptic procedures in use for all survival surgery (<i>Guide</i> , pp 118-119)	X				
• Operating Room:					
• effective contamination control procedures (<i>Guide</i> , p 144)	X				
• effective cleaning procedures/dedicated tools (<i>Guide</i> , p 145)	X				
• interior surfaces smooth and impervious to moisture (<i>Guide</i> , p 145)	X				
• HVAC system meets <i>Guide</i> requirements (<i>Guide</i> , p 145)	X				
• lighting safe and appropriate (<i>Guide</i> , p 145)	X				
• outlets safe and appropriate (<i>Guide</i> , p 145)	X				
• scavenging of anesthetic gases implemented (<i>Guide</i> , p 145)	X				
• Surgical Support:					
• facility for washing, sterilizing, storing instruments and supplies (<i>Guide</i> , p 145)	X				
• autoclave monitoring procedures are implemented (<i>Guide</i> , pp 119, 145)	X				
• storage of autoclaved materials maintains sterility (<i>Guide</i> , p 145)	X				
• cold sterilization procedures are appropriate (<i>Guide</i> , p 119)	X				
• Animal Preparation: contains large sink to facilitate cleaning of animal and operative site (<i>Guide</i> , p 145)	X				
• Surgeon Scrub: outside operating room, non-hand-operated sink (<i>Guide</i> , p 145)	X				
• Postoperative Recovery: allows adequate observation, easily cleaned, supports physiologic functions, minimizes risk of injury (<i>Guide</i> , p 145)	X				
• Dressing Area: place for personnel to change (<i>Guide</i> , p 145)	X				

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C = change in program (PHS Policy [IV.A.1.a.-i.](#)) (include in semiannual report to IO and in annual report to OIAW)

NA = not applicable

NOTES: none

Special Facilities: Procedure Areas, Non-survival Surgeries, Laboratories, Rodent Surgeries, Imaging, Whole Body Irradiation, Hazardous Agent Containment, Behavioral Studies

Date: **September 11, to 24, 2018**

Location: **All Locations (except where noted)**

	A	M	S	C	NA
• General Considerations:					
• labs used to house animals only when scientifically required and limited to minimum period necessary (<i>Guide</i> , p 134)	X				
• drug storage, control, and expiration dates (<i>Guide</i> , pp 115, 122)	X				

University of Cincinnati
Institutional Animal Care & Use Committee
2018-2 Semi-Annual Program Evaluation Supplement

Evaluation Team: GFB, & GES
LAMS Veterinarian: JTW

Zone 10c: UC Program Review
LAMS Rep: MLB
IACUC Office: DAC & NCJ
Last Evaluated: March 26, 2018

Evaluation Date: September 25, 2018

○ sharps disposal (<i>Guide, p 74</i>)	X				
○ anesthetic monitoring (<i>Guide, p 120</i>)	X				
○ scavenging of anesthetic gases (<i>Guide, p 21</i>)	X				
○ safety features (e.g., SOPs, safety signs, eyewash stations, secure gas cylinders) are in place (<i>Guide, p 19</i>)	X				
○ carcass disposal (<i>Guide, pp 73-74</i>)	X				
• Additional Concerns for Survival Surgery: (rodent and minor procedures only)					
○ rodent survival surgery clean and uncluttered, not used for anything else during surgery (<i>Guide, p 144</i>)	X				
○ records of peri-operative care (<i>Guide, p 120</i>)	X				
○ aseptic procedures (<i>Guide, pp 118-119</i>)	X				
○ autoclave monitoring procedures (<i>Guide, pp 119, 145</i>)	X				
○ storage of autoclaved materials (<i>Guide, p 145</i>)	X				
○ cold sterilization procedures are appropriate (<i>Guide, p 119</i>)	X				X
• Imaging/Whole Body Irradiation:					
○ location of resource limits contamination risk (<i>Guide, p 147</i>)	X				
○ appropriate transportation methods are in place (<i>Guide, p 147</i>)	X				
○ gas anesthesia provision, scavenging and monitoring are appropriate (<i>Guide, p 147</i>)	X				
○ appropriate sensors and ventilation are provided for cryogen gases (<i>Guide, p 147</i>) [must]					X
○ imaging console is located away from radiation source (<i>Guide, p 147</i>)	X				
• Hazardous Agent Containment:					
○ facility adheres to APHIS, USDA and CDC Select Agent Regulations and other federal, state and local regulations including security measures (<i>Guide, p 148</i>) [must]	X				
•					
○ facility minimizes airborne transmission of noise and ground-borne transmission of vibration (<i>Guide, p 149</i>)	X				
○ floor coverings reduce sound transmission (<i>Guide, p 149</i>)	X				
○ testing equipment allows for surface disinfection (<i>Guide, p 150</i>)	X				
○ components that cannot be cleaned are not in ready contact with animals and kept covered when not in use (<i>Guide, p 150</i>)	X				
○ housing areas are contiguous with testing areas when appropriate (<i>Guide, p 150</i>)	X				

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NA = not applicable

NOTES: none

University of Cincinnati
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Last Evaluated: March 26, 2018

Aquatic Animal Housing and Support Areas

Date: **September 11, & 19, 2018**

Location: [REDACTED]

	A	M	S	C	NA
• Location:					
• animal areas separate from personnel areas (<i>Guide, p 134</i>)	X				
• separation of species (<i>Guide, p 111</i>)	X				
• separation by disease status (<i>Guide, p 111</i>)	X				
• security and access control (<i>Guide, p 151</i>)	X				
• Construction:					
• corridors (<i>Guide, p 136</i>)	X				
• animal room doors (<i>Guide, pp 137, 150</i>)	X				
• exterior windows (<i>Guide, p 137</i>)					X
• floors (<i>Guide, pp 137, 150</i>)	X				
• drainage (<i>Guide, pp 138, 150</i>)	X				
• walls and ceilings (<i>Guide, pp 138, 150</i>)	X				
• heating ventilation and air conditioning (<i>Guide, pp 139, 150-151</i>)	X				
• power and lighting (<i>Guide, pp 141, 150</i>)	X				
• noise control (<i>Guide, p 142</i>)	X				
• vibration control (<i>Guide, p 142</i>)	X				
• environmental monitoring (<i>Guide, p 143</i>)	X				
• Water Quality:					
• standards for acceptable quality are established (<i>Guide, p 78</i>)	X				
• chlorine, chloramines, chemical, and reactive bioproducts are removed or neutralized prior to use in aquatic systems (<i>Guide, pp 78, 86</i>) [must]	X				
• Life Support System:					
• water source is based on appropriate controls and research requirements (<i>Guide, p 79</i>)	X				
• biofilter is of sufficient size to process bioload (<i>Guide, p 80</i>) [must]	X				
• Temperature, Humidity and Ventilation/Illumination/Noise and Vibration:					
• temperature and humidity (<i>Guide, pp 43, 80-81</i>)	X				
• ventilation and air quality (<i>Guide, pp 45, 81</i>)	X				
• illumination (<i>Guide, pp 47, 81</i>)	X				
• noise and vibration (<i>Guide, pp 49, 81</i>)	X				
• Primary Enclosure:					
• allows for normal physiological and behavioral needs (<i>Guide, p 82</i>)	X				

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Last Evaluated: March 26, 2018

○ allows social interaction for social species (<i>Guide, p 82</i>)	X				
○ provides a balanced, stable environment (<i>Guide, p 82</i>)	X				
○ provides appropriate water quality and monitoring (<i>Guide, p 82</i>)	X				
○ allows access to food and waste removal (<i>Guide, p 82</i>)	X				
○ restricts escape and entrapment (<i>Guide, p 82</i>)	X				
○ allows undisturbed observation (<i>Guide, p 82</i>)	X				
○ constructed of nontoxic materials (<i>Guide, p 82</i>)	X				
○ prevents electrical hazards (<i>Guide, p 82</i>)	X				
○ space needs of species are evaluated by IACUC during program evaluations and facility inspections (<i>Guide, p 83</i>)	X				
• Environmental Enrichment, Social Housing, Behavioral and Social Management:					
○ enrichment elicits appropriate behaviors and is safe (<i>Guide, p 83</i>)	X				
○ semi-aquatic reptiles are provided terrestrial areas (<i>Guide, p 83</i>)	X				
○ handling is kept to a minimum and appropriate techniques are in place at facility or protocol level (<i>Guide, p 84</i>)	X				
○ nets are cleaned, disinfected and managed to avoid contamination of systems (<i>Guide, p 84</i>)	X				
• Food:					
○ storage to prevent contamination, preserve nutrients and prevent pests (<i>Guide, p 84</i>)	X				
○ delivery ensures access to all , minimizing aggression and nutrient loss (<i>Guide, p 84</i>)	X				
○ storage times are based on manufacturer recommendations or accepted practice (<i>Guide, p 84</i>)	X				
○ a nutritionally complete diet is provided (<i>Guide, p 84</i>)	X				
• Substrate:					
○ amount, type and presentation of substrate is appropriate for the system and the species (<i>Guide, p 85</i>)	X				
• Sanitation, Cleaning and Disinfection					
○ frequency of tank/cage cleaning and disinfection is determined by water quality, permits adequate viewing and health monitoring (<i>Guide, p 86</i>)	X				
○ cleaning and disinfection of macro-environment (<i>Guide, p 86</i>)	X				
• Waste Disposal:					
○ procedures for collection (<i>Guide, pp 73-74</i>)	X				
○ hazardous wastes are rendered safe before removal from facility (<i>Guide, pp 73-74</i>) [must]	X				
○ animal carcasses (<i>Guide, pp 73-74</i>)	X				
• Pest Control:					
○ regularly scheduled (<i>Guide, p 74</i>)	X				
○ documented program including control of pests and insecticide use (<i>Guide, p 74</i>)	X				
• Emergency, Weekend, and Holiday Animal Care:					
○ care provided by qualified personnel every day (<i>Guide, pp 74, 87</i>)	X				

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• provision for accessible contact information (<i>Guide, pp 74, 87</i>)	X				
• emergency response plans in place to address major system failures (<i>Guide, 87</i>)	X				
• veterinary care available after hours, weekends, and holidays (<i>Guide, pp 74, 114</i>) [must]	X				
• Identification:					
• cage/tank cards contain required information (<i>Guide, pp 75, 87</i>)	X				
• genotype information included and standardized nomenclature used when applicable (<i>Guide, pp 75, 87</i>)	X				
• Recordkeeping:					
• water quality parameters and frequency of testing recorded (<i>Guide, p 88</i>)	X				
• records kept on feeding, nonexpired food supplies, live cultures (<i>Guide, p 88</i>)	X				
• Storage:					
• adequate space for equipment, supplies, food, substrate and refuse (<i>Guide, p 141</i>)	X				
• substrate protected from contamination (<i>Guide, p 141</i>)	X				
• food in vermin-free, temperature and humidity controlled area and protected from contamination (<i>Guide, p 141</i>)	X				
• refuse storage is separate (<i>Guide, p 141</i>)	X				
• carcass and animal tissue storage is separate, refrigerated below 7°C and cleanable (<i>Guide, p 141</i>)	X				
• Personnel:					
• adequate space for locker rooms, administration and training (<i>Guide, p 135</i>)	X				

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NA = not applicable

NOTES: none

Cage Wash

Date: **September 11, 20 & 24, 2018**

Location: [REDACTED]

	A	M	S	C	NA
• Construction and Operation:					
• dedicated central area for sanitizing cages and equipment is provided (<i>Guide, p 143</i>)	X				
• cage-washing equipment meets need (<i>Guide, p 143</i>)	X				
• doors, windows, floors, drainage, walls, ceilings (<i>Guide, pp 136-138</i>)	X				
• convenient to animal areas/waste disposal (<i>Guide, p 143</i>)	X				

University of Cincinnati
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Zone 10c: UC Program Review
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Last Evaluated: March 26, 2018

o ease of access (including door size) facilitates use (<i>Guide, p 143</i>)	X				
o sufficient space for staging and maneuvering (<i>Guide, p 143</i>)	X				
o safety precautions/clothing/equipment used for waste disposal/prewash/acid wash ((<i>Guide, p 143</i>)	X				
o traffic flow clean to dirty with no contamination of clean equipment by dirty equipment and appropriate air pressurization (<i>Guide, p 143</i>)	X				
o insulation and/or sound attenuation present as needed (<i>Guide, p 143</i>)	X				
o utilities are appropriate (<i>Guide, p 143</i>)	X				
o ventilation meets heat and humidity load (<i>Guide, p 143</i>)	X				
o safety features (e.g., SOPs, warning signs, eyewash stations) are in use (<i>Guide, p 143</i>)	X				
o functioning safety devices to prevent entrapment in washer/sterilizers (<i>Guide, p 143</i>)	X				
o cage wash temperatures are monitored and records are available (<i>Guide, p 73</i>)	X				
o appropriate clean cage storage (<i>Guide, p 141</i>)	X				

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NA = not applicable

NOTES: none

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2

Area: [REDACTED]
Inspection Team: DRB & TJG
LAMS Veterinary Staff: N/A
Date Inspected: September 10, 2018

Zone 12: Clinical Satellites
Contact: Jennifer W.
IACUC Office: DAC & NCJ
Last Inspected: March 12, 2018

*A = acceptable; M = minor deficiency; S = significant deficiency (is/may be a threat to animal health/safety)							
Room	PI	Species	Use	A	M	S	Comments
CT Scanner [REDACTED]	Campos	Pig	Procedure	X			

Area: [REDACTED]
Inspection Team: GAG & PMS
LAMS Veterinary Staff: N/A
Date Inspected: September 21, 2018

Zone 12: Clinical Satellites
Contact: Lois. C.
IACUC Office: DAC
Last Inspected: March 22, 2018

*A = acceptable; M = minor deficiency; S = significant deficiency (is/may be a threat to animal health/safety)							
Room	PI	Species	Use	A	M	S	Comments
████	Lin	Rabbits	Procedure	X			

Area: [REDACTED]
Inspection Team: GAG & PMS
LAMS Veterinary Staff: N/A
Date Inspected: September 21, 2018

Zone 12: Clinical Satellites
Contact: Lois. C.
IACUC Office: DAC
Last Inspected: March 22, 2018

*A = acceptable; M = minor deficiency; S = significant deficiency (is/may be a threat to animal health/safety)							
Room	PI	Species	Use	A	M	S	Comments
████	Goodman	Pigs	Procedure	X			

Area: [REDACTED]
Inspection Team: CCHMC IACUC
LAMS Veterinary Staff: N/A
Date Inspected: May 24, 2018

Zone 12: Clinical Satellites
Contact: Diana. L.
IACUC Office: CCHMC
Last Inspected: November 21, 2017

*A = acceptable; M = minor deficiency; S = significant deficiency (is/may be a threat to animal health/safety)							
Room	PI	Species	Use	A	M	S	Comments
████	Core Facility	Mice	Procedure	X			

Zone 13a: [REDACTED]
LAMS Supervisor: Tim B.
IACUC Office: DAC
Last Performed: March 21, 2018

- LAMS					
*A = acceptable; M = minor deficiency; S = significant deficiency (is/may be a threat to animal health/safety)					
Room	Use	A	M	S	Comments
	Procedure	X			
	Procedure	X			
	Procedure	X			
	Procedure	X			
	Procedure	X			
	Procedure	X			
	Procedure	X			
	Procedure Echo-NMR - rats	X			
	Procedure Echo-NMR - mice	X			
	Procedure Echo-MRI - mice	X			
	Ante Room / Storage		X		(Perez-Tilve) One vial of VetBond® tissue glue expired 7/2018. Resolution: A senior member of the lab responded by email on October 17, 2018 indicating that the vial of expired Vetbond® was disposed on October 17, 2018.
	Procedure	X			AVMA Compliant CO₂ inhalation apparatus located in this area.
	UV recirculation/Clidox Station		X		(LAMS) One electrical outlet cover near washing machine was missing. Resolution: The Facility Supervisor responded by email on October 19, 2018 stating the outlet cover was replaced on September 21, 2018.
Storage		X		(LAMS) Broom not hung off of floor. Resolution: The Facility Supervisor responded by email on October 19, 2018 stating the broom was properly placed on September 21, 2018. (LAMS) Bedding that was swept from hallway was left on the floor. Resolution: The Facility Supervisor responded by email on October 19, 2018 stating the floor inside the storage closet was swept clean on September 20, 2018.	
Room	Use	A	M	S	Comments

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semi-Annual Facilities Inspection

Inspection Team: ML, PCO & GES
Veterinarian: N/A
Safety Representative: Sandy G.
Date: September 20, 2018

Zone 13a: [REDACTED]
LAMS Supervisor: Tim B.
IACUC Office: DAC
Last Performed: March 21, 2018

♀ Locker Room		X		(LAMS) Rubber bands from uniform hangers on floor. Resolution: The Director of Facilities Maintenance at RC verified that floor in the locker room area was clean on November 1, 2018.
♂ Locker Room	X			
Break Room	X			
Vet Tech Office Drug Storage Cabinet	X			
Clean Side Cage Wash		X		(LAMS) One electrical light switch cover near door missing. Resolution: The Facility Supervisor responded by email on October 19, 2018 stating the light switch cover was replaced on September 21, 2018.
Dirty Side Cage Wash				
Autoclave		X		(LAMS) One electrical light switch cover near door missing. Resolution: The Facility Supervisor responded by email on October 19, 2018 stating the light switch cover was replaced on September 21, 2018.
Storage	X			
				- LAMS
Use	A	M	S	Comments
Feed/Bedding Storage	X			
Storage	X			
Procedure (Sah) Overnight Housing		X		(LAMS) One overhead light not working. Resolution: The Facility Supervisor responded by email on October 19, 2018 stating light fixture tubes were changed restoring the light to full working order on September 21, 2018.
Procedure (Clinical Lab)	X			AVMA Compliant CO ₂ inhalation apparatus located in this area.
Necropsy/Procedure	X			AVMA Compliant CO ₂ inhalation apparatus located in this area.
Housing	X			

University of Cincinnati
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Veterinarian: N/A

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Date: September 20, 2018

Zone 13a: [REDACTED]

LAMS Supervisor: Tim B.

IACUC Office: DAC

Last Performed: March 21, 2018

Housing	X			
Housing	X			
Housing - Procedure	X			
Housing	X			
Housing		X		(LAMS) One electrical outlet cover missing. Resolution: The Facility Supervisor responded by email on October 19, 2018 stating the outlet cover was replaced on September 21, 2018.
Housing	X			
Central Dock		X		(Facilities Management) Floor area of the dock needed to be swept. Resolution: The Director of Facilities Maintenance at RC verified that floor in the central dock area on November 1, 2018.
Dock		X		(LAMS) Floor in need of sweeping. General organization of the dock area. Resolution: The Facility Supervisor responded by email on October 19, 2018 stating the floor was swept and dock organized on September 24, 2018. (LAMS) Short walls on each side of the overhead door paint was peeling. Resolution: LAMS Management has requested that the correction for this issue be deferred until March 1, 2019. The IACUC voted with unanimous approval at the November 8, 2018 convened meeting to defer the correction of the peeling paint in this area until March 1, 2019.
Housing	X			
Housing	X			Empty
Housing		X		(LAMS) One electrical outlet cover missing. Resolution: The Facility Supervisor responded by email on October 19, 2018 stating the outlet cover was replaced on September 21, 2018.
Housing	X			
Housing - Procedure		X		(LAMS) One electrical outlet cover missing. Resolution: The Facility Supervisor responded by email on October 19, 2018 stating the outlet cover was replaced on September 21, 2018.

**University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semi-Annual Facilities Inspection**

Inspection Team: ML, PCO & GES
Veterinarian: N/A
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Zone 13a: [REDACTED]
LAMS Supervisor: Tim B.
IACUC Office: DAC
Last Performed: March 21, 2018

Procedure	X			AVMA Compliant CO ₂ inhalation apparatus located in this area.
Procedure	X			
Housing - Procedure	X			
Housing	X			
Housing	X			
Housing	X			
Housing	X			
Housing	X			
Housing	X			
Housing	X			
Housing	X			
Housing	X			
Housing	X			
Housing - Mouse [REDACTED]	X			AVMA Compliant CO ₂ inhalation apparatus located in this area.
Housing	X			Storage
Housing – Rat [REDACTED]	X			AVMA Compliant CO ₂ inhalation apparatus located in this area.
Housing	X			
Housing	X			
Ante Room	X			
Procedure Room	X			
TSE Core Procedure	X			

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Date: September 20, 2018

Zone 13a: [REDACTED]
LAMS Supervisor: Tim B.
IACUC Office: DAC
Last Performed: March 21, 2018

	Ante Room		X		(Perez-Tilve) F-Air anesthesia waste gas canister has not been weighed since 5/31/2018. Resolution: A senior member of the lab responded by email on October 17, 2018 indicating that the waste gas canister was weighed and found to be 20 gm below the 50 gm weight limit on October 17, 2018.
	TSE Core Procedure	X			
	Procedure	X			
	Ante Room	X			
	Procedure	X			
	LAMS	X			
Comments: none					

Room	PI	Species	Procedure	A	M	S	Comments
	Benoit Herman	Mice Rats	Procedure Survival Sx	X			

Zone 13b: [REDACTED]
LAMS Supervisor: Tim B.
IACUC Office: DAC
Last Inspected: March 19, 2018

Zone 13b [REDACTED]
2018-2 Semi-Annual Facilities Inspections
Page 2 of 5

Zone 13b: [REDACTED]
LAMS Supervisor: Tim B.
IACUC Office: DAC
Last Inspected: March 19, 2018

Obtained by Rise for Animals.
 Uploaded to Animal Research Laboratory Overview (ARLO) on 11/09/2020

University of Cincinnati
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2018-2 Semi-Annual Facilities Inspection

Inspection Team: JA & MJ
Veterinarian: N/A
Safety Representative: Sandy G.
Date Inspected: September 24, 2018

Zone 14:
LAMS Management: Michael L. & Kimberly R.
IACUC Office: DAC
Last Inspected: March 23, 2018

Facility				
*A = acceptable; M = minor deficiency; S = significant deficiency (is/may be a threat to animal health/safety)				
Use	A	M	S	Comments
LAMS Offices	X			
Clean Cage Wash	X			
Landry	X			
Feed Storage	X			
LAMS Dock	X			
Procedure	X			
Storage	X			
Storage	X			
Procedure	X			AVMA Compliant CO ₂ inhalation apparatus located in this area.
Non-Designated	X			
Housing		X		(LAMS) One electric outlet cover was missing above the change-out hood. Resolution: The Facility Supervisor responded by email on November 2, 2018 verifying that the work had been completed by FM.
Housing	X			
Men's Locker Room ♂	X			
Women's Locker Room ♀	X			
Imaging Room		X		(Lemen) One Clidox® spray bottle the contents were expired on 8/3/2018. Resolution: The Core Facility PI responded by email on November 2, 2018 stating the Clidox® disinfectant spray bottle was refilled with fresh solution and labeled on September 28, 2018. The PI related that the remedy into the future will be to refill this spray bottle every Monday morning before procedures.
Clinical Lab	X			
H ₂ O Recirculation	X			

University of Cincinnati
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Inspection Team: JA & MJ
Veterinarian: N/A
Safety Representative: Sandy G.
Date Inspected: September 24, 2018

Zone 14:
LAMS Management: Michael L. & Kimberly R.
IACUC Office: DAC
Last Inspected: March 23, 2018

Housing		X	(Scaglioni) Two singly housed mice on Rack 2 docking locations 29 & 30 did not have mouse huts as second form of enrichment. Resolution: A senior member of the lab responded by email on October 10, 2018 stating that all the colony cages were checked for singly housed animals and verified that all singly housing mice had two forms of enrichment on October 10, 2018.
Storage	X		
Chemical Housing	X		
Procedure	X		AVMA Compliant CO ₂ inhalation apparatus located in this area.
Ante Room Storage	X		
<u> </u> Housing	X		AVMA Compliant CO ₂ inhalation apparatus located in this area.
Animal Housing		X	(LAMS) Several mildly clouded cages on ventilated rack. Resolution: The Facility Supervisor responded by email on October 12, 2018 stating the cage wash staff has been instructed to remove any excessively clouded cages beginning on October 11, 2018.
Animal Housing	X		AVMA Compliant CO ₂ inhalation apparatus located in this area.
Housing	X		
Procedure	X		AVMA Compliant CO ₂ inhalation apparatus located in this area.
Necropsy/Procedure	X		AVMA Compliant CO ₂ inhalation apparatus located in this area.
Housing Outside Return	X		
Procedure	X		AVMA Compliant CO ₂ inhalation apparatus located in this area.
Dirty Cage Wash	X		

Comment: none

Facilities							
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Room	PI	Species	Use	A	M	S	Comments
	Central Loading Dock			X			

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Safety Representative: Sandy G.
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Zone 14:
LAMS Management: Michael L. & Kimberly R.
IACUC Office: DAC
Last Inspected: March 23, 2018

	Chen Guan Plas Qi Wang	Mice	Irradiator	X			
	Lemen Ben- Jonathan Guan Li Wang	Mice Rats Gerbils Hamsters	Core Imaging Facility	X			

[REDACTED] – PI Controlled Satellite Procedure Labs							
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Room	PI	Species	Use	A	M	S	Comments
[REDACTED]	Dong	Drug Storage		X			
	Dong	Mice	Procedure	X			
	Bogdanov	Diet Storage Walk-In Refrigerator		X			
	Bogdanov	Diet Storage Walk-In Freezer		X			No diets being stored at time of inspection.
	Waltz	Drug Storage Safe		X			
	Waltz	Mice	Procedure		X		(Waltz) The anesthesia machine vaporizer label indicated the next service due date as 9/2018. Resolution: A member of the lab responded to an IACUC Office telephone inquiry on November 5, 2018 about the status of the vaporizer service and was informed that the vaporizer was serviced recently and the next service due date was labeled on October 20, 2019.
	Waltz*	Mice	Procedure Survival Sx*	X			
	Du	Diet Storage Walk-In Refrigerator		X			
	Plas	Diet Storage Conventional Freezer		X			
	Guan	Mice	Procedure	X			
Guan	Drug Storage		X				
Comments: none							

University of Cincinnati
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Inspection Team: JA & MJ
Veterinarian: N/A
Safety Representative: Sandy G.
Date Inspected: September 24, 2018

Zone 14:
LAMS Management: Michael L. & Kimberly R.
IACUC Office: DAC
Last Inspected: March 23, 2018

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semi-Annual Facilities Inspection

Inspection Team: JA & PCO
Veterinarian: N/A
Safety Representative: Sandra G.

Date Inspected: September 17, 2018

Zone 15: [REDACTED]
LAMS Management: Tim B.
Consultants: JAW & Lois A.
IACUC Office: DAC
Last Inspected: March 16, 2018

Blue Ash College Veterinary Technology Building					
Room	Use	A	M	S	Comments
	Procedure Surgery		X		(Program Staff) One vial of furosemide diuretic was expired. Resolution: <i>The Program Director present discarded the expired drug at the time of the inspection correcting the issue on September 17, 2018.</i>
	Surgery	X			
	Surgical Scrub	X			
	Surgical Pack Area	X			
	Surgical Recovery	X			
	Locker Room ♀	X			
	Locker Room ♂	X			
	Storage	X			
	Cage Wash	X			
	Housing	X			
	Housing	X			
	Ante Room	X			
	Housing	X			
	Housing	X			
	Radiology	X			
	Developing		X		(Program Staff) One eye wash lavage bottle was expired 7/2018. Resolution: <i>A senior member of the program faculty responded by email on October 18, 2018 stating the expired bottle was discarded and was replaced with a new in-date eye lavage bottle on September 20, 2018.</i>
	Laundry & Bathing	X			
	O ₂ Storage	X			AVMA Compliant CO ₂ Inhalation apparatus located in this area.
	Dock	X			
	Storage	X			

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semi-Annual Facilities Inspection

Inspection Team: JA & PCO
Veterinarian: N/A
Safety Representative: Sandra G.

Date Inspected: September 17, 2018

Zone 15: [REDACTED]
LAMS Management: Tim B.
Consultants: JAW & Lois A.
IACUC Office: DAC
Last Inspected: March 16, 2018

[REDACTED]	Feed Storage	X			
	Exercise Yard	X			
Comments: none					

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semiannual Facilities Inspection

Zone 16: LAMS Transport Vehicles

Inspection Team: <u>MTB & CW</u> LAMS Veterinary Staff: <u>N/A</u> Date Inspected: <u>September 20, 2018</u>						LAMS Supervisor: <u>Jeff W.</u> IACUC Office: <u>DAC</u> Last Inspected: <u>March 13, 2018</u>
Vehicle	License Plate	Use	A	M	S	Comments
Dodge Cargo Van [REDACTED]	[REDACTED]	Transport	X			

Inspection Team: <u>MTB & CW</u> LAMS Veterinary Staff: <u>N/A</u> Date Inspected: <u>September 11, 2018</u>						LAMS Supervisor: <u>Jeff W.</u> IACUC Office: <u>DAC</u> Last Inspected: <u>March 13, 2018</u>
Vehicle	License Plate	Use	A	M	S	Comments
Box Truck [REDACTED]	[REDACTED]	Transport	X			

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semi- Annual Facilities Inspection

Inspection Team: JTW & DAC
LAMS Veterinary Staff: JTW

Date: September 24, 2018

Zone 17:
Consultants: GED
IACUC Office: DAC
Last Performed: March 23, 2018

*A = acceptable; M = minor deficiency; S = significant deficiency (is/may be a threat to animal health/safety)					
BSL-3 Facility					
Room	Use	A	M	S	Comments
	Housing	-	-	-	Locked Down – not inspected
	Survival Sx Procedure	-	-	-	Locked Down – not inspected
	Housing		X		One ceiling light fixture over right side of biosafety cabinet not working. Resolution: The Facility Director responded by email on November 3, 2018 stating that the fluorescent tubes were replaced on September 30, 2018 restoring the light fixture to full working order.
	Facility Entry		X		The Neosporin® antibiotic ointment in the first aid kit was expired, Resolution: The Facility Director responded by email on November 3, 2018 stating that a new first aid kit was placed in the facility on October 30, 2018. (Qualls) Some confusion about when cages were changed on the daily log sheet. Resolution: The PI responded by email on October 19, 2018 explaining that in the future a delta sign (Δ) with a comment explaining the number of cages from the entire census that were changed. (Qualls) Unexpected animal death on 9/18/2018 was not reported to veterinary staff. Resolution: The PI responded by email on October 19, 2018 explaining that in the future the lab will report any mouse (mice) that die on study to the Attending Veterinarian.
	Storage	-	-	-	Locked Down – Not inspected
	Storage	-	-	-	Locked Down – Not inspected
	Restroom	X			
	Restroom	X			
	Autoclave Dirty				Sprinkler head collar needs to be sealed. Resolution: The Facility Director responded by email on November 3, 2018 stating that the ceiling sprinkler head collar was caulk sealed on September 30, 2018.

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semi- Annual Facilities Inspection

Inspection Team: JTW & DAC
LAMS Veterinary Staff: JTW

Date: September 24, 2018

Zone 17: [REDACTED]
Consultants: GED
IACUC Office: DAC
Last Performed: March 23, 2018

[REDACTED]	Common Hallway		X	Expired sterile gloves. Resolution: <i>The Facility Director responded by email on November 3, 2018 stating some of the gloves were labeled for in-vitro use only – two boxes were discarded on September 30, 2018.</i> Trash can needed to be emptied. Resolution: <i>The Facility Director responded by email on November 3, 2018 stating the trash can was emptied and passed through the autoclave on September 30, 2018.</i>
	Comment: none			

University of Cincinnati
Institutional Animal Care and Use Committee
2018-2 Semiannual Facilities Inspection

Inspection Team: **GAG & PMS**
LAMS Veterinarian: **N/A**
Safety Representative: **Sandy G.**
Date Inspected: **September 21, 2018**

Zone 18: **██████**
LAMS Management: **N/A**
IACUC Office: **DAC**
Last Inspected: **March 22, 2018**

Labs							
*A = acceptable; M = minor deficiency; S = significant deficiency (is/may be a threat to animal health/safety)							
Room	PI	Species	Use	A	M	S	Comments
	Zhang	Mice Rats	Procedure	X			
	Zhang	Mice Rats	Procedure	X			
	Zhang	Mice Rats	Survival Sx	X			
	Zhang	Drug Storage		X			
	Zhang	Diet Storage Walk-In Refrigerator		X			
	Berta	Mice Rats	Surv Surg		X		One 50 mL centrifuge tube containing Betadine® not labeled. <u>Resolution:</u> The PI responded by email on October 22, 2018 stating the secondary container of Betadine® solution was properly labeled on October 22, 2018.
	Berta	Mice Rats	Procedure	X			
	Davidson	Mice Rats	Surv Surg		X		One 50 mL centrifuge tube containing Betadine® needed expiration date labeled. <u>Resolution:</u> The PI responded by email on October 22, 2018 stating the tube of Betadine® solution was labeled with the expiration date on October 22, 2018.
	Baccei	Mice Rats	Procedure Survival Sx	X			
	Baccei	Drug Storage		X			
	Davidson	Mice Rats	Procedure		X		One spray bottle was ambiguously labeled. <u>Resolution:</u> The PI responded by email on October 22, 2018 stating the spray bottle was properly labeled on October 22, 2018.
	Baccei	Mice Rats	Procedure Survival Sx	X			
	Miller	Diet Storage Conventional Refrigerator		X			
Luo		Procedure	X				

University of Cincinnati
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2018-2 Semiannual Facilities Inspection

Inspection Team: GAG & PMS
LAMS Veterinarian: N/A
Safety Representative: Sandy G.
Date Inspected: September 21, 2018

Zone 18:
LAMS Management: N/A
IACUC Office: DAC
Last Inspected: March 22, 2018

Luo	Mice	Procedure				(Luo) One cloth covered chair present in animal procedure area. Resolution: <i>The PI responded by email on October 26, 2018 stating that the cloth covered chair was removed from the animal procedure area on October 25, 2018.</i>
				X		(Luo) Three passive anesthesia waste gas canisters were over the 50 gm saturation weight. Resolution: <i>The PI responded by email on October 26, 2018 stating that the three waste gas scavengers had the initial weigh value and date recorded on the side of the new canisters placed on October 25, 2018.</i>
						(Luo) Two secondary containers (tubes) of Betadine® solution did not have labeled expiration dates. Resolution: <i>The PI responded by email on October 26, 2018 stating that the two secondary containers of Betadine® solution were labeled with the expiration date on October 25, 2018.</i>
Kao	Diet Storage Conventional Refrigerator		X			
Fan	Drug storage		X			
Fan	Mice	Non-Surv Sx	X			
Fan	Mice Rats	Procedure	X			
HS. Wang	Mice Rats	Procedure	X			
HS. Wang	Drug Storage		X			
Madan	Diet Storage Conventional Refrigerator Chest			X		(Madan) Two plastic containers of Teklad D12492 60% high fat diet were expired one 3/2018 and other 6/2018. Resolution: <i>A Research Team member present disposed the two bags of expired diet at the time of the inspection on September 21, 2018.</i>
Ridgway	Mice	Procedure	X			AVMA compliant CO₂ inhalation apparatus located in this area.

APPENDIX 11

HEATING, VENTILATION AND AIR CONDITIONING (HVAC) SYSTEM SUMMARY

Appendix 11: Heating, Ventilation and Air Conditioning (HVAC) System Summary

In the Table below, provide room-specific information requested. For each room within this location, indicate use, including the species for animal housing rooms. *Measurement of air exchange rates and verification of relative pressure within animal housing rooms (excluding rooms housing aquatic species only) and cage washing facilities must be completed within the 12 months preceding completion of this Program Description.* Air exchange rates may be important to maintain air quality in other areas; however, measurements may be left at the discretion of the institution. Information may be provided in another format, providing all requested data is included. [Note: Please remove the examples provided in the Table below.]

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)	
BUILDING								
		68°F	N	NA	Y	+ to E971 (DCW) - to Hallway	30	5/29/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	+ to Hallway	19	5/30/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	+ to Hallway	8	5/29/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	+ to Hallway	19	9/13/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	+ to Hallway	17	9/13/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	+ to Hallway	18	5/30/2018
		68°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	18	5/30/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	+ to Hallway	16	5/30/2018
		68°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	26	5/29/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	+ to Hallway	13	5/29/2018
		68°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	15	5/30/2018

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)	
		68°F	N	NA	Y	- to Hallway	53	5/30/2018
		68°F	N (Hygrometer)	NA	Y	- to Hallway	NA	NA
		68°F	N	NA	Y	- to E909 (CCW) - to Hallway	18	5/29/2018
		74°F	Y	80°F(alert) 65°F(alarm)	N	- to Room	N/A (CFH)	6/26/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	16	5/7/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	17	9/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	16	5/9/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	39	5/14/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	47	5/14/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	13	9/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	17	5/2/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	14	5/7/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	20	9/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	13	5/2/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	34	5/16/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	16	5/7/2018

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)	
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	15	5/2/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	15	5/2/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	19	5/2/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	15	5/14/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	26	5/14/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	13	5/14/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	60	5/14/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	41	5/14/2018
		68°F	N	NA	Y	- to Hallway	43	10/10/2018
		68°F	N	NA	Y	- to Hallway	N/A	N/A
		68°F	N	NA	Y	+ to Hallway + to R360 (DCW)	6	5/14/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	15	5/16/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	15	5/14/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	14	5/7/2018
		68°F	N	NA	Y	+ to Hallway - to R352	44	10/10/2018
		68°F	Y	81°F(alert) 50°F(alarm)	Y	+ to Hallway	19	5/7/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	14	5/15/2018

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)	
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	14	5/14/2018
		68°F	N	NA	Y	- to Hallway	10	5/15/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	15	5/7/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	17	5/15/2018
		68°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	13	5/15/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	16	5/9/2018
		68°F	N (Hygrometer)	NA	Y	- to Receiving Dock 409C	NA	NA
		68°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	50	5/7/2018
		68°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	16	5/9/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	21	5/8/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	16	5/8/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	19	5/8/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	18	5/15/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	11	5/8/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	16	5/14/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	6	6/26/2018

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)	
		68°F	N (Hygrometer)	NA	Y	- to Hallway	NA	NA
		68°F	N	NA	Y	- to Hallway	20	6/19/2018
		68°F	N	NA	Y	+ to Hallway	25	6/19/2018
		68°F	N	NA	Y	+ to Hallway	10	6/19/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	13	6/18/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	11	6/18/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	14	6/18/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	11	6/18/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	11	6/19/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	15	6/18/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	18	6/18/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	14	6/13/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	17	6/13/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	17	6/13/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	14	6/18/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	18	6/18/2018

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)	
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	15	6/18/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	14	6/13/2018
		74°F	N	NA	Y	- to 145 & 143B	17	6/19/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	15	6/18/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	16	6/18/2018
		74°F	N	NA	Y	- to Hallway	14	6/18/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	20	6/18/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	19	6/18/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	11	6/18/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	8	6/19/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	14	6/22/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	17	6/18/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	6	6/22/2018
		74°F	N	NA	Y	- to 317 & 317A	49	6/18/2018
		74°F	N	NA	Y	- to Hallway	0	6/19/2018
		74°F	N	NA	Y	+ to Hallway, 316 - to 317A & 318	19	6/18/2018
		74°F	N	NA	Y	+ to 317 & 316 - to 318	20	6/18/2018

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)	
		74°F	N	NA	Y	+ to 317 & 317A	26	6/19/2018
		74°F	N	NA	Y	- to Hallway	16	6/18/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	16	6/12/2018
		74°F	N	NA	Y	- to Hallway	14	6/13/2018
		68°F	N	NA	Y	- to Hallway	24	6/13/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	13	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	13	6/13/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	18	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	24	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	14	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	13	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	17	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	20	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	22	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	17	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	15	6/12/2018

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)	
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	15	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	19	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	40	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	19	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	19	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	17	6/19/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	18	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	18	6/19/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	18	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	+ to Hallway	11	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	+ to Hallway	12	9/17/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	12	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	16	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	17	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	17	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	18	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	20	6/12/2018

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)	
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	21	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	15	6/12/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	13	6/12/2018
		39°F	Y	50°F(alarm) 34 °F(alarm)	N	NA	NA	NA
		68°F	Y	81°F(alert) 50°F(alarm)	Y	+ to Hallway	14	6/26/2018
		68°F	Y	81°F(alert) 50°F(alarm)	Y	+ to Hallway	19	6/25/2018
		68°F	Y	81°F(alert) 50°F(alarm)	Y	- to Hallway	14	6/25/2018
		68°F	Y	81°F(alert) 50°F(alarm)	Y	-	19	6/25/2018
		78°F	Y	84°F(alert) 70°F(alarm)	Y	- to 851SA - to Hallway	13	6/25/2018
		78°F	Y	84°F(alert) 70°F(alarm)	Y	+ to 851SA	18	6/25/2018
		78°F	Y	84°F(alert) 70°F(alarm)	Y	- to 853Z	23	6/25/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	15	5/2/2018
		68°F	N	NA	Y	- to Hallway	20	6/19/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	15	5/2/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	15	5/2/2018

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)	
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	11	5/2/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	14	5/2/2018
		68°F	N (Hygrometer)	NA	Y	- to Receiving Dock 130	NA	NA
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to 0220A - to Hallway	15	6/6/2018
		74°F	N	80°F(alert) 65°F(alarm)	Y	+ to 0220 - to 0222A	27	6/6/2018
		74°F	N	80°F(alert) 65°F(alarm)	Y	- to 0221 - to Hallway	11	6/6/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to 0221 - to Hallway	14	6/5/2018
		74°F	N	80°F(alert) 65°F(alarm)	Y	- to 0222A - to Hallway	76	6/6/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	13	6/6/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	13	9/14/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	11	6/5/2018
		68°F	N (Hygrometer)	NA	Y	- to Hallway	NA	NA
		68°F	N	NA	Y	+ to Hallway	35	7/3/2018
		68°F	N	NA	Y	- to Hallway	83	9/14/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	15	6/6/2018
		74°F	N	NA	Y	- to Hallway	36	6/6/2018

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)	
		74°F	N	NA	Y	- to Hallway	45	6/7/2018
		68°F	N	NA	Y	- to Hallway	20	6/6/2018
		74°F	N	NA	Y	- to Hallway	14	6/5/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	22	6/6/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	12	6/5/2018
		74°F	Y	80°F(alert) 65°F(alarm)	Y	- to Hallway	11	6/6/2018

APPENDIX 12

AQUATIC SYSTEMS SUMMARY – PART I & II

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)
	<i>Xenopus</i> (tadpoles)	50/L NF stage 45-52 5/L NF stage 52-66	Fresh	Dosed R/O	Static - change water (>950 uS and/or >CaCO ₃ 240mg/L)	None	None
	<i>Xenopus tropicalis</i> (J & A)	3/L or 18/6L (J) 0.33/L or 8/6L (A)	Fresh	Dosed R/O (crystal sea marine mix)	Recirculated w/ daily 10% water change	Bio/chem/mech (filter cartridge, activated carbon)	UV
	<i>Xenopus laevis</i> (J & A)	2/L or 12/6L (J) 1.33/L or (15/40L) (A)	Fresh	Dosed R/O	Recirculated w/ daily 10% water change	Bio/chem/mech (filter cartridge, activated carbon)	UV
	<i>Xenopus laevis</i> (A)	25/74L	Fresh	Dosed R/O	Static - change water (>950 uS and/or >CaCO ₃ 240mg/L)	None	None
	<i>A. mexicanus</i> and/or <i>D. rerio</i> (J&A)	50/5 gal (J) 25/5 gal (A)	Fresh	Dosed R/O (aquarium salt & NaHCO ₃)	Recirculated w/ weekly tank cleaning	Bio/chem/mech (filter cartridge, activated carbon)	UV
	<i>A. mexicanus</i> and/or <i>D. rerio</i> (J&A)	Individual	Fresh	Dosed R/O (aquarium salt & NaHCO ₃)	Static w/ weekly 100% water change	None	None
	<i>Xenopus laevis</i> (A)	10/27L	Fresh	Dosed R/O (aquarium salt)	Constant flow w/ daily 4.5% water change	Bio/chem/mech (mesh cartridge, activated carbon)	UV

Note: Records of equipment maintenance (filter changes, UV bulb changes, probe changes, calibrations, etc.) should be available for review.

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 vs. room HVAC, hand vs. 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):
	27°C (daily) (HVAC/incubator)	800uS (continuous)	7.0 (6.5-8.5) (daily)	<0.5 mg/L (weekly)	<0.5 mg/L (weekly)	<50 mg/L (weekly)	None	None	Hardness, alkalinity (weekly)
	25-26°C (continuous) (heater/chiller)	800uS (continuous)	7.0 (6.5-8.5) (continuous)	<0.5 mg/L (weekly)	<0.5 mg/L (weekly)	<50 mg/L (weekly)	None	None	Hardness, alkalinity (weekly)
	22-24°C (continuous) (heater/chiller)	800uS (continuous)	7.0 (6.5-8.5) (continuous)	<0.5 mg/L (weekly)	<0.5 mg/L (weekly)	<50 mg/L (weekly)	None	None	Hardness, alkalinity (weekly)
	22-24°C (daily) (HVAC)	800uS (continuous)	7.0 (6.5-8.5) (daily)	<0.5 mg/L (weekly)	<0.5 mg/L (weekly)	<50 mg/L (weekly)	None	None	Hardness, alkalinity (weekly)
	23-24°C (continuous) (heater/chiller)	500-1000uS (continuous)	7.4 (7.0-7.8) (continuous)	0 ppm (weekly)	0-1 ppm (weekly)	80-200 ppm (weekly)	None	None	Hardness, alkalinity (weekly)
	23-24°C (daily) (HVAC)	600-900uS (daily)	7.4 (7.0-7.8)	0 ppm (weekly)	0-1 ppm (weekly)	80-200 ppm (weekly)	None	None	Hardness, alkalinity (weekly)
	17-18°C (continuous) (heater/chiller)	800uS (continuous)	7.0 (6.5-8.5) (continuous)	None	<0.5 mg/L (continuous)	<50 mg/L (weekly)	None	None	Hardness, alkalinity, chlorine (weekly)
	17-18°C (daily) (HVAC/chiller)	800uS (daily)	7.0 (6.5-8.5) (daily)	None	<0.5 mg/L (weekly)	<50 mg/L (weekly)	None	None	Hardness, alkalinity, chlorine (weekly)

Note: This information may be provided in another format, provided that all requested data is included.

APPENDIX 13

PRIMARY ENCLOSURES AND ANIMAL SPACE PROVISIONS

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**
Cat	Cage 23" x 36" x 28"H with Resting Board & Litter Box	1 adult/cage	<i>Guide for the Care and Use of Laboratory Animals</i> (Eighth edition)	Stainless steel cages with plastisol® coated wire grid flooring, a polypropylene resting board and litter box
	Room enclosure-minimum of 4 ft ² /cat	2 adults in room enclosure (based on compatibility)		Housed in room enclosure
Dog	25 ft ² , dimensions vary	1 adult/run	<i>Guide for the Care and Use of Laboratory Animals</i> (Eighth edition)	Galvanized, chain link runs manufactured by Mason Co.; equipped with Plastisol® coated steel mesh 3/4" x 9 gauge suspended flooring
	Room enclosure-minimum of 24 ft ² /dog	2 adults in room enclosure (based on compatibility)		Housed in room enclosure
Fish	Smallest (1 Liter) 22.5cm x 6cm x 9.5cm	20 juveniles; 1 adult	Guidance on the Housing and care of Zebrafish <i>Danio rerio</i> (Last updated May 2011)	Multi-linking recirculating Aquatic Habitat system or static aquaria
	Largest (38 Liters) 50cm x 28cm 30cm	100 juveniles; 50 adults; 500 fry		
Frog	27 Liters (recirculating) 12" x 36" x 16"H	10 adults/ tank	The Laboratory <i>Xenopus</i> sp. (2010)	Polycarbonate recirculating, aquaria
Frog	400 Liters 26" x 23" x 48"H	100 adults/tank	The Laboratory <i>Xenopus</i> sp. (2010)	Static fiberglass tank
Frog/tadpole (<i>X. laevis</i> , <i>X. tropicalis</i> , tadpole)	Smallest (2 Liters) 10" x 3" x 6"	1 <i>X. laevis</i> /3L; 1 <i>X. tropicalis</i> /1L;	The Laboratory <i>Xenopus</i> sp. (2010)	Polycarbonate Aquatic Habitat flow through aquaria
	Largest (75 Liters) 23" x 15" x 12"	8 metamorphs/1L; 15 tadpoles/1L		
Gerbil	19" x 10.5" x 8"H	4 adults/cage	<i>Guide for the Care and Use of Laboratory Animals</i> (Eighth edition)	Solid bottom, polycarbonate shoebox cage with stainless steel wire bar top: open top (filter tops are available) or static microisolator (SMI) cage

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**
Guinea Pig	19" x 10.5" x 8"H	2 adults/cage (<=350g)	<i>Guide for the Care and Use of Laboratory Animals</i> (Eighth edition)	Solid bottom polycarbonate, zylene, polyetherimide or polysulfone shoebox cage with stainless steel wire bar lid and filter top: static microisolator (SMI) or individually-ventilated cage (IVC)
	20" x 16" x 8"H 17.5" x 12.5" x 8"H (IVC)	2 adults/cage (>=350g)		
Mouse	11" x 7" x 5"H	4 adults/cage; 2 adults with 1 litter	<i>Guide for the Care and Use of Laboratory Animals</i> (Eighth edition)	Solid bottom polycarbonate, polyetherimide or polysulfone shoebox cage with stainless steel wire bar lid and filter top or solid top (ventilated): static microisolator (SMI) or individually-ventilated cage (IVC) system
	Allentown IVC 7.63" x 7.11"H x 15.68" Innovive Disposable Caging 14.7" x 9.2" x 5.5"H	5 adults/cage; 2 adults with 1 litter		
Pig	Multi-linking Modified Priefert pens (dimensions vary)	4' x 6' pen 1 pig (<=50 kg) 6' x 6' pen 2 pigs (<=50 kg), based on compatibility 6' x 12' pen 3 pigs (<=50 kg), based on compatibility	<i>Guide for the Care and Use of Laboratory Animals</i> (Eighth edition)	Powdered coated steel Priefert livestock panels assembled to meet recommended space requirements
Rabbit	27" x 27" x 18"H	1 rabbit/cage	<i>Guide for the Care and Use of Laboratory Animals</i> (Eighth edition)	Allentown rabbit racks with smooth perforated flooring, removable polypropylene cages and stainless steel door
	Multi-linking pen (dimensions vary)	3 rabbits/pen (based on compatibility)		Wire pen with E-Coating finish assembled to meet recommended space requirements
Rat	19" x 10.5" x 8"H	2 adults/cage; 2 adults with 1 litter/cage; 3 rats from weaning to 300 grams/cage	<i>Guide for the Care and Use of Laboratory Animals</i> (Eighth edition)	Solid bottom polycarbonate, polyetherimide or polysulfone shoebox cage with stainless steel wire bar tops, open- top or static microisolator cage (filter tops are available)
Snake	Smallest (5 gallon) 16" x 8" x 10.5"H	1 snake/cage	<i>Kauffeld, C. (1969). Snakes: the Keeper and the Kept. New York: Doubleday & Co.</i>	Glass tank with perforated lid
	Largest (75 gallon) 48" x 18" x 21"H			

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**
Snake	Smallest 24" x 24" x 11"H	1 snake/cage	<i>Kauffeld, C. (1969). Snakes: the Keeper and the Kept. New York: Doubleday & Co.</i>	Wood sealed tank with perforated lid
	Largest 30" x 14" x 23"H			
Spadefoot Toad	12" x 8" x 8"H 15" x 10" x 10"H	10 metamorphs/tank; 4 adults/tank	ASIH Guide (American Society of Ichthyologists and Herpetologists) (2004 edition)	Glass aquaria with perforated lid and sterilized dirt or moss

* 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

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 with filter top (static) – mouse & rat	Mechanical washer, manually sanitize	1-2 times/week	Alkaline detergent	Autoclaved cage (mouse)
Solid bottom cages with wire lid (no filter top) - rat				Autoclaved bedding (rat)
Solid-bottom cages (IVC) (mouse)	Mechanical washer, manually sanitize	Weekly or every 2 weeks	Alkaline detergent (mouse)	Autoclaved cage (mouse)
Solid bottom cages (IVC) (guinea pig)	Mechanical washer, manually sanitize	1-2 times/week	Citric acid cleaner (guinea pig)	Autoclaved cage (guinea pig)
Suspended wire bottom or slotted floor cages	Mechanical washer, manually sanitize	Weekly	Alkaline detergent	
Cage lids	Mechanical washer, manually sanitize	Weekly or every 2 weeks	Alkaline detergent	Autoclaved lid (Mouse, Guinea Pig)
Cage racks and shelves	Mechanical washer, manually sanitize	Monthly or every 6 months	Alkaline detergent	
Cage pans under suspended rabbit cage	Mechanical washer	Weekly	Citric acid cleaner	
Play pens, floor pens, stalls, etc. (rabbit, pig)	Mechanical washer, manually sanitize	Daily or every 2 weeks	Alkaline detergent	
Corrals for primates or outdoor paddocks for livestock	N/A	N/A	N/A	N/A
Aquatic, amphibian, and reptile tanks and enclosures	Manually sanitize	Weekly (aquatic)	Hot water wash (aquatic)	
		After feeding (reptile)	Sodium hypochlorite solution <10% followed by hot water rinse (reptile)	
Frog recirculating tank	Manually sanitize	Every 2 weeks	Hot water rinse	
Frog static tank	Manually sanitize	After each use or as needed	Sodium hypochlorite solution <10% followed by hot water rinse	
Feeders	Mechanical washer, manually sanitize	Weekly, every 2 weeks	Alkaline detergent	

Appendix 14: Cleaning and Disinfection of the Micro- and Macro-Environment

Area	Washing/Sanitizing Method (mechanical washer, hand washing, high-pressure sprayers, etc.)	Washing/ Sanitizing Frequency**	Chemical(s) Used*	Other Comments (e.g., autoclaved)
Watering devices	Mechanical washer, manually sanitize	Weekly, every 2 weeks	Alkaline detergent	
Exercise devices and manipulanda used in environmental enrichment programs etc.	N/A	N/A	N/A	N/A
Transport cages (rabbit carriers)	Mechanical washer, manually sanitize	After each use	Alkaline detergent	More often as needed
Operant conditioning & recording chambers, mechanical restraint devices (chairs, slings, etc.)	In accordance with IACUC protocol	Per IACUC protocol	Per IACUC protocol	Per IACUC protocol
Euthanasia chambers	Manually disinfect	After each use	Quaternary/alcohol solution	More often as needed
Macro-environment				
Animal Housing Rooms				
Floors	Sweep/hose/mop, foam, high pressure washer/mechanical scrubber	Weekly; more often as needed	Quaternary ammonium disinfectant	
Walls	Foam, hand wash with scrub pad, high pressure washer	Semiannual; more often as needed	Quaternary ammonium disinfectant	
Ceilings	Manually sanitize	Semiannual; more often as needed	Quaternary ammonium disinfectant	
Ducts/Pipes	Manually sanitize	Semiannual; more often as needed	Quaternary ammonium disinfectant	
Fixtures	Manually sanitize	Semiannual; more often as needed	Quaternary ammonium disinfectant	
Corridors				
Floors	Mop, floor scrubber	Weekly; more often as needed	Potassium hydroxide disinfectant	
Walls	Manually sanitize	Semiannual; more often as needed	Quaternary ammonium disinfectant	
Ceilings	Manually sanitize	Semiannual; more often as needed	Quaternary ammonium disinfectant	
Ducts/Pipes	Manually sanitize	Semiannual; more often as needed	Quaternary ammonium disinfectant	
Fixtures	Manually sanitize	Semiannual; more often as needed	Quaternary ammonium disinfectant	
Support Areas (e.g., surgery, procedure rooms, etc.)				
Floors	Manually sanitize	Daily, weekly, monthly	Quaternary ammonium disinfectant	

Appendix 14: Cleaning and Disinfection of the Micro- and Macro-Environment

Area	Washing/Sanitizing Method (mechanical washer, hand washing, high-pressure sprayers, etc.)	Washing/ Sanitizing Frequency**	Chemical(s) Used*	Other Comments (e.g., autoclaved)
Support Areas (e.g., surgery, procedure rooms, etc.) continued				
Walls	Manually sanitize	Daily, weekly, monthly	Quaternary ammonium disinfectant	
Ceilings	Manually sanitize	Daily, weekly, monthly	Quaternary ammonium disinfectant	
Ducts/Pipes	Manually sanitize	Daily, weekly, monthly	Quaternary ammonium disinfectant	
Fixtures	Manually sanitize	Daily, weekly, monthly	Quaternary ammonium disinfectant	
Implements (note whether or not shared)				
Mops (assigned in all rooms, shared in corridors per facility)	Manually disinfected with bleach solution	Monthly	Sodium hypochlorite solution <10%	
Mop buckets (assigned in all rooms, shared in corridors per facility)	Mechanical washer, manually sanitize	Monthly	Alkaline detergent (mechanical) Quaternary ammonium disinfectant (manual)	
Brooms (bristle brooms assigned in all rooms, dust mop shared in corridors per facility)	Dust mop laundered	Monthly	Quaternary ammonium disinfectant (brooms) Hydrogen peroxide laundry detergent (dust mop)	
Dust pans (assigned in all rooms, shared in corridors per facility)	Mechanical washer, manually sanitize	Monthly	Alkaline detergent (mechanical) Quaternary ammonium disinfectant (manual)	
Aquaria nets	Manually disinfected with bleach solution and hot water rinse	After each use	Sodium hypochlorite solution <10%	
Blue Floor Mats	Manually sanitize	Daily	Cationic surfactant	
Other				
Vehicle(s)	HEPA vacuum, manually sanitize, mechanical fogger	After each animal transport or soiled cage transport	Virkon (box truck) Chlorine dioxide solution & disinfectant pre-moistened wipes (vans)	
Other transport equipment: Bulk truck unit(s), Feed/Bottle cart(s), Platform cart(s)	Mechanical washer, manually sanitize, autoclave	After each use, monthly	Alkaline detergent	Autoclaved bulk truck unit, platform cart(s)

* Please provide chemical, not trade name.

** Frequency is based on cage/pen population density.

APPENDIX 15

FACILITIES AND EQUIPMENT FOR SANITIZING MATERIALS

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
		Rack washer	Basil 4600 De-energizing mechanism, emergency pull cable, explosion relief door latches, labeled exit door.	Guarantee 180-degree hot water rinse, temperature-sensitive tape used during each start-up, ATP (adenosine triphosphate) swab performed monthly and service contractor performs routine and preventative maintenance quarterly.
		Bulk autoclave	Getinge AR2 Safety linked door mechanism, thermally-insulated doors.	Temperature sensitive tape, sterilizer indicator strip used during each cycle, biological indicator run monthly and service contractor performs routine and preventative maintenance quarterly.
		Tunnel washer	Getinge/MTP 2236 Electrical disconnect switch de-energizes controls, emergency "stop" button for conveyor belt drive, emergency "pull" cable to terminate all processes.	Guarantee 180-degree hot water rinse, temperature-sensitive tape used during each start-up, ATP swab performed monthly and service contractor performs routine and preventative maintenance quarterly.
		Tunnel washer	Basil SL600 Electrical disconnect switch de-energizes controls, emergency "stop" button. horizontal bar when vertical stops the conveyor belt.	Guarantee 180-degree hot water rinse, temperature-sensitive tape used during each start-up, ATP swab performed monthly and service contractor performs routine and preventative maintenance quarterly.
		Rack washer	Scientek SW6300 De-energizing mechanism when door is opened, emergency "stop" button, explosion relief door latches, labeled exit door.	Guarantee 180-degree hot water rinse, temperature-sensitive tape used during each start-up, ATP swab performed monthly and service contractor performs routine and preventative maintenance quarterly.
		Rack washer	Basil 4650 De-energizing mechanism when door is opened, emergency "pull" cable, explosion relief door latches, labeled exit door.	Guarantee 180-degree hot water rinse, temperature-sensitive tape used during each start-up, ATP swab performed monthly and service contractor performs routine and preventative maintenance quarterly.
		Bulk autoclaves	Amsco Primus Safety linked door mechanism, door sensors, thermally-insulated doors.	Temperature sensitive tape, sterilizer indicator strip used during each cycle, biological indicator run monthly, and service contractor performs routine and preventative maintenance quarterly.
		Front load autoclaves	Getinge/BioFoe Safety linked door mechanism, thermally-insulated doors.	Temperature sensitive tape, sterilizer indicator strip used during each cycle, biological indicator run monthly and service contractor performs routine and preventative maintenance quarterly.

Appendix 15: Facilities and Equipment for Sanitizing Materials

Building	Room No.	Equipment Type	Safety Feature(s)	Methods of Monitoring Effectiveness
		Bulk autoclave	Primus Hydro-tested chamber and door mechanism, door-closed switch to prevent cycle processing.	Temperature sensitive tape used during each cycle, biological indicator run every 6 months and service contractor available for service calls.
		Rack washer	Better Built R630 De-energizing mechanism when door is opened, emergency "stop" button, emergency "pull cable", explosion relief door latches, labeled exit door.	Guarantee 180-degree hot water rinse, temperature-sensitive tape used during each start-up, ATP swab performed monthly and service contractor performs routine and preventative maintenance quarterly.
		Tunnel washer	Getinge/MTP 2200 Electrical disconnect switch de-energizes controls, emergency "stop" button to stop conveyor belt drive, emergency "pull" cable to terminate all processes.	Guarantee 180-degree hot water rinse, temperature-sensitive tape used during each start-up, ATP swab performed monthly, and service contractor performs routine preventative maintenance quarterly.
		Bulk autoclave	Getinge Sterilizer Model PACS2000 Safety linked door mechanism, lock-out key, door sensors, thermally-insulated doors.	Temperature sensitive tape, sterilizer indicator strip used during each cycle, biological indicator run monthly, and service contractor performs routine and preventative maintenance quarterly.
		Dump station for soiled rodent cage bedding	Limited to PPE.	Visual assessment, ATP swab of sanitized caging.
		Hand washing area (cat and rabbit caging only)		
		Tunnel washer	Getinge/MTP 2224S Electrical disconnect switch de-energizes the controls, emergency "stop" button for conveyor belt drive and emergency "pull" cable to terminate all processes.	Guarantee 180-degree hot water rinse, temperature-sensitive tape used during each start-up, ATP swab performed monthly and service contractor performs routine and preventative maintenance quarterly.
		Rack washer	Getinge 2110 De-energizing mechanism when door is opened, emergency "stop" button, emergency "pull" cable to terminate all processes, explosion relief door latches, labeled exit door.	Guarantee 180-degree hot water rinse, temperature-sensitive tape used during each start-up, ATP swab performed monthly and service contractor performs routine and preventative maintenance quarterly.
		Gar-bel (waste disposal system)	Gar-bel AL-75P Emergency "stop" button on front panel.	N/A
		Bulk autoclaves (2)	Getinge AR-PAC2000 Safety linked door mechanism, thermally-insulated doors.	Temperature sensitive tape, sterilizer indicator strip used during each cycle, biological indicator run monthly and service contractor performs routine and preventative maintenance quarterly.

APPENDIX 16

LIGHTING SUMMARY

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).

[Note: Please remove the examples provided in the Table below.]

Room Type ^(a)	Light Intensity Range	Lighting Fixture Construction Features ^(b)	Photo-period (Light:Dark) (hrs) ^(c)	Photoperiod and Lighting Control	Override Mechanisms (if applicable)
	262-326 lux	Surface mounted, sealed and water resistant	14:10	Automatic programmable wall mounted timer box for individual room; built in capacitor to maintain program	Manual override switch; override will begin when initiated and remain until overridden again or next setpoint is reached. No alarm output.
	240-314 lux	Surface mounted, sealed and water resistant	14:10	Automatic programmable wall mounted timer box for individual room; built in capacitor to maintain program	Manual override switch; override will begin when initiated and remain until overridden again or next setpoint is reached. No alarm output.
	233-547 lux	Surface mounted, sealed and water resistant	14:10	Automatic programmable wall mounted timer box for individual room; built in capacitor to maintain program	Manual override switch; override will begin when initiated and remain until overridden again or next setpoint is reached. No alarm output.
	295-470 lux	Recessed, sealed and water resistant	14:10	Scheduled control via building management system	Override control via building management system. No alarm output.
	281-308 lux	Recessed or surface mounted, sealed and water resistant	14:10	Scheduled control via building management system	Override control via building management system. No alarm output.
	234-322 lux	Recessed or surface mounted, sealed and water resistant	14:10	Scheduled control via building management system	Override control via building management system. No alarm output.
	742-926 lux	Recessed or surface mounted, sealed and water resistant	14:10	Scheduled control via building management system	Override control via building management system. No alarm output.
	347-503 lux	Recessed or surface mounted, sealed and water resistant	Dark:Light 12:12	Scheduled control via building management system	Override control via building management system. No alarm output.
	229-317 lux	Recessed or surface mounted, sealed and water resistant	14:10	Scheduled control via building management system.	Override control via building management system. No alarm output.
	165-443 lux	Recessed or surface mounted, sealed and water resistant	12:12	Scheduled control via building management system.	Override control via building management system. No alarm output.

Room Type ^(a)	Light Intensity Range	Lighting Fixture Construction Features ^(b)	Photo-period (Light:Dark) (hrs) ^(c)	Photoperiod and Lighting Control	Override Mechanisms (if applicable)
	413-516 lux	Surface mounted, sealed and water resistant	12:12	Scheduled control via building management system.	Override control via building management system. No alarm output.
	179-279 lux	Recessed, sealed and water resistant	14:10 or 12:12	Automatic programmable wall mounted timer box for individual room; built in capacitor to maintain program.	Manual override switch; override will begin when initiated and remain until overridden again or next setpoint is reached. No alarm output.
	288-437 lux	Recessed, sealed and water resistant	12:12	Automatic programmable wall mounted timer box for individual room; built in capacitor to maintain program.	Manual override switch; override will begin when initiated and remain until overridden again or next setpoint is reached. No alarm output.
	188--244 lux	Recessed, sealed and water resistant	Dark:Light 12:12	Automatic programmable wall mounted timer box for individual room; built in capacitor to maintain program.	Manual override switch; override will begin when initiated and remain until overridden again or next setpoint is reached. No alarm output.
	175-267 lux	Recessed, sealed and water resistant	14:10 or 12:12	Automatic programmable wall mounted timer box for individual room; built in capacitor to maintain program.	Manual override switch; override will begin when initiated and remain until overridden again or next setpoint is reached. No alarm output.
	160-183 lux	Recessed, sealed and water resistant	14:10 or 12:12	Automatic programmable wall mounted timer box for individual room; built in capacitor to maintain program.	Manual override switch; override will begin when initiated and remain until overridden again or next setpoint is reached. No alarm output.
	162-282 lux	Recessed, sealed and water resistant	Dark:Light 12:12	Automatic programmable wall mounted timer box for individual room; built in capacitor to maintain program.	Manual override switch; override will begin when initiated and remain until overridden again or next setpoint is reached. No alarm output.
	315-594 lux	Recessed, sealed and water resistant	12:12	Scheduled control via building management system; building backup power to maintain program.	Override control via building management system. No alarm output.
	315-594 lux	Recessed, sealed and water resistant	12:12	Scheduled control via building management system; building backup power to maintain program.	Override control via building management system. No alarm output.
	260-386 lux	Recessed, sealed and water resistant	12:12	Scheduled control via building management system; building backup power to maintain program.	Override control via building management system. No alarm output.
	361-494 lux	Recessed, sealed and water resistant	12:12	Scheduled control via building management system; building backup power to maintain program.	Override control via building management system. No alarm output.

Room Type ^(a)	Light Intensity Range	Lighting Fixture Construction Features ^(b)	Photo-period (Light:Dark) (hrs) ^(c)	Photoperiod and Lighting Control	Override Mechanisms (if applicable)
	303-221 lux	Recessed, sealed and water resistant	14:10	Scheduled control via building management system; building backup power to maintain program.	Override control via building management system. No alarm output.
	Satellite Housing				
	292-344 lux	Surface mounted, protective cover over bulb and sealed	14:10	Automatic programmable wall mounted timer box for individual room; battery operated; programmed and batteries changed at daylight savings.	Manual override switch; override will begin when initiated and remain until overridden again. No alarm output.
	127-348 lux ^(d)	Surface mounted, protective cover over bulb, sealed mounted inside hood	12:12	Programmable mounted timer box controls light inside hood, plugged into outlet with building backup power to maintain control, surrounding lab scheduled control via building management system.	Manual override control for light timer box to control hood light, Surrounding lab override control via building management system. No alarm output.
	161-750 lux	Recessed, sealed and water resistant	12:12	Automatic programmable wall mounted timer box for individual room; built in capacitor to maintain program.	Manual override switch; override will begin when initiated and remain until overridden again or next setpoint is reached. No alarm output.
	407-614 lux	Recessed, sealed and water resistant	12:12	Automatic programmable wall mounted timer box for individual room; built in lithium battery backup to maintain program.	Manual override switch; override will begin when initiated and remain until overridden again or next setpoint is reached. No alarm output.
	337-805 lux	Recessed, sealed and water resistant	12:12	Automatic programmable wall mounted timer box for individual room; built in lithium battery backup to maintain program.	Manual override switch; override will begin when initiated and remain until overridden again or next setpoint is reached. No alarm output.
	370-644 lux	Recessed or surface mounted, sealed and water resistant	12:12	Automatic programmable wall mounted timer box for individual room; built in lithium battery backup to maintain program.	Manual override switch; override will begin when initiated and remain until overridden again or next setpoint is reached. No alarm output.

^(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.

^(d) Light intensity range measured from inside the cage due to cages being stored within a fume hood modified for housing. Range minimum reflects the light intensity observed in cages housed in the bottom shelving unit; the range maximum reflects the light intensity observed in cages housed in the top shelving unit.

APPENDIX 17

SATELLITE HOUSING FACILITIES

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) Devoted to Housing	Maximum Period of Stay	Purpose / Rationale / Justification	Construction Features and Finishes
		PI (JL)	Mice/Rats	268	4 weeks	Core facility	Key or keycard required access, epoxy resinous flooring, concrete/glazed brick walls, drywall ceiling, metal steel doors.
		PI (AL)	Mice	18	14 days	Experiments encompass several days' duration (reduces stress from transportation)	Chemical fume hood (CFH), keycard required access to lab, sealed linoleum flooring, concrete/glazed brick walls, suspended ceiling acoustical tiles.
		PI (PT)	Mice/Rats	394	36 hours	Specialized caging for experiments	Keycard required access to lab, epoxy resinous flooring, concrete/glazed brick walls, suspended ceiling acoustical tiles.
		PI (DB)	Frogs	92; 386	Permanent	Specialized caging/husbandry	Keycard required access, epoxy resinous flooring or sealed linoleum, concrete/glazed brick walls, drywall ceiling, metal steel doors.
		PI (JG)	Fish	204; 54	Permanent	Specialized caging/husbandry	Keycard required access, epoxy resinous flooring or sealed linoleum, concrete/glazed brick walls, drywall ceiling, metal steel doors.
		PI (BJ)	Snakes	308; 152; 276	Permanent	Specialized caging/husbandry	Keycard required access, epoxy resinous flooring or sealed linoleum, concrete/glazed brick walls, drywall ceiling, metal steel doors.