Program Description
Animal Care and Use Program

School of Medicine and Public Health

AAALAC File Number 000305

University of Wisconsin – Madison

[redacted]

For

AAALAC International

July 28th, 2017

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Appendices

Program Description

Link to 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.

The program unit is the University of Wisconsin School of Medicine and Public Health (UW SMPH). Its parent organization is the University of Wisconsin-Madison. In addition to providing animal care for the School of Medicine and Public Health, SMPH provides animal care for the School of Pharmacy, the College of Engineering and the Wisconsin Institutes of Discovery/Morgridge Institute of Research.

The office within the SMPH responsible for the laboratory animal care program is Biomedical Research Model Services (BRMS), formally known as Laboratory Animal Resources (LAR). Veterinary care, IACUC administration, post approval monitoring, training and related functions are provided by the Research Animal Resources Center (RARC).

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

The University of Wisconsin–Madison is the flagship campus of the University of Wisconsin System. This campus was designated a land grant institution in 1866 with the mandate to serve society through focus on agriculture, science and engineering.

The UW School of Medicine and Public Health is a national leader in biomedical education, physician training, and the advancement of knowledge through biomedical research. The primary mission of the School of Medicine and Public Health is prevention and treatment of disease. Discoveries from biomedical research are fundamental to the success of this mission, and continued research is critically dependent upon the use of animal models. The SMPH administration is committed to the success of the animal care and use program, recognizing that healthy, well maintained animals are essential for biomedical discovery.

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. In the European Union, the standards applied might be the Guide, ETS 123, Directive 2010/63, and any country-specific regulations.

UW-Madison has formally adopted the following as standards for the animal care and use program: (1) *Guide for the Care and Use of Laboratory Animals* (Guide), NRC, 2011; (2) *Guide for the Care and Use of Agricultural Animals in Research and Teaching* (Ag Guide), FASS 2010; (3) the U.S. Department of Agriculture (USDA) Animal Welfare Act and Animal Welfare Regulations; and (4) the Public Health Service Policy on the Humane Care and Use of Laboratory Animals. The Guide and PHS Policy is applied to all live vertebrate species except for agricultural animals used in food studies, fiber studies, or teaching activities. Under these circumstances, the Ag Guide is followed. All four standards also apply to facility planning and management, training programs, IACUC functions, animal husbandry and veterinary care. For purposes of assessing appropriate species-specific euthanasia plans, the animal program adheres to the American Veterinary Medical Association Guidelines for the Euthanasia of Animals (2013).

D. Describe the organization and include an organizational chart or charts (as an Appendix/Appendices) 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, 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.

The Chancellor of the University of Wisconsin-Madison is Rebecca M. Blank, PhD, who serves as CEO. Chancellor Blank officially delegated the responsibilities of the Institutional Official (IO) and IACUC appointment authority to [redacted], PhD, [redacted]. Dr. [redacted] has officially delegated the responsibility of appointing members to the SMPH Institutional Animal Care and Use Committee (IACUC) to [redacted], PhD, [redacted] at the SMPH. The Chair of the SMPH IACUC, [redacted], PhD, communicates directly with the IO.

UW-Madison has multiple animal research programs with dedicated IACUCs. Two University-wide units support the programs and promote coordination; the Research Animal Resources Center and the All Campus Animal Planning and Advisory Committee:

1) Research Animal Resources Center (RARC). RARC is a service unit that provides support for the responsible care and use of animals throughout the University. The RARC has four primary functions:

a. Provide veterinary and laboratory services in support of quality animal care.

b. Provide formal training in the proper care, handling and use of research and teaching animals.

c. Provide administrative functions for the IACUCs.

d. Provide post-approval evaluation and assurance of compliance with the laws, regulations and guidelines governing the care and use of laboratory animals.

2) All Campus Animal Planning and Advisory Committee (ACAPAC). The ACAPAC provides advice to the IO, RARC and the Vice Chancellor for Research and Graduate Education on planning, operations and advocacy in the animal program. ACAPAC members are appointed by the IO and include the Attending Veterinarian for the campus, the chairs of the school and college IACUCs, researchers with active animal programs, animal facility managers, and representatives of UW Legal Services. Subject matter experts are invited to participate in ACAPAC activities as needed. The ACAPAC is not an IACUC, and ACAPAC action cannot supersede or counter any official action taken by the SMPH IACUC or any other campus IACUC. The ACAPAC provides advice to the IO on setting some policies (IO Policies) that pertain to animal research campus-wide.

Veterinary staff:

[redacted], DVM, PhD, MPH of the RARC is the Chief Campus Veterinarian of the University of Wisconsin-Madison. Dr. [redacted] serves as Attending Veterinarian for the University and is responsible for the veterinary care of research animals campus-wide. Dr. [redacted] is supervised by Dr. [redacted] and has a direct reporting line to Dr. [redacted], IO.

- [redacted], DVM, PhD is RARC Senior Program Veterinarian at the SMPH, and reports directly to Dr. [redacted].
- [redacted], DVM is Program Veterinarian at the SMPH.
- [redacted], DVM is Program Veterinarian at the SMPH.
- Vacant (search in progress), Program Veterinarian position at the SMPH.

SMPH Animal Husbandry:

The [redacted], MD, has delegated the overall administrative responsibility for the School of Medicine and Public Health's animal care program to the [redacted], PhD. Dr. [redacted] has appointed [redacted], PhD, as [redacted], and [redacted], B.S., RLATG as [redacted]. Dr. [redacted] and Mr. [redacted] oversee the animal husbandry program at SMPH. The SMPH facilities are managed by [redacted] and [redacted]. Drs. [redacted] and [redacted] interact directly with the BRMS leadership.

See Appendix 1 for the Organizational Charts.

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.

UW-Madison Central Administration

Rebecca M. Blank, PhD, Chancellor, CEO per PHS policy

[redacted], PhD, [redacted] (VCRGE)

[redacted], PhD, [redacted]

[redacted], PhD, [redacted], Institutional Official and Interim Director of the RARC

[redacted], PhD, [redacted] & Professor

[redacted], PhD, [redacted]

UW-Madison Environment, Health & Safety

[redacted], PhD, [redacted]

[redacted], BS, MS, PhD, [redacted], Assistant Director of Environment, Health & Safety

[redacted], PhD, [redacted], Assistant Director of Environment, Health & Safety

[redacted], BS, MS, [redacted], Assistant Director of Environment, Health & Safety

[redacted], BS, MBA, [redacted], Animal Research Safety, UW-Madison Environment, Health & Safety

[redacted], BS, Animal Research Safety Specialist, UW-Madison Environment, Health & Safety

[redacted], BS, Animal Research Safety Specialist, UW-Madison Environment, Health & Safety

[redacted], MS, CBSP, SM, [redacted]

UW-Madison University Health Services

[redacted], MD, MPT, [redacted], University Health Services

[redacted], MD, University Health Services, [redacted]

[redacted], RN, BSN, COHN-S, UW-Madison [redacted], University Health Services

[redacted], MS, CIH, CHMM, [redacted], Environmental and Occupational Health, University Health Services

Office of VCRGE, Research Animal Resources Center (RARC)

[redacted], DVM, MPH, PhD, DACLAM, Chief Campus Veterinarian, UW-Madison Attending Veterinarian

[redacted], PhD, [redacted]; RARC Program Assessment Specialist

[redacted], MA, CPIA, [redacted], Administrative Program Specialist Senior

[redacted], BS, PhD, CPIA, [redacted], Assoc. Administrative Program Specialist

[redacted], MS, RARC Program Assessment Specialist

[redacted], BS, RARC Program Assessment Specialist

[redacted], BS, CVT, RLAT, [redacted]

[redacted], BS, MS, [redacted], RARC

[redacted], DVM, [redacted]

[redacted], DVM, RARC Program Veterinarian

[redacted], DVM, PhD, DACLAM, RARC Senior Program Veterinarian

[redacted], DVM, DACLAM, RARC Program Veterinarian

School of Medicine and Public Health & Biomedical Research Model Services

[redacted], MD, [redacted]

[redacted], PhD, Senior [redacted]

[redacted], PhD, Director, [redacted]
Professor of Medicine and Oncology

[redacted], BS, RLATG, [redacted]
[redacted], Facilities Manager

[redacted], Supervisor, Biomedical Research Model Services

[redacted], Supervisor, Biomedical Research Model Services

[redacted], Supervisor, Biomedical Research Model Services

[redacted], PhD, Chair of SMPH IACUC and Professor of Neuroscience

F. Briefly describe the major types of research, testing, and teaching programs involving animals and note the approximate number of principal investigators and protocols involving the use of animals. As mentioned in the instructions, please complete one of the animal use forms included with this outline or provide the information requested in a similar format as an appendix.

A broad range of research and teaching activity involving animals occurs at the School of Medicine and Public Health. Studies address every organ system, their diseases, the mechanisms of disease processes, and treatment strategies. Studies include but are not limited to: cancer, cardiovascular diseases, environmental hazard effects, gene transfer, immunology, neurological abnormalities, ophthalmology, organ transplantation, orthopedic medicine, parasitology, radiology, sleep disorders, toxicology, and virology. Approximately 233 Principal Investigators (PIs) hold 358 approved protocols in the School of Medicine and Public Health at this time.

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

The School of Medicine and Public Health receives research funding from federal grants and non-federal grants. Non-federal grants include funding from both intra- and extramural entities, the latter including non-profit organizations and companies including those that develop instruments and pharmaceutics.

H. List other units (divisions, institutes, areas, departments, colleges, etc.) of your organization that house and 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.

In addition to the SMPH, four other units at UW-Madison use animals in teaching and research: 1) College of Agricultural and Life Sciences (CALS), 2) School of Veterinary Medicine (SVM), 3) Office of Vice Chancellor for Research and Graduate Education (VCRGE), and 4) College of Letters and Science (L&S).

CALS, SVM and VCRGE each maintain their own AAALAC accreditation and have independent Program Descriptions. Information about these programs are therefore not included in this program description.

L&S is the only UW-Madison school that is not AAALAC-accredited. Animals listed on SMPH protocols are never housed in L&S facilities.

Each program with operationally distinct facilities is overseen by specific IACUCs.

Facility use is allowed among the AAALAC accredited programs. When animals are housed and used in facilities that cross the jurisdictions of more than one IACUC, primary oversight (including protocol review and approval, semiannual inspections, and veterinary care) is performed by the IACUC that oversees the facility where the majority of the animals are housed. Policy 2003-024-io describes the method and circumstances under which multiple IACUCs exercise shared protocol review and approval (https://www.rarc.wisc.edu/iacuc/acapac/2003-024-io_assignment_of_protocols_to_uw-madison_acucs.html).

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.

Not Applicable

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

None

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 p. 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 UW-Madison Chief Campus Veterinarian communicates directly with Dr. [redacted], the Institutional Official (IO).

The IACUC sends reports of its semiannual inspections and program reviews to the IO. The Chair of the IACUC can communicate programmatic needs to the IO at any time. The IO also attends at least one regular IACUC meeting per year and most All Campus Animal Planning and Advisory Committee (ACAPAC) meetings.

As the [redacted], Dr. [redacted] attends regular meetings with the management of RARC and monthly all-staff meetings.

b. The Attending Veterinarian [Guide, p. 14]

i. Describe the institutional arrangement for providing adequate veterinary care. For each veterinarian associated with the program (including private practitioners), provide the veterinarian's name(s), list responsibilities, and how the veterinarian is involved in monitoring the care and use of laboratory animals. If employed full-time by the institution, note the percentage of time devoted to supporting the animal care and use program of the institution. If employed part-time or as a consultant, note the frequency and duration of visits.

All veterinarians and veterinary technicians providing service to the SMPH Animal Research Program are employees of the RARC. Three veterinarians and 7 veterinary technicians are regularly assigned to provide veterinary care within SMPH facilities. This staff provides 90-100% of their time supporting the SMPH animal care and use program. Occasionally, they might support other programs on campus as needed. Dr. [redacted], DVM, PhD, DACLAM serves as the [redacted] animal care and use program. Dr. [redacted] reports directly to Dr. [redacted], Chief Campus Veterinarian/Attending Veterinarian.

Dr. [redacted] along with Drs. [redacted] and [redacted] provide clinical care to research animals (including emergency care), consult with

investigative staffs on research animal use, provide oversight of animal biosecurity and disease surveillance programs, and serve on the SMPH IACUC. Veterinarians monitor the care and use of laboratory animals through animal-use protocol pre-review and review, semiannual IACUC inspections, veterinary clinical rounds, clinical examinations of animals, and consultation with veterinary technicians, animal care staff and investigative staffs.

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. An organizational chart depicting the reporting relationship between these individuals and the Attending Veterinarian should be included as an appendix.

Veterinary care is provided by RARC veterinarians, or RARC veterinary technicians working under the direction of an RARC veterinarian. Investigative staff may provide basic care, such as the administration of post-operative analgesics or antibiotics, either according to an approved animal-use protocol or at the direction of an RARC veterinarian.

c. Collaborations [Guide, p. 15]
Describe processes for assigning animal care and use responsibility, animal ownership and IACUC/OB oversight responsibilities at off-site locations (i.e., collaborations).

Policy 2003-015-io on collaborative research projects exists in the event non UW-Madison collaborations are pursued. The Policy states that any UW-Madison investigator conducting collaborative animal-based research at facilities not owned or controlled by UW-Madison must have an IACUC-approved protocol from the institution where the animal work occurs, and that UW-Madison will not relinquish its right to review any animal care and use protocol. Animal ownership in collaborations is determined on a case by case basis. Regardless of ownership, the institution housing the animals has primary responsibility for animal welfare.

2. Personnel Management

a. Training and Education
Describe how the IACUC/OB provides oversight and evaluates the effectiveness of training programs. Describe how training is documented.

The university training program is described in Policy 1999-006-io, and is detailed as required in the appropriate sections of the Program Description. Required training includes occupational health and safety training, animal use orientation training, species-specific training, and laboratory animal surgery training for personnel performing surgery.

The IACUC provides oversight and evaluation of training program effectiveness during protocol review, semiannual program reviews, semiannual inspections, at monthly IACUC meetings, and on an *ad hoc* basis as needed.

When protocols are submitted for IACUC review, administrative staff verifies training of individuals as detailed in Policy 1999-006-io. If required training is not completed or scheduled, the IACUC has the authority to deny animal use privileges. The IACUC also has the discretion to require additional training on a case-by-case basis. The IACUC can direct veterinary staff, RARC trainers, or specialists (e.g. anesthesiologists from the School of Veterinary Medicine) to be present with research staff for initial procedures and surgeries to observe and evaluate techniques, and report their recommendations to the IACUC.

Training is documented in central training databases maintained by RARC and University Environment Health and Safety.

i. Veterinary and Other Professional Staff [Guide, pp. 15-16]
Provide name and credentials of veterinary and other professional staff, including the veterinary personnel listed above, and describe their qualifications, training, and continuing education. Please do not provide curriculum vitae of personnel.

RARC

[redacted], DVM, MPH, PhD, DACLAM; Chief Campus Veterinarian: [redacted]

[redacted], DVM, PhD, DACVP; [redacted]

[redacted]

[redacted], DVM; [redacted] Research Animal Veterinarian for SMPH: [redacted]

[redacted], DVM, PhD, DACLAM; [redacted]

[redacted], DVM, DACLAM; Program Veterinarian for SMPH: [redacted]

[redacted]

Biomedical Research Model Services (BRMS)

[redacted], PhD; [redacted]

[redacted], BS, AHT, RLATG; [redacted]
Facility Manager: [redacted]

[redacted]

[redacted], LAT; Laboratory Technician Support Supervisor: [redacted]

[redacted], BS, LVT; Laboratory Technician Support Supervisor: [redacted]

[redacted], ALAT; Laboratory Technician Support Supervisor: [redacted]

ii. Animal Care Personnel [Guide, p. 16]
Indicate the number of animal care personnel. **32**
Summarize their training, certification level and type, experience, and continuing education opportunities provided.

Permanent Full-Time	Part Time	Total
32	0	32

AALAS Certification is summarized below:

ALAT	LAT	Total
12 *(38% of staff)*	6 *(19% of staff)*	18 *(57% of staff)*

New BRMS personnel are required to complete a standardized employee orientation. This orientation occurs both outside and inside the animal facilities and covers a wide variety of topics ranging from onboarding to online tutorials to hands on experience. All aspects of training are describe below and documented.

To begin working in an animal vivarium, new personnel must acquire a University ID card (WisCard), computer login (NetID), and keys and then complete initial training requirements. They must review all campus policies and standard operating procedures that pertain to animals; complete relevant online tutorials including animal health monitoring, biosafety, chemical safety, emergency procedures, microisolator technique, personal protective equipment, research related hazards, and zoonotic disease; and complete an Animal Contact Risk Questionnaire, facility tours and respirator fit testing. Once the initial training requirements are complete, new personnel learn to complete daily room activity logs, illness/injury reports, and overcrowded cage reports as well as receive hands on experience working with different species in the vivaria working one-on-one with the facility supervisor and peers. Training for animal care personnel is documented in training databases maintained by BRMS and RARC.

Continued training is given to all BRMS staff on topics including but not limited to: fire extinguisher use, ergonomics, Animal User Certification, occupational health and safety and microisolator technique. SOP-based training is completed for new or updated SOPs. Species-specific husbandry refreshers are offered to specific individuals as needed.

In addition, AALAS certification classes were started in 2012. Previously, these classes were offered at the campus level, but sufficient interest in ALAT and LAT certification levels was present within the department warranting classes limited to BRMS staff.

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.

When protocols are submitted for IACUC review, protocol administrative staff verifies the training of every individual listed on each protocol as detailed in Policy 1999-006-io. This policy addresses training requirements for principal investigators, research staff, postdoctoral fellows, students and visiting scientists. Training includes completion of the online UW-Madison Animal User Orientation and Occupational Safety training, followed by species-specific training based on the species they will use, and surgical

training if applicable. Every animal user's individual training is recorded in a training database.

BRMS supervisors or advanced animal care staff conduct facility-specific orientation prior to granting a researcher access to animal vivaria.

a) Briefly describe the content of any required training.

UW-Madison Animal User Orientation is an online course that covers the rules and regulations regarding the use of animals in research. Specifically, topics include IACUC function, ethics of animal use, the Three R's, methods for reporting concerns about animal use, occupational health and safety issues, animal handling and other related topics. Must be renewed every 5 years.

Safety for Personnel with Animal Contact is an online training course provided by EH&S that offers an introduction to the UW Madison EH&S Department and an overview of occupational health and safety topics including animal contact safety, zoonoses, allergies & asthma, ergonomics, medical concerns, immunizations, injury and exposure protocols, syringe use guidelines, and personal protective equipment. Must be renewed every 5 years.

Risk Communication in Animal Facilities is an online course designed for individuals exposed to chemicals, biologicals, and radioactive materials in an animal facility and how to properly notify the animal care and veterinary staff.

Animal Contact Risk Questionnaire (ACRQ) provided by UHS is an onboarding and annual requirement that addresses the health risk assessment for employees working with animals. A blank copy of the baseline questionnaire and annual follow-up form are provided in Appendix 5: Medical Evaluation Form.

Species Specific Training is required of all personnel listed on an approved animal care and use protocol. Training includes online courses and hands-on instruction pertaining to the particular species the individual will be working with.

Medical Records Training Module is an online module that explains the role of the veterinarian, veterinary staff, principal investigator, laboratory staff, and animal care staff in maintaining current and accurate medical records. This training is a prerequisite for the Laboratory Animal Surgery Class or may be required of some individuals if deemed necessary by their department or IACUC.

Laboratory Animal Surgery Class is required of all personnel performing survival surgery and prolonged nonsurvival surgery. This course covers anesthesia, analgesia, aseptic technique, instrument handling, basic suturing and wound closure and culminates in a hands-on surgical procedure.

Anesthesia Training Requirements for Nonsurvival Surgery Class is an online module that covers anesthesia and monitoring, and is required in lieu of the Laboratory Animal Surgery Class for individuals performing nonsurvival surgery less than 5 minutes in duration from the time of incision. This training is a prerequisite for the Laboratory Animal Surgery Class.

Aseptic Technique Training Module is an introduction to the basic terminology associated with aseptic technique. It covers why aseptic technique is used, common sterilization methods, the difference between disinfecting and sterilizing, and the steps that need to be taken in preparation for animal surgeries. This training is a prerequisite for the Laboratory Animal Surgery Class.

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

Per Policy 1999-006-io, all UW-Madison animal users are required to complete the UW-Madison Animal User Orientation prior to animal contact.

Once an individual is placed on an IACUC-approved protocol, species-specific training (administered by RARC) for the species with which the individual will work is to be completed within 30 days.

Once an individual is placed on an IACUC-approved protocol, *Safety for Personnel with Animal Contact* is to be completed within 30 days and renewed every five years. Safety staff follow-up with individuals until training is completed and there is no opt out.

Individuals named on IACUC-approved protocols as part of the surgical staff are to complete the *Lab Animal Surgery Class* or the *Anesthesia Training Requirements for Nonsurvival Surgery Class* (administered by RARC) within 30 days of being placed on the protocol.

If individuals need to work with or care for animals before completing the required training, they must work under the direct

supervision of a supervisor who has completed the required training described in Policy 1999-006-io.

Visiting scientists who spend less than 30 days on campus must work under the direct supervision of the host principal investigator or designee who has completed required training. Visiting scientists who spend greater than 30 days working with animals on campus must complete the appropriate required training as detailed in Policy 1999-006-io.

c) Describe continuing education opportunities offered.

Online training modules for continuing education opportunities are available. These modules include:

AALAS Learning Library
Anesthesia Machine User Guide
Anesthesia Training Requirements for Nonsurvival Surgery
Controlled Substances
Lab Animal Surgery Anesthesia
Lab Animal Surgery Aseptic Technique
Medical Records
Microisolator Technique

Additional education opportunities are also offered:
AALAS ALAT certification – classroom and self-study
AALAS LAT and LATG – self-study
Necropsy
Perfusion
Stereotaxic surgery

2) Describe the process(es) to ensure surgical and related procedures are performed by qualified and trained personnel. Who determines that personnel are qualified and trained for surgical procedures? What role does the Attending Veterinarian and IACUC/OB have in this determination? [Guide, pp. 115-116]

Every individual named on IACUC-approved protocol as part of the surgery staff, including anesthetists, must successfully complete the RARC Laboratory Animal Surgery Class or the Anesthesia Training Requirements for Nonsurvival Surgery Class. Courses are taught by qualified RARC Trainers and Veterinary Staff. Protocol administrative staff verifies that every individual listed on an IACUC-approved protocol has successfully completed the mandatory species-specific and/or surgical training as outlined in Policy 1999-006-io. Policy 1999-006-io also describes processes to exempt experienced surgeons from this training.

RARC Veterinarians are informed of proposed surgical procedures through protocol pre-review and review. Questions that research animal veterinarians or the IACUC may have about qualifications of personnel or the nature of the surgical technique are addressed through protocol review. Additionally, when a researcher is identified through protocol review as performing surgery on a USDA-covered species on which they have never operated, they are observed/assisted by a research animal veterinarian when they perform surgery on the new species for the first time, regardless of experience with other species. The veterinary staff is also made aware of any surgical procedures planned in BRMS surgery suites through surgical-suite scheduling procedures. The veterinary staff regularly observes procedures, schedules walk-throughs, and performs facility inspections to observe animals. Any concerns are reported to the Senior Program Veterinarian, the Chief Campus Veterinarian, or both.

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

If anesthesia will be used, it must be stated in an approved animal care and use protocol. Every protocol is reviewed for proper anesthesia usage by the IACUC and an assigned veterinarian.

Individuals listed on IACUC-approved protocols must complete species-specific training for the species with which they will be working within 30 days of being listed on a protocol. Individualized anesthesia training is offered during the species-specific training courses.

Individuals named on IACUC-approved protocols as part of the surgery staff, including anesthetists, must complete the Lab Animal Surgery course or the Anesthesia Training Requirements for Nonsurvival Surgery course. Both courses include training in anesthesia and analgesia.

Once an individual has received the required training (species-specific and/or surgery), it is recorded in the central training database maintained by RARC. Until an individual has received the required training, they must work under the direct supervision of a supervisor who has completed the required training.

Additional supportive material is available through RARC. Forms for species-specific sedation, analgesia, anesthesia and euthanasia list approved drugs and dosages. An online Medical Records Training Module discusses anesthesia record content with examples provided and anesthesia monitoring. Guidelines for Anesthesia Record and Monitoring Requirements for Vertebrate Animals can also be found under the Animal Health, Medical Records section of the RARC website.

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

Euthanasia method(s) must be stated in an approved animal care and use protocol. Individuals listed on IACUC-approved protocols must complete RARC species-specific training for the species with which they will be working. Individualized euthanasia training is offered during the species-specific training courses. RARC training provides instruction on verification of death after euthanasia procedures, and techniques of CO2 euthanasia and IP injections for rodent species. Euthanasia of larger species is performed by veterinary staff members or experienced laboratory personnel. Instruction on physical methods of euthanasia is provided to research team members by experienced laboratory personnel, with assistance from RARC staff if needed. Ongoing assessment of proficiency takes place through regular programmatic oversight by RARC and BRMS personnel, through IACUC semiannual inspections, and through formal post approval monitoring.

b. Occupational Health and Safety of Personnel [Guide, pp. 17-23]
Describe the institutional entities that are involved in the planning, oversight, and operation of the institutional occupational health and safety program.

UW-Madison has six institutional entities responsible for the institutional occupational health and safety program:

1. University Health Service (UHS)
2. UW Environment, Health and Safety (EH&S)
3. Institutional Safety Committees
4. Stem Cell Research Oversight Committee (SCRO)
5. Animal Care and Use Committees (IACUCs)
6. Office of Risk Management

1. University Health Services (UHS): UHS has two major divisions, Environmental and Occupational Health and Occupational Medicine.

A) Environmental and Occupational Health: Environmental and Occupational Health provides a variety of services campus wide: industrial hygiene investigation and consultations, food safety, noise evaluation surveys and hearing conservation, indoor air quality, assists departments with respiratory protection plans, ergonomics, reproductive hazards, non-research blood borne pathogen programs, and coordinates the measurement and fitting of prescription safety glasses.

B) Occupational Medicine: Occupational Medicine personnel review the *Animal Contact Risk Questionnaire* (ACRQ) baseline (Appendix 5A) to enroll personnel with animal contact into the occupational health program. Thereafter, an annual form is used (Appendix 5B). Medical staff perform

tetanus vaccinations, rabies and Hepatitis B vaccinations, pre-exposure consultations and vaccinations for personnel working with certain infectious diseases and work related allergy consultation and management. Other responsibilities include respirator clearance and fit testing, TB testing for non-human primate handlers, follow-up evaluations for positive responders, and treatment of exposures during regular working hours. After hours treatment for exposures is performed by UW Hospital & Clinics Emergency Room Services. In addition, UHS coordinates any serum collection needed for pre-employment or pre-exposure services for some laboratories depending on the hazardous agent involved.

Further information about UHS can be found on their website: https://www.uhs.wisc.edu/eoh/

2. UW Environment, Health and Safety Department (EH&S): EH&S is organized into five offices involved in the oversight of animal program safety: (A-E below):

A) Office of Biological Safety (OBS): Assists all faculty and staff in observing safe biomedical laboratory practices as prescribed by the Centers for Disease Control and Prevention (CDC) and the National Institutes of Health (NIH) and the University of Wisconsin-Madison Institutional Biosafety Committee (IBC). OBS oversees the Biological Safety protocol review process and performs regular laboratory visits for post approval monitoring. The office assures that research is done in secure facilities in compliance with all local, state, and federal regulations. OBS also encompasses the **Animal Research Safety** group and the **Select Agent Safety** group:

Animal Research Safety (ARS): ARS advises IACUCs on animal protocol hazards and coordinates bi-monthly animal safety working group meetings to discuss occupational safety and health concerns within the UW-Madison animal research community. Three ARS specialists review sections of Biological Safety protocols related to animal research, and attend IBC meetings as needed when Biological Safety protocols that include animal research are submitted for review as part of consistency checks. ARS staff also advise personnel with animal contact on safety issues, and coordinate research-related blood-borne pathogen programs.

Select Agent (SA) Program: The UW-Madison SA program assists faculty and staff to ensure compliance with the Federal Select Agent Program. The Federal Select Agent Program is jointly comprised of the CDC Division of Select Agents and Toxins and the APHIS Select Agent Services. The Federal Select Agent Program oversees the possession, use and transfer of biological select agents and toxins (SABT), which have the potential to pose a severe threat to public, animal or plant health, or

to animal or plant products. The UW-Select Agent Program assists in implementing and enforcing the Select Agent Regulations, maintains an up to date inventory of all SABT on campus, conducts laboratory inspections, ensures that all individuals who work with these agents undergo a security risk assessment performed by the FBI, and investigates any incidences in which non-compliance may have occurred. The current list of select agents and biological toxins that fall under the SA regulations are posted on the Federal Select Agent Program website: www.selectagents.gov/SelectAgentsandToxinsList.html

B) Office of Engineering and Technical Services (ETS): ETS provides facility and biomedical containment consultation throughout the University and within EH&S. ETS provides consultation concerning the purchase of biological safety cabinets (BSC) and oversees a BSC and containment equipment certification program.

C) Office of Chemical Safety: Chemical Safety assists the University and research community by providing guidance on chemical safety and compliance with regulations dealing with the use and storage of hazardous chemicals and drugs. It provides general laboratory safety training and also performs laboratory visits in order to provide direct feedback on safety and compliance concerns. Chemical Safety also consults with investigators on safety and compliance issues upon request. The Office assists with chemical disposal and serves as an advisor for spill cleanup. Each laboratory is required to have a chemical hygiene plan while non-chemical laboratories are required to have a Hazard Communication Plan. The Chemical Safety Committee, overseen by the Office of Chemical Safety, uses the OSHA Laboratory Standard to identify Particularly Hazardous Substances requiring additional special precautions. A Particularly Hazardous Substance Approval Form is completed for each area using these chemicals. After approval, this form is reviewed by all personnel working with that material, and is attached to their chemical hygiene plan. All rooms used for storing hazardous materials must have a "Laboratory Emergency Information" form posted near the door and a copy of the completed form must be provided to each facility manager. The signs are updated annually. Chemical safety specialists provide consultations for the safe use of hazardous chemicals and hazardous drugs administered into animals.

D) Office of Radiation Safety (ORS): ORS assures proper use of radioactive materials and radiation producing devices. It provides training and consultation to researchers and staff, as well as frequent audits of radiation laboratories to ensure all radiation safety requirements are in place. ORS staff visit each laboratory to discuss safe handling and storing, posting and labeling, contamination checks, waste disposal, record keeping and other requirements as needed. In order to use radioactive materials in vertebrate animals, the authorized user must submit a form 99A to ORS. An animal care and use protocol approved by the IACUC is

also required prior to approval of the 99A request. ORS works with the authorized user to assure that proper radiation training has occurred, that animals are not moved to unauthorized facilities, that proper labeling is placed in animal rooms and on cages, that animal waste, food and bedding is properly disposed of, that the animals are permanently marked or tagged as having been given radioactive materials, that animals are disposed of by ORS when euthanized, and that other requirements as stated on form 99A are followed. ORS controls the purchase of all radioactive materials for the campus. Unless all required practices are followed, the user will not be allowed to obtain radioactive materials for a project.

E) Office of General & Building Safety assists all UW-Madison departments, programs, faculty, students and staff in observing safe work practices as prescribed by the Wisconsin Administrative Code. The department promotes the development of safe facilities and advocates for proactive maintenance programs to insure the safety of persons using campus facilities for work, learning or recreation. The office's areas of responsibilities include building safety (includes asbestos and lead management), confined space entry, accident prevention, sharps and hazardous glass disposal, advice on Lockout/Tag-out for hazardous equipment, fire safety (which includes fire extinguisher maintenance, training and annual testing), evaluation of safety showers and eye wash stations, fire prevention via inspections and improvements for code compliance, evacuation drills and fire alarm testing.

3. Institutional Safety Committees: There are five faculty committees that function at the institutional level. They receive administrative support from EH&S:

A) Institutional Biosafety Committee (IBC): The IBC reviews research activities involving biologically hazardous materials and/or recombinant DNA molecules/organisms. Investigators using biologically hazardous materials and/or recombinant DNA must submit a Biological Safety Protocol to the Committee. The Committee reviews and approves protocols, and establishes appropriate safety precautions. The Committee is constituted as mandated by section IV-B-2 of NIH Guidelines.

B) Biosecurity Task Force: The Task Force is the home of the institutional select agent program.

C) Chemical Safety Committee: The Chemical Safety Committee establishes policies and procedures for the safe acquisition, use, storage and disposal of chemicals on campus. The Committee provides guidance to the Office of Chemical Safety in carrying out these policies and procedures. The Committee advises EH&S and campus chemical users on programs to comply with federal, state and local chemical and environmental safety laws.

D) Radiation Safety Committees: In 2016, UW-Madison and UW Health (governed by UW Hospitals and Clinics Authority) finalized a partnership agreement to merge, reorganize, and jointly manage their radiation safety programs. Overall oversight of the program is charged to an Executive Radiation Safety Committee, and six full, standing radiation safety committees that focus on more specific aspects of radiation safety. The Campus Radiation Safety Committee oversees animal research involving radioactive materials.

E) Occupational Health Committee: The committee advises University administration, sets policy to ensure compliance with local, state, and federal regulations and accreditation requirements governing occupational health and safety. The committee reviews workplace health and safety issues brought to their attention and makes recommendations for resolutions. The committee also reviews safety services provided to the campus, and evaluates University safety performance consistent with their charter.

4. Stem Cell Research Oversight (SCRO) Committee: The SCRO Committee is an institutional committee based administratively in the VCRGE. The SCRO Committee provides oversight for all research on campus that involves 1) the use of human stem cells or their derivatives; 2) the introduction of human pluripotent cells, or their derivatives, obtained from a non-embryonic source, into non-human animals at any embryonic, fetal, or postnatal stage, if an expected effect is that the human cells will be integrated into the central nervous system, testes, or ovaries of the animal; 3) all research that (a) involves pre-implantation stages of human development, human embryos, or embryo-derived cells or (b) entails the production of human gametes in vitro when such gametes are tested by fertilization or used for the creation of embryos; or 4) the storage or disposition of human embryos or gametes obtained for the purposes of stem cell research. SCRO policies and guidance are based on federal and international guidelines from the NIH, NAS, and ISSCR. Before approval, the committee ensures all appropriate oversight approvals are in place.

5. Animal Care and Use Committees (IACUCs): Exposure intensity, frequency, hazards posed by animal species, and the research materials used in or with animals are evaluated by the IACUC and other specialized review committees described above. Specialists from the EH&S Office of Biological Safety's Animal Research Safety Group (ARS) review animal care and use protocols as voting members of the IACUCs. Ms. [redacted] is the voting member assigned to all four IACUCs, and Mr. [redacted] and Ms. [redacted] are her voting alternates. The specialists participate in IACUC semiannual facility inspections, and attend convened IACUC meetings to provide expert opinion and guidance. The specialists also review animal related parts of Biological Safety protocols and attend the IBC meetings as

needed Biological Safety protocols are submitted for review as part of consistency checks.

The IACUC specifically reviews the occupational safety program as it relates to the animal program at every semiannual program review and provides feedback in its reports to the Institutional Official

6. UW Division of Business Services, Office of Risk Management: The Office is responsible for processing State of Wisconsin Worker's Compensation reports and evaluating risk data. Among other occupational risk mitigation services, the Office provides the following:

- Driver Authorization
- Student Risk Management Information
- Risks of Off Campus Classes
- Liability Program
- International Health Insurance

Other entities that provide important services, but are not directly involved in program planning or oversight include the following:

A) UW Hospital and Clinics (Emergency Department and Infectious Disease Physicians). The UW Hospital and Clinics emergency department serves as a back-up to UHS for the treatment of bites and exposures as well as other research hazards. The Infectious Disease Physicians serve as a resource for exposure to and treatment for biological hazards and zoonotic diseases.

B) Employee Health Providers serve as the main diagnostic entity for the treatment of non-traumatic injuries sustained by University employees with health insurance. Students would generally be treated by UHS or the UW Hospital & Clinics emergency department.

i. Hazard Identification and Risk Assessment [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]

1) Describe the process used to identify, evaluate and control experimental and other potential hazards (such as ionizing and non-ionizing radiation, chemical cleaning agents, animal bites, allergens, zoonoses, and venomous species) inherent or intrinsic to the use of animals by the institution. Describe how risks of these hazards are assessed and how procedures are developed to manage the risks.

Research Hazards Identification & Evaluation Processes:
Processes to identify, evaluate, manage and control hazards are overseen by the Offices of Biological Safety, Radiation Safety, and Chemical Safety, and by the IACUC.

Office of Biological Safety (OBS):
PIs must submit a Biological Safety protocol to OBS, and OBS routes these protocols to the Institutional Biosafety (IBC). Review of biosafety protocols forms the basis for the conduct of a thorough risk assessment, the results of which are communicated to the principal investigator. The review process is as follows:

1. PI's must submit a Biological Safety Protocol to OBS.
2. OBS performs a risk assessment based on the type of hazard, how it is used, and quantity administered. An ARS staff person is assigned to review any relevant animal sections and insure congruence with applicable animal care and use protocols.
3. The PI is notified if any changes are needed. Finalized biological Safety Protocol is submitted to the Institutional Biosafety Committee (IBC) for review.
4. The IBC reviews research activities involving biologically hazardous materials and/or recombinant or synthetic DNA molecules/organisms.
5. The IBC will either approve the protocol, approve the protocol pending changes, or table the protocol.

Office of Radiation Safety (ORS):
PIs using radioactive materials in vertebrate animals must submit a Radiation Safety form 99 to ORS. An animal care and use protocol approved by the appropriate IACUC is also required prior to final approval of the 99A request. ORS works with the authorized user to assure that:

- proper radiation training has occurred, including laser use
- animals are not moved to unauthorized facilities
- proper labeling is placed in animal rooms and cages
- animal waste food and bedding is properly disposed of
- animals are permanently marked or tagged as having been given radioactive materials
- animal are disposed of by ORS when euthanized
- other requirements as stated on form 99A are followed.

The PI must indicate on the animal care and use protocol they have an approved or pending 99A. ORS controls the purchase of all radioactive materials for the campus. Unless all required practices are followed, the user will not be allowed to obtain radioactive materials for the project.

Office of Chemical Safety:
When use of hazardous chemicals is identified, Chemical Safety staff assist laboratories with the safe use of chemicals and prevention of hazardous exposures. They also assist with chemical disposal and guidance for spill cleanup and provide a manual titled, "Laboratory Safety Guide." Each laboratory is required to have a Chemical Hygiene Plan (CHP) while laboratories not utilizing hazardous chemicals are required to have a Hazard Communication Plan. The Chemical Safety Committee uses the OSHA Laboratory Standard to identify Particularly Hazardous Substances requiring additional special precautions. A Particularly Hazardous Substance Approval Form is completed for each area using these chemicals. After approval, this form is reviewed by all personnel working with that material, and is attached to their chemical hygiene plan.

All rooms used for storing hazardous materials must have a "Laboratory Emergency Information" form posted near the entrance of the laboratory. The Laboratory Emergency Information card is reviewed and updated annually.

IACUC Protocol Review:
Animal care and use protocols must include identification of hazards, initial risk assessment of hazards, establishment of precautions, and confirmation of an applicable Biosafety protocol and/or Radiation Safety Form 99A. As part of the protocol review process, an ARS staff member:

a. Assesses the risk presented by the species used and ensures appropriate procedures are outlined to manage or control the risks, including appropriate personal protective equipment (PPE), and caging to handle allergens and zoonotic agents.
b. Assesses the risk presented by biological or radioactive agents administered to the animals. Compares the protocol to the Biological Safety protocol and 99A form for consistency, and, if necessary, emails the PI if a Biological Safety or 99A is needed, if they need to be modified or amended, if they need to be renewed, or if safety precautions contained within the other protocols are inconsistent with the information presented in the animal care and use protocol.
c. Assesses the risk presented by chemicals or drugs administered to the animals. Performs research to obtain the following information regarding the compound if needed or available: pharmacokinetic data, safety and toxicity data, Safety Data Sheets or product inserts. When new compounds are added or dosages of current compounds change, the Office of Chemical safety performs a risk assessment.

The IACUC has authority to place a hold on granting animal care and use protocol approval if a corresponding amendment is needed to the

Biological Safety protocol. If a PI is adding a new biological agent that is either subject to the NIH Guidelines for Research Involving Recombinant or Synthetic DNA Molecules, or is a pathogen or agent in risk group 2 or higher, the agent must also be added to their Biological Safety protocol. The ARS staff person will advise the IACUC when the PI has submitted the corresponding Biological Safety amendment and recommend approval of the animal care and use protocol when congruence between both the animal and Biological Safety protocol has been achieved.

Once the animal care and use protocol is approved, RARC sends electronic notification to the PI. The notification includes instruction that animal facility staff must be contacted prior to initiating work with any hazard. Animal facility supervisors are included on emails so they are aware of any safety precautions needed for the protocol.

Post-Approval Monitoring:

1. A member of the ARS group participates in semiannual site inspections of animal facilities and research laboratories performed by the IACUC. ARS staff members also participate in Biosafety laboratory visits as well as Biosafety Level 3 inspections with the Biological Safety staff.
2. Personnel from the EH&S Offices of Biological Safety, Chemical Safety and Radiation Safety may perform site visits to ensure that facilities, laboratories, animal rooms, and safety equipment are appropriate for the hazardous agents present. Monitoring and support in the event of an accident or exposure or in response to reported concerns are available from these offices and UHS.

2) Describe procedures for reporting and evaluating exposure to hazards, work place injuries, etc.

Access to an online injury or exposure report form is prominently featured on the EH&S emergency contact website homepage (http://ehs.wisc.edu/emergency.htm). When submitted, this report provides the Office of Biological Safety, the Office of Occupational Health, and the Institutional Biosafety Committee with information to ensure that proper actions have been taken, including appropriate medical care. It also assists the University in meeting NIH reporting requirements. OBS performs a root cause analysis to determine if any mitigation steps can be taken to avoid the incident from reoccurring.

Once threats to personal safety and property have been mitigated, the employee completes the Employee's Work Injury and Illness Report and submits the form to their supervisor. The supervisor then completes the Employer's First Report of Injury or Disease form. Finally, the BRMS HR Manager completes the Supervisor and Safety Coordinator Investigation Report for Injury or Illness. The supervisor

forms are to be completed within 24 hours of being notified by the employee of an accident.

The UW-Madison Institutional Biosafety Committee (IBC) requires that Principal Investigators or supervisors to report all potential exposures or releases of organisms or biological toxins within 24 hours of the event. Potential exposures include needle sticks, animal bites, aerosol exposures, and other incidents potentially resulting in disease. Potential releases include spills outside of primary containment as well as potential releases to the environment.

The Chemical Safety Office, as part of EH&S, performs inspections of laboratories as part of its Laboratory Visitation Program. During the visits hazard assessments are performed to ensure that exposures to hazardous materials are minimized and general safety practices are followed. After inspections, the Principal Investigators are issued reports outlining deficiencies along with recommended corrective actions. The Chemical Safety Office also requires reporting (on the same emergency contact page above) and investigates incidents on campus involving hazardous chemicals to determine root cause and corrective actions and will communicate to the rest of campus (when appropriate) lessons that have been learned from these incidents.

The Radiation Safety Office has Reporting Event Schedule based on the exposure received. The University of Wisconsin-Madison maintains an ALARA ("as low as reasonably achievable") policy based on personal dosimeter and area surveillance.

ii. Facilities, Equipment and Monitoring [Guide, pp. 19-20]

1) Describe how hazardous agents are contained within the study environment and in the animal housing area.

Hazardous agents are contained at the cage level (i.e. use of microisolator cages), room level, and/or isolation suite or facility. Disposable PPE is worn when working with hazardous materials. SMPH-BRMS provides all personal protective equipment required to be worn in the animal facility. Cage-changing for rodents administered hazardous agents is done in a BSC (Class II or III) or fume hood depending on the hazard and risk level. BSCs and fume hood function is validated yearly by EH&S. Every facility with a Garb-el disposal unit is fitted with a SafeAir Dust Collection system to capture dust and particles when dumping cages into the Garb-el. The SafeAir Dust Collection unit employs HEPA/ULPA, carbon, and prewash filters to capture particles. Biohazardous animal wastes are treated prior to disposal in accordance with the Biological Safety protocol.

2) Describe facilities that use hazardous agents. Note square feet/meters, number of animal rooms, and support spaces. In addition, describe design features, construction features, and special equipment, especially as they relate to hazard containment. Note if, and how, exhaust air is treated. If special facilities are not available and animals exposed to hazardous agents are housed within conventional animal rooms, so note.

There are 10 separate animal facilities included in this description. Hazardous agents could be used in any of these facilities. Line drawings are presented in Appendix 4.

[redacted]:
Located on the [redacted] of the [redacted], a BSL-2 [redacted] occupies 1003 ft^2 on the [redacted] end of vivarium, with 3 animal holding rooms and 3 support rooms. The cage wash area contains a rack washer and an autoclave.

[redacted]

Gnotobiotics housing for mice occupies 2099 ft^2 on the [redacted] end of the vivarium, with 2 animal holding rooms and 1 support room. Cages are maintained in positive pressure isolation bubbles in the housing rooms.

[redacted]
Located in the [redacted] of the [redacted], this animal facility occupies 9,594 ft^2 with 13 animal holding rooms and six support rooms.

ATSs and BSCs are used for procedures and cage changing. The facility has an autoclave for decontamination and has a rack washer

and tunnel washer with an inline Garb-el waste disposal unit, and a SafeAir dust collection system.

[redacted]

Located on the [redacted] of [redacted] in room [redacted], this 603 ft^2 room contains six cubicles for housing rodents for testing animal pathogens and allergenic agents. The room contains a fume hood for hazard use.

The Environmental Enclosure Unit consists of horizontally interlocking and vertically telescoping window panels. This space in front of the units allows cage rack manipulation and reduces the possibility for contamination of adjacent spaces. The windows are interlocking and provide an air barrier when in the closed position sufficient to continuously maintain the enclosure in a positive or negative differential pressure of at least +/- 0.05 inches of water column with respect to the room when moving 15 air changes per hour.

[redacted]

Located on the [redacted] of the [redacted], the animal facility occupies 25,923 ft^2. Fifty-nine rooms are animal holding rooms, and there are 13 support spaces. BSC, ATS and chemical fume hoods are available for procedures and cage changing.

[redacted]

The animal facility occupies 22,581 ft^2 on [redacted] of the [redacted]. There are 58 animal rooms and 15 support rooms. The [redacted] cage wash includes an inline Garb-el waste disposal unit, tunnel washer, rack washer and an autoclave. The [redacted] cage wash area has a rack washer. If used, biohazards are autoclaved on the [redacted]. BSCs, chemical fume hoods and animal transfer stations (ATS) are available for procedures and cage changing.

[redacted]

Located in the [redacted] of the [redacted], this animal facility occupies 9,918 ft^2 with 10 animal holding rooms and 28 support rooms. BSCs and ATSs are used for procedures and cage changing.

[redacted]

[redacted]
Located in the [redacted] of the facility, animal facility occupies 19,820 ft^2 with 11 animal holding rooms and 6 support rooms. BSCs and ATSs are used for procedures and cage changing.

[redacted]
Located on the [redacted] of the facility, animal facility occupies 8,755 ft^2 with 28 animal holding rooms and 9 support rooms. Six cubicles are located in suite [redacted]. BSC and ATSs are used for procedures and cage changing.

[redacted]**:** Located on the [redacted] of the building, laboratory space housing fish tanks occupies approximately 800 ft^2 in two adjoining rooms.

[redacted]**:**
Located in the [redacted] of the facility, this animal facility occupies 34,500 ft^2 with 43 animal holding rooms and 21 support rooms. A containment/isolation suite is located on the dirty corridor and contains three animal rooms and one procedure room. BSCs, fume hoods and ATSs are used for procedures and cage changing.

[redacted]
Located on the [redacted] of the facility, this vivarium occupies 11,745 ft^2 with 35 animal holding rooms and 7 support rooms. BSCs are used for procedures.

3) Describe the oversight process and husbandry practices in place to ensure personnel safety, including any personal protective equipment provided when work assignment involves hazardous agents.

Oversight Process:
An Office of Biological Safety Animal Research Safety (ARS) staff person and the IACUC members review all protocols to ensure hazards are identified and appropriate safety practices are detailed in the animal care and use protocol. The ARS staff person compares the hazards used in each animal care and use protocol with the hazards registered with the UW EH&S via the Biological Safety Protocol (approved by the IBC) or form 99A with Radiation Safety (approved by the Office of Radiation Safety). Research personnel are responsible for placing required precautions cards on animal room doors, placing animal labels (cage card hazard stickers) on individual cages, and informing facility supervisors when using hazardous agents or materials. Semiannual site inspections are performed by IACUC members accompanied by RARC assigned veterinarians and an ARS staff person. Safety issues found during the site visits are communicated to the facility supervisor.

Husbandry Practices:
All animal rooms have door signs indicating required PPE to enter the room and handle animals. Rooms containing animals exposed to hazardous materials are posted with appropriate hazard warning signs; "Animal Biosafety Level 2"," Health Hazard", and "Caution Radioactive Materials". Accompanying each hazard-warning door sign is a yellow hazardous agent card indicating the specific name of the hazard, waste disposal procedures, additional PPE needed to handle animals exposed to the agent, and any special precautions/instructions. Individual cages or pens where the agent is present are also marked.

PPE when working with hazardous agents:
For all personnel, BRMS provides all PPE needed in the vivarium whether required or for voluntary use except for special equipment used by researchers. PPE requirements vary depending on species of animal, agents used, and procedures performed. Signage indicating required PPE is posted in animal housing areas.

4) Describe any facilities that may also be used for 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.

5) 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.

[redacted]

6) If motorized vehicles are used for animal transport, describe how the driver is protected from exposure to hazards such as allergens or zoonoses.

The cargo truck and transport van used for animal transport has the driver area completely separate from the animal transport area. All animals are transported in species appropriate containment enclosures.

iii. Personnel Training [Guide, p. 20]

1) Describe educational program(s) to inform personnel about zoonoses, personal hygiene, allergies, and other considerations regarding occupational health and safety.

All campus personnel with identified animal contact are required to complete an online Animal User Orientation presented by the RARC, and an online safety training program presented by EH&S staff; both of these initial trainings are renewed every five years. Personnel with possible non-human primate contact also receive annual herpesvirus B training.

Office of Animal Research Safety offers a course on Safety for Personnel with Animal Contact. This training is available in Learn@UW to all animal handlers as part of the animal handler certification required training; ARS staff also performs in-person trainings upon request. Animal handlers renew the online recertification every five years.

Biosafety:
Two educational programs are required: the Biosafety Training Course and Bloodborne Pathogens for Lab and Research. The Biosafety Training Course covers risk assessment and mitigation, exposure response, biohazard disposal, and other information that applies occupational health and safety of personnel.

Office of Radiation Safety:
Any personnel involved with handling radioactive materials or radiation producing devices are required to take specific trainings to be approved to use and handle radioactive materials. Training modules (http://ehs.wisc.edu/radiationsafetytraining.htm) are:

Radiation Safety 101: Radiation Safety for Radiation Workers
Radiation Safety 102: Radiation Safety Refresher Training
Radiation Safety 105: Radiation Safety for Irradiator Users and Animal Caregivers
Radiation Safety 106: X-Ray Diffraction
Laser Safety Training

Chemical Safety Office:
The Chemical Safety Office is responsible for overseeing campus chemical safety and compliance through its Hazard Communication Program and Chemical Hygiene Program. Depending on a staff member's role, the individual will generally participate in one of these two programs. Both programs require that staff working with hazardous chemicals know the chemicals they are handling, understand the hazards associated with the chemicals, and know what steps they need to take to minimize exposure. Additionally, staff must be trained in how to identify and respond to emergency situations, such as a spill or release of a hazardous chemical. Chemical Safety offers a variety of trainings (http://ehs.wisc.edu/chemsafetytraining.htm), including Fume Hood Training, Cryogen Safety Training, and Hazard Communication. PIs are responsible for any agent-specific training if needed.

SMPH BRMS:
During new employee orientation, an experienced peer trainer is assigned and personnel receive hands-on training. BRMS SOPs are also discussed at length, including the topics of PPE and personal hygiene.

During facility tours for animal care and research staff, special emphasis is placed on the importance of signage. Personnel are educated to recognize signage associated with potential hazards and signs detailing required PPE. The research staff are instructed that it is their responsibility to inform supervisors when initiating work with hazards and to properly label cage cards with hazard stickers and fill out corresponding precautions cards to ensure all personnel entering animal rooms are aware of the hazards, wear the appropriate PPE, and take any other necessary precautions needed for the hazard.

2) Describe special qualifications and training of staff involved with the use of hazardous agents in animals.

All personnel working under a biological safety protocol are required to take and pass the required biosafety training modules offered by the Office of Biological Safety. This requirement is fulfilled by completing the Biosafety Training and the Bloodborne Pathogens courses. Completion of these modules is required before beginning research activities. These modules address working with biohazardous agents in animals. Training topics include regulations, risk assessment, risk mitigation, exposure response, reportable events, disinfection and disposal.

BRMS personnel working in animal biosafety level 2 (ABSL2) areas are also required to take Office of Biological Safety training.

iv. Personal Hygiene [Guide, p. 20; Ag Guide pp. 4-5]

1) List routine personal protective equipment and work clothing provided for animal care personnel, technical staff, farm employees, etc. Describe arrangements for laundering work clothing.

Personal Protection Equipment
Aprons – rubber and plastic
Arm protectors (Tyvek sleeves)
Booties/Shoe covers
Boots, rubber
Caps, surgical and bouffant
Chemical splash goggles – regular, prescription
Coveralls, Tyvek
Dust googles – regular, prescription
Ear muffs and plugs
Face shields – disposable and non-disposable
Gloves
Gowns, disposable
Laboratories coats – disposable and non-disposable
Mask, surgical
Respirators – disposable: N95, N100

Respirators – non-disposable: Powered Air Purifying Respirators, half-face particulate with organic and/or acid vapor cartridges
Safety glasses – regular and prescription
Shoes, dedicated facility

Laundering Arrangements

Non-disposable surgical scrubs and laboratory coats are picked up, laundered, and delivered by a commercial laundry service, which has the contract for the University of Wisconsin-Madison. All soiled scrubs and laboratory coats are placed in the services biohazard (blue) bags and treated accordingly when handling and washing or large bins for used scrubs and laboratory coats. Research and animal care staff, veterinary staff and laboratory staff (when applicable) are provided with a sufficient number of scrub suits and laboratory coats for use in the facility. Employees are also provided with work gloves, eye (safety glasses and goggles) and respiratory protection when needed. Dedicated scrub suits, laboratory coats or gowns (launderable or disposable) are used in the BSL1, BSL-2 and BSL-3 isolation areas. Launderable clothing used in some BSL-2 areas (depending on project) and BSL3 areas are autoclaved before being laundered.

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

The majority of the animal and procedure rooms have sinks for washing hands and the rest have sinks in the immediate vicinity of a group of animal rooms (suites or hallway) for washing hands. All locker rooms have sinks for washing hands, showers, and private areas for changing from street clothes into work scrubs and vice versa. All animal care areas provide uniforms, laboratory coats and/or disposable gowns.

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

All buildings on the University of Wisconsin campus are designated smoke-free per Wisconsin Statute 101.123(2)(a)(5t) so it is illegal to smoke in state institutions. The UW-Madison Smoke-Free Policy further prohibits smoking within 25 feet of building entrances and exits, and in University owned or leased vehicles. Eating or drinking is only allowed in break rooms and offices. Lunch and break rooms are provided for staff at all facilities.

v. Animal Experimentation Involving Hazards [Guide, pp. 20-22]

1) Describe briefly institutional policies governing experimentation with hazardous biological, chemical, and physical agents, including the oversight process for the use of hazardous agents. Note: Written policies and standard operating procedures (SOPs) governing experimentation with hazardous biological, chemical, and physical agents should be available during the AAALAC site visit. If such policies and procedures are not available, please explain.

Policy 2004-025-io: Occupational Health Program Enrollment. This Policy details the requirement for all personnel to complete an Animal Contact Risk Questionnaire (ACRQ). The ACRQ is reviewed in a HIPAA-compliant manner by University Health Services (UHS) medical staff. The UHS medical staff determine the level of occupational health and safety practices required based on the individual's health information and the hazards and risks imposed by the environment, the animal species involved, and the degree of animal contact. Completion of the ACRQ baseline form (Appendix 5A) and evaluation of the questionnaire by UHS staff is required before individuals can have contact with research animals.

Policy 1999-006-io: Animal Care and Use Authorization and Mandatory Training. This Policy defines minimum training requirements for individuals who use or care for animals in teaching, research and outreach at the University of Wisconsin-Madison.

Policy 2013-052-v: Cage Labeling Requirements. This Policy instructs investigators on cage/pen labeling activity secondary to the use of biohazards, toxic substances, or radioactivity in animals.

Oversight of polices, biosafety protocols and/or standard operating procedures is provided by the Institutional Biosafety Committee, the ARS group, the Office of Radiation Safety, the Office of Chemical Safety, UHS, the IACUC, and RARC personnel.

Biomedical Research Model Services (BRMS) Standard Operating Procedures:

SOP 503: Emergency Equipment and Supply Checks.

SOP 505: Room Sanitation Practices for Prevention of Methicillin-Resistant Staphylococcus Aureus (MRSA) in Chronically Instrumented Animals

SOP 508: Minimum Standards for Working in Animal Biosafety Level 2 (ABSL-2) Vivaria

SOP 511: Quarterly Sanitation of Hoods within Animal Vivaria

SOP 516: Transport of Carcasses

SOP 517: Hazard Exposure Procedures

SOP 518: Principle Investigator (PI) Responsibilities in Animal Experimentation Involving Hazards in Vivaria

Oversight of Polices, Biosafety Protocols or Standard Operating Procedures is provided by the Institutional Biosafety Committee, the ARS group, the Radiation Safety Department, the Chemical Safety Department, University Health Services, BRMS administrators, the IACUC, and RARC personnel.

All animal rooms and procedure areas where hazardous chemical, biological, or radioactive materials are used must have the applicable warning signs posted on the door along with the name of the hazardous agent(s), the required personal protective equipment, and the emergency notification procedures (i.e., contact person and telephone numbers to call in case of questions and/or an emergency). Individual animals that have received hazardous substances are also indicated by a hazard sticker on the cage card.

2) Describe aspects of the health and safety program specifically for personnel potentially exposed to hazardous agents.

Exposures to hazardous agents are handled as described in section 2.I.A.2.b.i.2 (“Describe procedures for reporting and evaluating exposure to hazards, work place injuries, etc.”).

When a BRMS employee is exposed or potentially exposed, they must complete an employee injury report and if needed seek medical attention. Each report is reviewed by their supervisor, BRMS administration and EH&S representatives. First aid/exposure kits are available in all BRMS vivaria.

3) Describe safety procedures for using volatile anesthetics and how waste anesthetic gases are scavenged.

Volatile anesthetic gases are used in gas anesthesia machines with a waste-gas absorbing canister recovery system or are used in a certified fume hood or a hard-ducted BSC connected to building exhaust. Anesthesia machines may also be directly connected to a building vacuum system. In some facilities bench-top scavenging units exhausted to outside (“snorkels”) can be used for exhausting anesthetic gases during certain procedures. Gas anesthesia machines are professionally maintained and certified annually. Chemical fume hoods and table top evacuation units are tested and certified by UW Physical Plant annually.

When an induction box is used, it remains in a hood or BSC, and only be opened within the hood after isoflurane has be used. When a nose cone is used, a commercially available model with a diaphragm that provides a tight seal around the animal's nose is recommended.

RARC offers an on-line training module for anesthesia machines, which covers the appropriate use of the machine. There is a campus Volatile Anesthetic Policy, and Occupational Health monitors isoflurane levels and provides recommendations to personnel if needed.

4) 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: This information may be provided as an Appendix.

a) Biological agents, noting hazard level (CDC Biohazard Level, Directive 93/88 EEC, CDC or USDA/DHHS Select Agent, etc.).

See appendix 18 for biological agents listed in SMPH animal care and use protocols rated as BSL2 or higher.

b) Chemical agents, noting general category of hazard (toxicant, toxin, irritant, carcinogen, etc.).

See appendix 18 for agents listed in SMPH animal care and use protocols that remain hazardous or potentially hazardous for several hours after administration to an animal.

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

See appendix 18 for physical agents listed in SMPH animal care and use protocols.

5) Describe the program for housing and caring for animals exposed experimentally to the hazardous agents noted above, with emphasis on management and safety practices for containment of each class of agent. Indicate how levels of personnel exposure are assessed.

Biologicals:
Rodents that are exposed to hazardous agents are housed in microisolator cages. Large animals are housed in rooms with appropriate biosafety signage. Door signage indicates safety

precautions needed. Labels with the biohazard symbol and name of agent are placed on each cage card for each cage of animals exposed.

Animals housed in the BSL-3 & Select Agent biohazard suites are cared for by research staff only. Each suite is negative air pressure to the hallways and all air is exhausted through HEPA filters. Researchers autoclave or decontaminate all infectious materials removed from the rooms. All sharps containers and animal carcasses removed from the rooms are bagged and autoclaved before following the routine disposal procedures for sharps and animal carcasses.

Hazardous Chemicals and Drugs:

Precautions are established for handling animals administered hazardous chemicals and drugs during active elimination of the agent from the animals, or other time period if applicable. During the special handling period, warning door signs are posted containing the appropriate hazard symbol(s) and listing PPE required to enter the room and/or handle the animals. The yellow precautions card is used to communicate other precautions needed, contact information, and other relevant safety information such as clean-up and disposal methods. Labels are placed on the cage-card of each cage of animals administered the hazardous chemical or drug. In some instances, the research personnel are responsible for animal husbandry since the animals are administered highly hazardous agents; UW EH&S picks-up the animal carcasses and cage waste containing highly hazardous agents. The waste from less hazardous chemicals and drugs is disposed of into the trash or the sanitary sewer; animal carcasses are incinerated or in some cases for large animals, disposed of by chemical digestion.

Radioactive Hazards:

Most radioactive materials are administered for imaging, scanning, or to label materials to trace them through the body. Animals that have been treated with radioactive compounds are housed in an appropriately labeled and monitored area after completion of the procedure. When appropriate, lead shielding is used around the animal cage. Husbandry is managed by trained personnel until radiation levels return to background levels; care can then be performed by BRMS personnel. A contact/precautions index card indicates name of hazard, protocol number, PI name, personnel to contact, waste disposal method, and an area for noting any additional precautions or instructions. Laboratory personnel trained in radiation safety procedures provide care for the animals, and are the only ones handling the animals and their waste until the radiation has dropped to background levels. When required, personnel wear personal dosimeters to monitor their exposure and they survey animal housing areas to detect, collect and contain radioactive materials for cleanup and disposal via ORS. ORS also manages the pregnancy surveillance program for declared pregnant radiation workers.

vi. Personal Protection [Guide, pp. 21-22]

1) Describe training, 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).

I. Training:

The training program provides orientation for new personnel covering the following safety issues: Chemical Safety and the Globally Harmonized System (29CFR 1910.1200), Dressing Right for the Job, On the Job Injuries and Emergencies, Research Hazards (biological, chemical, drugs, and radioactive isotopes), Zoonotic and Other Risks of Working with Laboratory Animals and appropriate species specific training, which includes their hazards and safety precautions. Special training may be provided by research staff, BRMS supervisory staff or safety staff as needed. Training continues once on the job site with hands-on training reinforcing the training received at orientation including additional topics such as: safely moving equipment, employing good ergonomic techniques, autoclave and washer safety procedures, exposure and spill procedures, emergency showers and eyewashes, site specific emergency procedures, medical evaluation and fit testing for respirators (N95, N100 and PAPRs), proper use, cleaning, and maintenance of safety equipment such as ATSs, BSCs, and chemical fume hoods. Fire Safety training, ergonomic training and chemical safety training designed for animal handlers is available.

All animal handlers and research personnel on animal care and use protocols are required to take the training “Safety for Personnel with Animal Contact” maintained by the Animal Research Safety Department. The EH&S department has greatly expanded its training available online. Applicable training for the animal research community that is required for certain personnel or optional includes:

General Safety:
Workplace Safety
Asbestos Awareness
Lead (Pb) Awareness
Fire Extinguisher Training
Lockout/Tagout for electrical work
Compressed Gas Cylinder Safety
Tornado Evacuation Procedures

Animal Research Safety:
Agricultural Safety
Safety for Personnel with Animal Contact
Animal Biosafety Level 2
Risk Communication in Animal Facilities

Chemical Safety:
Chemical Safety Training (general introductory training)
201- Fume Hood Use
Hazardous Chemical Shipping/Transportation
Hazard Communication with Globally Harmonized System (GHS)

Office of Radiation Safety:
101 – Part 1 & 2 for radiation workers (required),
102 – Refresher training (required),
105 – Radiation safety for irradiator users, animal caretakers, and users of radiation-producing equipment (required).
Radiation Safety 106: X-Ray Diffraction
Laser Safety Training Basic online training
Additional training is available and can be found on the website: http://ehs.wisc.edu/training.htm

Select Agent Program:
A variety of training is offered and required for individuals in the UW-Select Agent Program. Training is delivered in both an online and in person format. Contact the UW-Madison Select Agent Program for any additional information on their training program.

UHS Trainings:
Ergonomics: Office Ergonomics Video
Material Handling Video
Respiratory Protection Training
Hearing Conversation

II. Equipment:

ATSs, BSCs, chemical fume hoods and dust control units are used.

Ergonomic stools and special floor mats are provided to BRMS employees if needed. Prescription safety glasses are provided at no charge to employees as well as prescription dust goggles. Powered Air Purifying Respirators (PAPR) are provided to personnel as needed.

III. Procedures:

The movement of heavy equipment within a building is to be performed with a minimum of two people. Personnel are to seek assistance from other staff or use lifting assist devices when needed. Hearing protection is recommended in rooms where the noise level is greater than 85 dB. Monitoring of noise levels is performed by EH&S.

Personal protective equipment including safety glasses, chemical splash goggles, face shields, face masks, respirators, ear protection, gloves, scrubs and laboratory coats, rubber boots, aprons and toe protection is provided as required.

BRMS uses the UW's UHS ergonomic specialist for assessment when ergonomic issues develop. The evaluation reviews the individual's work routine, identifies the problems, and recommends solutions to prevent further issues. Sound ergonomic practices were established for worker protection. These include worker rotation, stacking heights for equipment and supplies, and sound ergonomic practices at work stations, in cage wash and animal rooms. Special ergonomic stand/sit stools were purchased to serve personnel working in cabinets or hoods that cannot be height-adjusted to alleviate back pain.

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

ATSs and BSCs are certified annually by Engineering and Technical Services (ETS) specialists, and decontaminated and repaired as needed. Chemical fume hoods are tested and re-certified annually by UW Physical Plant. SafeAir dust collection systems are maintained through a preventative maintenance agreement by an outside vendor and are tested and recertified annually by ETS. Filters on the screens are cleaned periodically or as needed by cage-wash personnel. HVAC systems are maintained by UW Physical Plant personnel or Plant Engineering in the UW Hospital and Clinics.

HEPA filtered vacuums are annually inspected and certified by ETS. Fire & Life Safety, a sub-division of Environment, Health and Safety, performs an annual flushing and inspection of emergency showers and eyewash stations. Upon completion, a dated tag is attached to the unit documenting the service. If the unit needs repair, a red repair tag is attached and repairs are requested via the plumbing shop. Fire & Life Safety maintains and annually inspects all the fire extinguishers on campus. In BRMS-managed vivaria, each emergency shower is tested monthly and eyewash stations are tested weekly. Dates of the flushing and testing done are recorded on a testing card for each emergency shower/eye wash unit.

3) Describe situations where respiratory protective equipment is available or required, such as cage washing facilities, feedmills, etc. Describe how such equipment is selected and how respirator fit testing and training in the proper use and maintenance of the respirator is provided.

BRMS supplies all respiratory protection required in the vivaria for all personnel handling animals or animal waste. Respiratory

protection is always available and used when it is a requirement to enter an animal room or a person chooses to wear additional protection after being informed of potential situational hazards. Personnel are informed of situational hazards via signage, facility orientation tours, or direct communication from BRMS supervisory staff, veterinary staff, laboratory staff or EH&S staff.

Respiratory Protective equipment is selected based on the hazards to which the worker is exposed to (29 CFR Part 1910.134) and as determined by risk assessments performed by UHS. They determine the type (N95, N100, etc.) and model specific for the hazardous material the worker will or may be exposed to in collaboration with Biological, Chemical, and Radiation Safety departments and following the guidance of American National Standard Practices for Respiratory Protection Z88.2-1969.

The training begins by completing a medical questionnaire for the use of respirators, which is reviewed by a medical professional (UHS). Once approved to wear a respirator, a fit test is performed by UHS. The fit testing training includes: the proper donning of the respirator, ensuring the respirator fits comfortably and seals appropriately, and information on the appropriate use and limitations of the particular respirator. The protocols for fit testing followed by UHS staff can be made available by request. Annual fit-testing is required of all employees approved to wear a respirator.

4) Describe program policies to ensure personnel safety when working with rack/cage washers, other sanitation/sterilization equipment, and other heavy equipment such as scrapers, tractors, and farm machinery. Describe the training program that supports these policies.

New personnel to the cage wash area receive hands on training from animal care staff leads or other designated personnel familiar with the equipment.

The training for the washers starts with preparing the caging equipment and other items so they are properly cleaned, what the items should look like if clean, what PPE should be worn, and the safety precautions that should be followed to prevent burns from hot equipment and water. Training on escape from washers in the event of accidental entrapment is provided and documented.

For autoclaves the hands-on training covers how to prepare loads, load and run the autoclave, and empty the autoclave when the cycle is completed. Employees are informed of appropriate PPE to prevent burns from hot equipment and water when removing loads. Training on escape from large autoclaves in the event of accidental entrapment is provided and documented.

A hydrogen peroxide vaporizer unit is available for disinfection of rooms or large equipment. BRMS personnel who perform the disinfection are trained on operation of this unit.

vii. Medical Evaluation and Preventive Medicine for Personnel [Guide, pp. 22-23]

1) Identify the individual(s) and/or office responsible for developing and monitoring the medical evaluation and preventive medicine program.

The (UHS) Occupational Medicine Office develops and monitors the Medical Evaluation and Preventive Medicine Program for the UW-Madison campus.

2) Describe the categories of personnel (research staff, visiting scientists, animal care staff, students, support staff, etc.) included in the program.

Policy 2004-025-io, "Occupational Health Enrollment Program," identifies four target groups of employees, students and visitors, and outlines when enrollment in the Occupational Health Program is required. The four target groups are:

1. Anyone who through their employment, training or service at UW-Madison has regular contact with animals: a) faculty, staff and students named in an animal-use protocol, b) research animal veterinarians, c) animal care staff, d) IACUC members, e) veterinary medical students, and f) Veterinary Medicine Teaching Hospital staff.
2. Students
3. Visitors
4. UW-Madison Employee Service Personnel

3) Describe general features of the medical evaluation and preventive medicine programs, including pre-employment/pre-assignment health evaluation, periodic medical evaluations, immunization programs, and procedures for communicating health related issues.

UHS is a fully accredited ambulatory care clinic located on campus that provides primary medical care to students and occupational medicine to faculty, staff and students. UHS provides pre-exposure services such as routine testing, examinations, consultation, immunizations and other services which are required before encountering a specific occupational risk.

The Animal Contact Risk Questionnaire (ACRQ) is evaluated by medical professionals at UHS to assess potential risks for each individual who may have contact with research animals or who may work in animal facilities. Individual risk and prevention

recommendations are communicated via a secure UHS electronic health records system. The information obtained in the ACRQ (including review of previous annual submission) is used to determine required immunizations, use of personal protective equipment, hygiene practices, medical surveillance, and training.

Individualized immunization services provided by UHS include tetanus, hepatitis B, rabies and influenza.

4) Describe special precautions or procedures for personnel exposed to potentially hazardous species (nonhuman primates, sheep, etc.) or agents (infectious agents, human origin tissues, chemicals/toxins, etc.).

Environment Health & Safety offers safety courses in biological, chemical and radiation safety that explains the potential risks and hazards that personnel may be exposed to working with hazardous species and agents.

University Health Services provides pre-exposure services such as routine testing, examinations, consultation, immunizations and other services which are required before encountering a specific occupational risk.

The Office of Biological Safety posts standard procedures in the event of an exposure: http://ehs.wisc.edu/bio/BiologicalExposureAndSpillResponseGeneral.pdf.

BRMS SOP 517 provides specific procedures to follow in the event of exposure to potentially hazardous species or agents. The SOP has instructions for cleaning any exposure sites, contacting health professionals, and reporting of incidents to supervisory personnel.

Post-exposure services are provided by University Health Services. UHS provides medical care for workers exposed to animals or to hazardous chemicals or biologic agents within the research and academic setting including screening, case management, outpatient evaluation and management, outpatient laboratory testing, plain film radiology, and telephone call line support for employees with exposures. When referral to outside or after hours care is required, UHS assists with arranging follow-up and care coordination.

The University of Wisconsin-Madison coordinates with UW Health Infectious Disease Physicians when needed. UW Health infectious disease specialists provide inpatient, outpatient and emergency consultative services for the diagnosis and management of complex infectious diseases and unexplained febrile illnesses, especially those that may become life-threatening.

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

Policy 2003-017-io states any individual who has concerns related to the use of animals in teaching, research or outreach at UW-Madison may express those concerns without fear of reprisal. Reporting may be anonymous via a hotline, or verbally or in writing to a person of authority in the animal program. Signage about this policy with contact information is posted in all animal facilities. Reports are investigated either by the Chief Campus Veterinarian or designee, in cooperation with animal program directors and facility managers, department chairs, research staff, legal services, human resources staff, and other campus support as needed. The reported concern may be reported to the IACUC, the IO, OLAW, USDA, AAALAC, or other entities depending on the nature of the report and the ultimate finding of the investigation.

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 an appendix.

i. Describe Committee membership appointment procedures.

The Chancellor of the University and CEO per PHS policy, is Rebecca M. Blank. Chancellor Blank officially delegated appointment authority to IO Nadine Connor, who then officially delegated that authority for the SMPH IACUC to [redacted] of SMPH. The SMPH IACUC roster is attached as Appendix 6.

ii. Describe frequency of Committee meetings.

The Institutional Animal Care and Use Committee meets monthly to review protocols and conduct other business. Two additional separate meetings are scheduled to complete regular semiannual programmatic reviews as per PHS Policy and the Animal Welfare Act Regulations, usually held in November and May. Other meetings may be scheduled to conduct specific business or training.

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

a) All members complete the RARC online introductory animal user orientation course.
b) Prior to beginning service on the Committee, each member attends an orientation session conducted by the Committee Chair and the [redacted]. This meeting involves a comprehensive discussion of the charge of the Committee, obligations of Committee members, how protocols are reviewed, animal facilities and laboratories, the role and method of semiannual inspection, and training opportunities. The member is given a binder that includes the Guide to the Care and Use of Laboratory Animals (most current edition) the AWA, CFR 9, 2013 AVMA Guidelines on Euthanasia, Public Health Service Policy on Humane Care and Use of Laboratory Animals, and other pertinent information and reference sources.
c) New Committee members do not review protocols for at least the first meeting they attend, allowing new members to train for protocol review by observation.
d) The Senior Program Veterinarian or [redacted] provide prepared training on various relevant topics at most monthly meetings. Topic experts provide additional information to committee members regarding issues that may arise during meetings.
e) Continuing education is provided for IACUC members through monthly presentations by RARC staff and campus experts, member viewing of OLAW, NABR, PRIM&R, and other web seminars, and attendance of workshops (e.g., PRIM&R, SCAW).

b. Protocol Review [Guide, pp. 25-26]
A blank copy of your institution's protocol review form should be provided as an appendix. Also include forms used for annual renewal, modifications, amendments, etc., as applicable.

i. Describe the process for reviewing and approving animal study protocols, including research and teaching proposals. Include a description of how animal study protocols that do not involve a formal grant proposal are reviewed and approved (i.e., pilot studies or internally funded studies). Include a description of how the IACUC/OB weighs the potential adverse effects of the study against the potential benefits that may result from the research. Describe how protocols that have the potential to cause pain or distress to animals are reviewed, alternative methodologies reviewed, veterinary input solicited, and studies controlled or overseen. Specify how animals and experimental group sizes are justified.

All work involving the use of live vertebrate animals at UW-Madison requires approval by at least one IACUC prior to work beginning. The same process of protocol review and approval is followed, regardless of the source of funding (external or internal) or the intended use of the animals (i.e., teaching, research or testing, pilot study, or outreach).

Animal care and use protocols are completed by the Principal Investigators on a standardized form used campus-wide. New and

renewal protocols are submitted via a web-based system called ARROW (Application Review for Research Oversight at Wisconsin; see Appendix 7). The SMPH began transitioning protocols into the ARROW system in January 2015 and all protocols will be transferred to ARROW by January 2018. All new and renewal protocols undergo a required veterinary pre-review. Protocols must be transferred to ARROW at the time of renewal, but existing protocols that have not yet been transferred to the ARROW format may be amended on the paper form.

Protocol forms are submitted to the IACUC office staff at RARC and routed to the IACUC for review in one of two ways: full committee review at a convened IACUC meeting or Designated Review (DR).

For Full Committee Review, two voting members of the IACUC (one veterinarian and one non-veterinarian) are responsible for leading the IACUC's discussion of the specific protocols assigned to them. Although these "primary reviewers" are named, all voting IACUC members are provided with access to all protocol submissions scheduled for review at the convened meeting. Prior to the convened monthly meeting, IACUC members can submit review questions relevant to each protocol. Those questions are visible to all IACUC members, and are used to facilitate discussion. After discussion of each protocol at a convened meeting, the IACUC takes action to approve, require modifications to secure approval, defer, or deny the protocol. If the IACUC action is to require modifications to secure approval, the investigator must submit a rewrite of the protocol addressing all of the IACUC's review concerns that were finalized at the meeting. Such rewrites are reviewed via DR by the veterinary reviewer and other voting committee members as described below:

Designated Review is used to review protocols under three circumstances (see Policy 2002-020-c):

(1) DR can be used as an alternative to review of a protocol at a legally convened meeting. For DR, each voting committee member is provided a copy of the protocol through ARROW (or as an email attachment if the protocol is not yet in ARROW) and has the opportunity to respond before a reasonable deadline (generally 3 working days) as to whether or not the protocol is eligible for DR. If any one member indicates "not eligible for DR," the protocol is scheduled for full committee review at the next convened IACUC meeting. If approved for DR, then designated reviewers from that IACUC (one veterinarian and one non-veterinarian) are appointed by the Chair. Designated reviewers review identical versions of the protocol. They may approve, require modifications to secure approval, or call for full committee review at a convened meeting. Approval must be unanimous by the designated reviewers.

(2) DR can be used following full IACUC approval of a motion to require modifications to secure approval. The solicited changes are reviewed by at least one veterinarian who has voting privileges on the IACUC, with other voting Committee members participating in the review upon request or as determined by the chair.

(3) DR can be used when an amendment simply addresses one or more of the following "minor" criteria:

• Addition of locations where procedures are conducted on animals, or where other animal activities of a duration less than 12 hours occur

• Addition of an IACUC-approved housing location within the reviewing IACUC's oversight

• Qualifications and training of instructors invited by the university to teach specific procedures, generally for continuing education courses, is submitted in lieu of completing standard on-line animal user orientation for UW-Madison.

• Addition of language to allow the transfer of animals between IACUC-approved protocols with RARC veterinary approval.

• Changing from one approved commercial source of animals to another.

• Changing brand names of materials or substances (e.g., "Kleenex" instead of "Puffs").

• Changing from a specific brand name to a generic term (e.g., from "Kleenex" to "tissue").

• Decreasing the frequency or volume of previously-approved blood draws.

• Removal of certain types of procedures and/or procedure locations

Amendments that fall into this third category are reviewed by the IACUC chair and the Senior Program Veterinarian (or designees), either of whom may call for the amendment to be reviewed by the full IACUC at a convened meeting.

Following review, RARC notifies in writing the investigator of the status of the protocol. The logistics of all protocol processing and PI notifications regarding protocol maintenance (e.g. impending expirations) are coordinated by the RARC IACUC Office. A log is kept of any protocols reviewed outside a convened IACUC meeting. This log is reviewed at the next full committee meeting; any

committee member has the right to call a previously-approved amendment for full-committee review.

Regardless of the review method used or source of funding, the IACUC applies the same standards in its reviews to balance potential benefits against potential animal welfare concerns, as well as potential pain and distress that the procedures in the study may cause animals and any alternatives that were considered. The IACUC's review of specific questions in the standardized protocol form ensure that PIs have explained the goals of the study and its potential benefits and harms. If this information is inadequate or unclear, the IACUC requires modifications to the PI's responses until the IACUC is satisfied. Regarding potential pain or distress, the IACUC comprehensively evaluates the proposed work, the animal monitoring plans, anesthesia and analgesia plans, and the PIs' literature searches. If this information is inadequate or unclear, the IACUC requires modifications to the PI's responses until the IACUC is satisfied.

Evaluation of the use of animals and the appropriate numbers of animals for studies is conducted on a case-by-case basis during protocol review by the IACUC. PIs must include a justification for animal use, indicating why non-animal alternatives cannot be used. PIs are also instructed to include acceptable justifications for species and the requested number of animals. If the PI's explanation of the need for animal use, species, or the number of animals is unclear to the IACUC, the Committee requires modification of the response until it meets the IACUC's satisfaction before approval of the protocol is granted. When deemed necessary, the IACUC can solicit advice from a biostatistician. Policy 2013-051-c provides specific guidance to PIs in presenting animal number justifications to the IACUC.

ii. Describe process for reviewing and approving amendments, modifications, and revised protocols. If applicable, include a description of "major" vs. "minor" amendments.

Amendments that involve only changes in funding sources can be submitted via ARROW, email or fax on an administrative amendment form. These simple administrative amendments are processed by RARC as non-reviewable changes for the IACUC. Except in cases of Veterinary Verification and Consultation (see below), all other amendments must be submitted within a full copy of the currently-approved protocol. The amended protocol is then reviewed by the full IACUC or via designated review according to procedures previously described.

In accordance with NIH Notice NOT-OD-14-126, "Guidance on Significant Changes to Animal Activities", the SMPH IACUC has adopted a University-wide Veterinary Verification and Consultation (VVC) Policy (2016-058-c). This Policy is in full compliance with the NIH Notice.

Under this policy, veterinarians – acting as subject matter experts – can approve:

a) Certain changes to anesthesia, analgesia or sedation
b) Changes in experimental substances and routes of administration, as long as the change does not result in a change of study objectives or in greater pain, distress, or degree of invasiveness
c) Changes in method(s) of euthanasia to any method approved in the current AVMA Guidelines for the Euthanasia of Animals.
d) Duration, frequency, type or number of previously approved procedures performed on an animal, as long as the change does not result in greater pain, distress, or degree of invasiveness.

The SMPH IACUC has approved this Policy, and has approved a list of RARC veterinarians qualified to perform VVC.

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

i. Experimental and Humane Endpoints [Guide, pp. 27-28]
Describe how criteria for determining alternatives to experimental (humane) endpoints are developed, approved, and applied. Include a description of monitoring systems in place for studies for which information on alternative endpoints are not available.

Animal care and use protocols require the PI to describe specific criteria for the application of humane endpoints that are separate from scientific endpoints; the criteria are therefore subject to IACUC and veterinary review and final approval. Daily monitoring by animal care staff, and checks by laboratory and veterinary staffs are mechanisms for monitoring for humane endpoints. If there is clinical need, research animal veterinarians have the authority to treat or euthanize animals if circumstances exist that were not specifically anticipated in the animal care and use protocol.

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

PIs are required to report adverse or unanticipated events when they occur (Policy 2012-050-v). All animals are observed every day by animal care staff, veterinary staff, or investigative staff. BRMS SOPs 201 and 210 outline the mechanisms for trained animal care staff and investigative staff to identify and report sick, injured or dead animals. Consultation between veterinarians and investigative staff take place as needed to interpret any type of unexpected outcome. Unexpected outcomes are reported by the Senior Program Veterinarian or designee at convened IACUC 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.

Prolonged restraint must be described and justified in the animal care and use protocol, and must be approved by the IACUC. Application of prolonged restraint must be in accordance with Policy 1997-004-v. The policy describes the requirements for protocol approval, animal selection and acclimation, personnel training, animal monitoring, additional special requirements for restraint >12 hours, provision of food, water, and enrichment, and the reporting of complications.

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.

Restraint devices used within the SMPH animal program over the last three years include cat bags; rodent boxes, casts, cranial implants, sleeves or tubes; or gelatinous water for fish. These devices are used to immobilize animals for extended procedures such as electrophysiological recordings, imaging, and repeated/continuous injections or blood draws. In some protocols the experimental purpose of the restraint is to induce mild stress.

Monitoring is accomplished by direct visual inspection. In most studies (unless the purpose is to create some degree of stress), the aims of the experiment cannot be met if the animals are moving or distressed. Unless required for specific study needs such as those of stress, animals that do not acclimate to prolonged restraint as evidenced by excessive struggling are removed from the restraint device.

Research animal veterinarians become aware of protocols requiring prolonged restraint during protocol pre-review and review. Animals are observed by trained animal care personnel on a daily basis, and research animal veterinarians provide care to animals if any adverse clinical consequences of prolonged restraint are present. Any adverse clinical consequences are reported to the IACUC by the Senior Program Veterinarian or designee.

Protocols approved for prolonged restraint, including duration of restraint and acclimation procedures if applicable are listed in Appendix 20.

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 institutional policy(ies) regarding multiple survival surgery (major or minor) on a single animal.

Multiple survival surgery must be fully described in the animal care and use protocol. The SMPH IACUC approves multiple major or minor survival surgeries on a single animal only if presented with adequate scientific justification for the performance of these procedures.

No USDA-covered species undergo survival surgery between two protocols. In the event that non-USDA-covered animals were to undergo major survival surgeries on two different protocols, the surgeries would be required to be part of the same experimental goal, and the procedures would have to be approved by the IACUC.

2) Describe the procedure for approving multiple survival surgery (major or minor) and the criteria used to determine the potential impact on the animals' well-being.

The protocol form includes specific questions about multiple survival surgeries. Scientific justification and necessity for multiple survival surgeries on a single animal must be clearly detailed in the animal care and use protocol and be approved by the veterinarians and other IACUC members. The PI must provide a description of the multiple survival surgical procedures, to include the minimum time between procedures and how animals are cared for after each procedure to ensure animal wellbeing.

3) Summarize the protocols currently approved that involve multiple major survival surgical procedures and the time allowed between procedures on the same animal. Describe the method of institutional monitoring.

Animals are monitored daily by animal care personnel. Veterinary and laboratory staff also monitor animals post-operatively. Veterinarians provide clinical care if needed. Adverse or unanticipated events noted by animal care staff, laboratory staff or veterinary staff are addressed by the veterinarians and reported to the IACUC by the Senior Program Veterinarian or designee.

Veterinarians have the authority to delay or deny multiple major survival procedures if there is a clinical reason.

Protocols approved for multiple major survival surgical procedures are listed in Appendix 14. Protocols include the minimum time between procedures and post-surgical monitoring performed by laboratory staff.

v. Food and Fluid Regulation [Guide, pp. 30-31]

1) Describe experimental situations that require food and/or fluid regulation. Note: This does not include pre-surgical fast. List title of the experiment(s), justification, species involved, and length and type of food/fluid regulation.

Food and/or fluid regulation is typically employed in instances where food or fluid reward is necessary to train animals to perform a specific task, or as required for imaging studies or fasting blood tests. Food or fluid regulation must be detailed in an animal-use protocol, and is therefore subject to veterinary and IACUC review and approval. The animal use protocol must list the maximum time that food and/or fluid regulation occurs.

Appendix 15 lists protocols describing food or fluid regulation and provides justification, species, and length and type of regulation.

2) Describe animal health monitoring procedures and frequency (e.g., body weight, blood urea nitrogen, urine/fecal output, food/fluid consumed).

All animals are checked daily by trained personnel for signs of distress. Specific health monitoring procedures vary depending on nature and length of food or fluid regulation, and on species of animal. Parameters monitored can include body weight, body condition, skin elasticity (tenting), serum chemistry profiles, and amount of food and/or fluid consumed. Veterinarians can order any additional monitoring procedure at any time, regardless of specific regimens listed in protocols.

3) Describe methods of ensuring adequate nutrition and hydration during the regulated period.

All animals are checked daily by trained personnel for signs of distress. Physical examinations of animals by a research animal veterinarian, that can include CBC, serum chemistry analysis, and other tests as indicated are performed if determined to be necessary by the veterinarian.

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

Describe the rationale and consideration given by the IACUC/OB for use of non-pharmaceutical grade drugs or other substances, if applicable.

As described in Policy 2010-037-io, the use on non-pharmaceutical-grade compounds must be stated in a protocol approved by the SMPH IACUC, and be appropriately justified. Briefly, the Policy states:

1. Medications to be used in living vertebrate animal subjects are to be pharmaceutical-grade whenever possible.
2. The use of non-pharmaceutical-grade chemical compounds in living vertebrate animal subjects is a necessary and acceptable component of biomedical research under certain circumstances. Permission to use non-pharmaceutical-grade chemical compounds may be granted by the IACUC upon request by Principal Investigators. Such requests must:

a. be made within the context of an animal care and use protocol submitted to the IACUC;
b. include information on the scientific necessity to use a non-pharmaceutical-grade chemical compound (e. g. the non-availability of an acceptable veterinary or human pharmaceutical-grade compound);
c. acknowledge that guidelines provided by Policy 2010-037-io will be followed or provide details on how the Principal Investigator will compound (prepare) non-pharmaceutical-grade compounds for administration; and
d. be approved in the protocol by the IACUC before any administration of non-pharmaceutical-grade chemical compounds to animals.

vii. Field Investigations [Guide, p. 32]

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

When a field investigation protocol is reviewed, the IACUC ensures a) the PI has obtained any necessary special permits, b) any special occupational health and safety needs of personnel are addressed, and c) methods of trapping, handling and euthanasia of wild animals are appropriate.

Currently, there are no field investigation protocols in SMPH.

viii. Agricultural Animals [Guide, pp. 32-33]

Describe considerations given and guiding documents used by the IACUC/OB when reviewing "biomedical" and "agricultural" research projects involving agricultural species as study animals, if applicable.

Agricultural animals used in biomedical research are housed within SMPH facilities and not on farms. Environmental conditions are controlled.

Standards of the *Guide* and the *Guide for the Care and Use of Agricultural Animals in Research* are followed.

ix. Animal Reuse [Guide, p. 5]
Describe institutional policies and/or oversight of animal reuse (i.e., on multiple teaching or research protocols). Summarize the protocols currently approved that involve the reuse of individual animals.

In keeping with the principle of reduction, PIs are educated through required training to use animal resources in the most efficient and practical ways. The protocol form for all studies includes text that allows transfer of animals that are experimentally naïve or those in which prior use will not compromise further research results to other investigators with active protocols, pending veterinary approval. Policy 2014-054-v on transfer and reassignment of animals provides guidance on reuse of animals.

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

a. Describe mechanisms for IACUC/OB review of ongoing studies and periodic reviews (e.g., annual review, 3-year renewals if PHS funded, etc.).

Up to two reminders are sent to each PI by IACUC office staff prior to the annual re-approval date of each protocol. A required form must be completed and submitted by each investigator for each protocol. The PI must specifically request continuance of the protocol for one year, and is asked to provide a brief update on activity performed under the protocol over the previous year. At each convened meeting, the IACUC reviews a brief synopsis of each project due for annual update, requests any needed changes or clarifications, and approves the annual re-approvals by motion and majority vote. IACUC office staff communicates the IACUC's requests to the PIs, tracks the responses, and reports the results to the IACUC. If a PI fails to return the required form, this is reported to the IACUC, and the IACUC takes action to achieve compliance. Such action can include suspension of the protocol if the PI does not respond in an appropriately timely fashion.

Triennial renewals are required for every protocol, regardless of funding source or species used. Up to three reminders are issued to each PI prior to the expiration date of each protocol. Protocols must be submitted to the IACUC every three years for complete *de novo* review and approval as described previously. If the PI fails to respond, the protocol is terminated upon the expiration date. A notice of protocol termination is sent by the protocol office via email to the PI, department chairperson, Senior Program Veterinarian, and the BRMS supervisor of the animal facility listed on the protocol. Animals remaining on the terminated protocol are transferred to a veterinary holding protocol pending approval of the renewal.

As needed, the IACUC will discuss at a convened meeting any active protocol called for review by a voting member to re-evaluate specific procedures, monitoring criteria, endpoints, or other aspects of the animal work.

b. Describe the process and frequency with which the Committee reviews the animal care and use program and conducts facility and laboratory inspections. Detail any criteria used for exempting or varying the frequency of reviewing satellite holding facilities and 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 an appendix.

The School of Medicine and Public Health IACUC conducts semiannual reviews of the Animal Care and Use Program and all School of Medicine and Public Health animal facilities.

The program is reviewed every six months at a specially convened meeting of the IACUC. The review uses a worksheet based on the Guide for the Care and Use of Laboratory Animals and the description of an animal care and use program published in Lab Animal ([redacted]., "Defining the Animal Care and Use Program, Lab Animal, vol. 34 no. 10).

Without exception, all animal housing facilities, animal activity areas (including all sites where animal surgery occurs), and BRMS animal transport vehicles are inspected semiannually. The inspections typically involve at least two members of the IACUC, but may be performed by a single Committee member when only non-USDA-covered species are involved. In the event deficiencies are discovered, the inspection team can at their discretion request corrective action and set correct-by dates. Inspection draft reports are presented to the full IACUC at convened meetings, and in the event deficiencies are reported, the Committee can mandate further corrective action be taken if deemed necessary. The finalized draft reports are approved as a formal motion by a majority of the IACUC. When needed, RARC coordinates follow-up communication and assistance with the facility supervisors and individual investigators, and presents progress reports to the IACUC. Any deficiencies not corrected by the correct-by date are brought before the IACUC for action.

RARC forwards the compiled report to the Institutional Official. A copy of then fall 2016 semiannual program report is included in Appendix 9.

c. Describe institutional responses to deficiencies noted on regulatory inspection reports (e.g., government, regulatory agencies). Note: Copies of all such inspection reports for the past three years (if available) should be available for review by the site visitors.

The USDA has issued no Non-Compliant Items for the SMPH animal program in the past three years.

In the event the University of Wisconsin-Madison SMPH program were to receive formal notice of non-compliant items or other deficiencies from a government or regulatory agency, the following would take place:

1. The IACUC Chair and Senior Program Veterinarian, in consultation with the IO and other relevant University personnel as needed, would review the deficiency and determine action required to correct the deficiency
2. A report of the deficiency and planned corrective action would be presented to the full IACUC; if requested by the IACUC, additional corrective action would be mandated
3. The UW would communicate with the agency as needed to ensure the deficiency was fully corrected.

d. Describe other monitoring mechanisms or procedures used to facilitate ongoing protocol assessment and regulatory compliance.

All active animal research protocols are eligible for formal laboratory assessment by RARC Animal Program Assessment Specialists as per Policy 2016-059-io, "Post Approval Monitoring". Assessments may be conducted as part of routine monitoring efforts performed by the RARC Program Assessment Specialists, or may be specifically directed by the IACUC, the Chief Campus Veterinarian, IO, or the [redacted]. The scope of the review can include, but not be limited to: focused reviews of protocols and associated animal use records; inspection of animal care and use areas and materials; review of animal medical records; observation of animal research procedures; and, other tasks as directed by the IACUC, the Chief Campus Veterinarian, or the [redacted]. Results of assessments are communicated to the IACUC, and action is taken by the Committee and Veterinary staff if indicated.

II. Animal Environment, Housing and Management

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

A. Animal Environment

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

a. Describe briefly the heating and air conditioning system performance. Provide method and frequency for assessing, monitoring, and documenting animal room or housing area temperature and humidity that is appropriate for each species. Note current (measured within the last 12 months), detailed (by room) performance data are to be provided as indicated on the enclosed Heating, Ventilation, and Air Conditioning (HVAC) System Summary appendix. If outdoor housing areas are used, so note.

Dry bulb macroenvironmental temperatures for all species at the SMPH are specifically set to be within the recommended temperature ranges stated in the *Guide* (8th edition, Table 3.1, p. 44). Room temperature and humidity in all

housing rooms are continually monitored and recorded by an environmental monitoring system. Recorded information is stored in a database. The system automatically calls specified personnel when set temperature parameters are exceeded. Automated communications are sent during or after regular work hours and are continued to be sent until acknowledged.

Room performance data are listed in the HVAC System Summary appendix.

b. If temperature set points and/or environmental conditions are outside the thermoneutral zone for the species, describe the process for ensuring behavioral thermoregulation (e.g., nesting material, shelter, etc.) and/or IACUC/OB approved exception.

Animal housing facilities use room temperatures according to the Guide's parameters for individual species. To avoid heat stress in rodent species, these parameters are typically set below the Lower Critical Temperature (LCT) of 26°C for rodents. For housing below the LCT, rodents are provided with adequate resources to avoid cold stress, which include nesting material, appropriate bedding material, and presence of cage mates.

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

a. Briefly describe the performance aspects of the ventilation system. Provide method and frequency for assessing, monitoring, and documenting the animal room ventilation rates and pressure gradients (with adjacent areas). Note: current (measured within the last 12 months) detailed (by room) information is to be provided as indicated on the enclosed Heating, Ventilation, and Air Conditioning (HVAC) System Summary appendix.

The most recent report on HVAC system performance is included in the HVAC Summary Appendix 10. Rooms are supplied with 100% outside air. The HVAC system is maintained by Physical Plant personnel. Ventilation rates in all animal housing rooms are confirmed by Physical Plant personnel at least every three years, and more often if indicated or as directed by BRMS or RARC personnel. Pressure gradient indicators are present at housing room entries and are checked by BRMS personnel at least weekly.

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

All high density individually ventilated racks have HEPA-filtered supply air, set for low-velocity airflow and a total volume exchange of approximately 60 changes per hour. Exhaust is through HEPA-filtered exhaust blowers or through the building ventilation system.

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.

Not applicable for any SMPH BRMS facilities.

3. Life Support Systems for Aquatic Species [Guide, pp. 84-87]
Provide a general description of institutional requirements for enclosures using water as the primary environmental medium for a species (e.g., aquatics). Describe overall system design, housing densities, and water treatment, maintenance, and quality assurance that are used to ensure species appropriateness. Please note that facility-specific tank design and parameter monitoring frequencies should be summarized in the Aquatic Systems Summary appendix.

The SMPH Aquatic Animal Management Program is in Appendix 11. The Aquatic Animal Management Program sets minimum standards for care of aquatic species, including water quality requirements and testing/assurance (e.g. daily temperature monitoring and weekly pH and ammonia checks). The SMPH uses both static and recirculating aquatic housing systems. Housing densities vary according to species and type of system (static versus recirculating), but densities used must provide an environment where animal health and behavior is not adversely affected and where water quality remains within required parameters.

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.

Heavy machinery, such as cage wash equipment, is physically separated from animal housing rooms. Human areas (break rooms, locker rooms) are physically separated from animal housing rooms. Fire alarms in animal housing facilities alert personnel through voice alarms and amber lights. Casters on carts, racks, and hand trucks are routinely repaired, lubricated or replaced as needed.

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

1. Primary Enclosures
Provide a description of primary enclosures used (e.g., cages (conventional, individually-ventilated cage systems (IVCS), etc.), pens, stalls, pastures, aviaries, tanks) in appendix.

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 Guide for the Care and Use of Laboratory Animals and the Animal Welfare Act Standards are the primary guiding documents to establish adequate housing space for research animals. Additional information is provided in Appendix 12, Primary Enclosures and Animal Space Provisions.

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

The SMPH program currently does not have any space exceptions. In the event an investigator were to request an exception based on scientific reasons, the request would need to be justified in an animal care and use protocol and be approved by the IACUC and the veterinary staff.

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

a. 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, etc.).

Environmental enrichment requirements are stated in the RARC Animal Social Housing and Enrichment Requirements (ASHER) document (Appendix 19).

Structural elements that are used by the animal program include resting boards placed in secure run-areas outside of primary enclosures, elevated resting areas inside of cages, small enclosure devices/privacy areas, and secured areas for free-running of animals.

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).

All mice are provided with nesting material unless there is a veterinary or IACUC-approved exception. Mice may also be provided with shelters if requested by research staff or at veterinary direction. Rats are provided with a shelter or loft unless there is an approved exception. Rats may also be provided with a gnawing toy or nesting material. Other types of rodents are provided with nesting material, shelter, gnawing toys or a combination of these. Extra dietary enrichment can also be provided.

Dogs and cats are socially housed whenever possible and are provided with an assortment of environmental enrichment toys. They are routinely allowed the opportunity for additional exercise, such as being allowed to run in secured rooms. Rabbits are provided with an assortment of

environmental enrichment toys, and are socially-housed whenever possible. Other USDA-covered species are provided enrichment toys and allowed to run in secured areas when safe and appropriate.

b. Social Environment [Guide, p. 64]

i. Describe institutional policy or strategy for social housing of social species.

Social housing requirements are stated in the RARC Animal Social Housing and Enrichment Requirements (ASHER) document (Appendix 19). Unless otherwise necessitated, such as by protocol-specified or clinical requirements, social species are housed in a way that promotes safe and appropriate interaction with conspecifics. Social housing plans are species-specific and based on their normal social behavior.

ii. If social animals are not socially housed, provide justification, as approved by the IACUC/OB.

Single housing is based either on animal welfare reasons as determined by the veterinarians, or based on research-related requirements described in an animal care and use protocol and approved by the IACUC. Institutionally-approved reasons for single housing of a social species, such as single-housing necessitated by aggressive behavior of male breeder mice, are detailed in the ASHER document (Appendix 19).

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

Single-housed rodents are provided a shelter, nesting material, and other enrichment device(s) as indicated in the ASHER document. As per the ASHER document enhanced environmental enrichment can be provided to single housed USDA covered animals. This can include the opportunity for exercise, interaction with a member of the animal care, veterinary or investigative staff, or other enrichment opportunities.

c. 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.

All vertebrate species arriving from outside sources are to have a minimum of 48 hours to acclimate to SMPH housing facilities prior to any survival procedures, unless a shorter time period is approved by the IACUC or a veterinarian.

d. 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.

The ASHER document is reviewed and approved annually by the IACUC. Individual exceptions to social housing of social animals not associated with scientific need are reviewed by the veterinary staff on a case by case basis, and brought to the IACUC for discussion and approval if needed. Exceptions to social housing for scientific necessity must be justified in a protocol approved by the IACUC. These protocols are reviewed regularly by the IACUC when they are amended, at annual updates, or at triennial review.

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 for the SMPH.

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

Not applicable for the SMPH.

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 for the SMPH.

f. Naturalistic Environments [Guide, p. 55]

i. Describe types of naturalistic environments (forests, islands) and how animals are monitored for animal well-being.

Not applicable for the SMPH.

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

Not applicable for the SMPH.

iii. Describe how animals are captured.

Not applicable for the SMPH.

C. Animal Facility Management

1. Husbandry

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

i. List type and source of food stuffs.

Vendor	Feed Types
[redacted]	**2014** *Teklad Global 14% Protein Rodent Diet* **2016** *Teklad Global 16% Protein Rodent Diet* **2018** *Teklad Global 18% Protein Rodent Diet* **2019** *Teklad Global 19% Protein Extruded Rodent Diet* **2025** *Teklad Global 25% Protein Dog Diet* **2031** *Teklad Global High Fiber Rabbit Diet* **2916** *Teklad Global 16% Protein Rodent Diet – Irradiated* **2918** *Teklad Global 18% Protein Rodent Diet - Irradiated* **2919** *Teklad Global 19% Protein Extruded Rodent Diet - Irradiated* **7913** *NIH-31 Modified Open Formula Mouse/Rat Sterilizable Diet* **8604** *Teklad Rodent Diet* **8626** *Teklad Mouse Breeder Diet* **8753** *Teklad Mini-swine Diet* **TD06596** *Teklad Irradiated Uniprim Diet*
[redacted]	**5015** *Lab Diet Mouse Diet* **5020** *Lab Diet Mouse Diet 9F* **5058** *Lab Diet PicoLab Mouse Diet 20* ***5326*** *Lab Diet Rabbit Food* *BioServe Timothy Hay* *Alpo Canned Dog Food* *Purina Pro Plan Adult Cat or Kitten Food (dry and canned)*
[redacted]	*Xenopus Brittle*
[redacted]	*Tetra Flakes – zebrafish*
[redacted]	*Finfish starter #1*

Vendor	Feed Types
[redacted]	*Brine Shrimp cysts (juvenile fish diet)*
[redacted]	*Frozen brine shrimp (adult fish diet)*
Local Grocery Store	*Fresh Fruits, Vegetables & Treats*

ii. Describe storage facilities of vendors, noting temperature and vermin control measures. If more than one source, describe each.

Vendors maintain clean, well-kept facilities with temperature-controlled storage areas. Vendors have comprehensive pest control programs. [redacted] is a barrier production facility that directly ships its product to customers. [redacted] and [redacted] also directly ship to customers. [redacted] is a distributor and not a dedicated barrier production facility, and is inspected annually by RARC veterinarians to ensure storage conditions are appropriate. A report of the annual visit is made to the IACUC.

iii. Describe bulk food storage facilities, if applicable, noting temperature and vermin control measures. Note food storage areas within the specific animal facilities are described below in Section IV.B.4.a. Physical Plant.

The SMPH program does not maintain a bulk storage facility. Food is stored within animal facilities.

iv. Describe food storage in animal rooms.

Sturdy plastic feed containers in animal rooms are covered and marked with the mill date of the contents.

v. Describe food preparation areas.

Not Applicable for SMPH facilities.

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

Rodents: Feed is provided *ad libitum* via cage-top wire bar feeder. Gel cups or moistened feed in containers may be placed on cage floor if described in a protocol or at veterinary direction.
Rabbits: Feed is provided in measured amounts in a J feeder.
Dogs: Feed is provided in measured amounts in stainless steel feeders.
Cats: Feed is provided in measured amounts in stainless steel feeders.
Swine: Feed is provided in measured amounts in plastic or stainless steel feeders.
Xenopus: Feed is dropped into tank in measured amounts on scheduled days.

Aquatics (fish): Food is provided 2x daily at specified time periods.

Differences from the above feeding amounts and methods are protocol-driven or at veterinary direction.

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

Upon receipt, feed bags are inspected for condition of the bags and mill dates. In storage, bagged feeds are rotated ensuring items are consumed prior to expiration date. All feed is veterinary approved. Feed comes from established, reputable dealers with guaranteed analysis.

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, etc.).

The source is city water that is treated by Reverse Osmosis (RO) and chlorination or acidification. Water is provided by automatic watering systems, bottles or bowls.

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

The SMPH Water Quality Testing Program (BRMS SOP #410) assesses animal drinking water at least once yearly in all animal facilities for bio-loads, pH, hardness, and chlorine. The results are reviewed after each round of testing, and action (e.g. re-testing, increasing the frequency of monitoring, or ordering inspection and maintenance of water delivery systems) is taken when necessary.

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

Watering valves on wall-mounted racks are sanitized with hydrogen peroxide wipes at cage change. Automatic watering manifolds on mobile cage racks are drained prior to rack washing and flushed with hyper-chlorinated or acidified water. Room distribution manifolds are flushed daily.

All watering equipment is maintained through a preventive maintenance contract from an outside vendor.

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

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

Corn cob and paper are used for rodents. Contact paper is used for swine when they are not in elevated housing.

ii. Describe bulk bedding storage facilities, if applicable, including vermin control measures. Note bedding storage areas within the specific animal facilities are described below in Section IV.B.4.a.

The SMPH program does not maintain a bulk storage facility. Bedding is stored within the animal facilities.

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

Only bedding and nesting material that is purpose-produced by reputable manufacturers is used. Bags are inspected for damage when shipments are received. When bags are opened, bedding is examined for particle size, excessive dust, debris, and gross contamination.

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.

BRMS uses two purpose-designed transport vehicles to transport animals and equipment between facilities; 1) a cargo van with temperature controlled environment, and 2) a cargo truck with temperature controlled environment and hydraulic lift gate.

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

BRMS has portable high pressure washers, wet/dry vacuums, floor scrubbers, and clothes washers/dryers.

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

i. Bedding/Substrate Change

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

Species	Cage/ Enclosure Type	Bedding Type	Frequency
Cats	Solid Bottom Cages	N/A	Cleaned Daily
Dogs	Pens/ Slotted Floor Cages	N/A	Cleaned Daily
Rabbits	Slotted Floor Cages/Drop Pans	N/A	Cleaned three times per week
Rodents	Static Microisolator	Corn cob and/or paper	Changed at least weekly
Rodents	Ventilated High Density Microisolator	Corn cob and/or paper	Changed at least bi-weekly
Swine	Solid Bottom Pens	Paper	Changed daily

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

Individually ventilated cages (IVCs) are changed every two weeks unless unexpected conditions such as cage flooding are detected. The SMPH IACUC has discussed and approved this schedule for IVCs based on performance standards. This committee reviews this exception during each Program Review. When approved in a protocol or at veterinary direction, there may be instances of extended cleaning times for rodent IVCs (up to 72 hours in excess of 2 weeks) when rodent pups are present.

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

Solid bottom cages are dumped on the dirty side of cage wash rooms. Clean bedding is added on the clean side of the washroom or designated clean room. See Section IV. B. 5. for specific facility and room locations.

ii. Cleaning and Disinfection of the Micro- and Macro-Environments
Describe the washing/sanitizing frequency, and methods used in the Appendix, "Cleaning and Disinfection of the Micro- and Macro-Environment."

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

Microisolator cage tops for mouse cages are washed every three months. Microisolator cage tops for rats are washed every two months. This cleaning schedule was approved by the SMPH IACUC after examination of performance data that were collected in SMPH facilities. The performance data indicated that adoption of this schedule did not result in unacceptable microbial contamination or accumulation of debris on cage lids. The SMPH IACUC reviews this exception at each Program Review.

2) Assessing the Effectiveness of Sanitation and Mechanical Washer Function

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

A temperature indicator strip (or similar device) is run in all mechanical washers at least once each work day. Quarterly, ATP testing is performed on random washed cage surfaces. All autoclave loads contain chemical indicators, with biological indicators being run monthly for all autoclaves. Quarterly, all cage wash and tunnel washers are on a schedule to check titration levels, and all peristaltic detergent pumps are checked and lubricated by an outside contractor.

b) Describe preventive maintenance programs for mechanical washers.

Rack washers, tunnel washers, and sterilizers are maintained and calibrated quarterly by an outside vendor. Non-routine maintenance is provided by an outside vendor or Physical Plant.

f. Waste Disposal [Guide, p. 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

Soiled bedding is disposed though the sanitary sewer or bagged in plastic bags, sealed, and placed into dumpsters to be collected weekly by UW Physical Plant personnel and disposed of in a sanitary landfill.

ii. Animal carcasses

The majority of animal carcasses are bagged, boxed, labeled for hazard type (if applicable) and frozen for weekly collection by UW EH&S for incineration. Large animal carcasses are transported by BRMS transportation services to the [redacted] digester, located on campus, for disposal.

iii. Hazardous wastes - infectious, toxic, radioactive, sharps and glass

Soiled bedding from animals that have received biological hazards is autoclaved (or in limited cases chemically disinfected) prior to normal disposal if indicated by the relevant Biological safety protocol. When necessitated following Environmental Health and Safety review, bedding from animals that have received hazardous substances is picked up by EH&S or an outside contractor for special disposal,

Radioactive waste with isotopes with long half-lives is bagged in special yellow bags, boxed, and picked up by UW EH&S to hold until it can be properly disposed of complying with all federal, state and county regulations. Waste from animals administered isotopes with medium to short half-lives are bagged in the yellow bags and held in a designated laboratory freezer or other appropriate place such as a shielded hood, until it has decayed to “background levels”. The waste and animal carcasses are then placed in the normal animal freezer that is picked up by UW EH&S for incineration.

Sharps including needles, syringes, lancets, scalpels and razor blades are collected in sharps containers. Containers are placed in collection bins for disposal by an outside vendor complying with all federal, state and county regulations.

Glass and plastics are placed in glass disposal boxes double lined with leak-proof bags, taped closed and labeled “Glass for Disposal” or “Okay to Trash”. The boxes are then placed into dumpsters. Glass bottles, petri dishes, broken glass or other potential sharps contaminated with hazardous materials must be appropriately rinsed, neutralized, or disinfected (by autoclaving or chemically) as applicable to the hazard prior to disposal in the trash.

g. Pest Control [Guide, p. 74]

i. Describe the program for controlling pests (insects, rodents, predators, etc.) noting the control agent(s) used, where applied, and who oversees the program and applies the agent(s). Include a description of natural predators (e.g., barn cats) or guard animals (e.g., dogs, donkeys) used for pest and predator control, if applicable.

A licensed pest control company monitors vermin activity around the perimeter of all BRMS animal facilities at least once every two weeks. Reports from each inspection are maintained in the BRMS database. Pest traps within the vivaria are monitored by BRMS staff at least daily. All traps are live traps. BRMS SOP #405 details the pest control program.

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

Pesticides have historically never been used in rooms holding animals. If it were necessary to use pesticides, animal users in the affected area would be informed via e-mail, postings, or phone calls. Sensitive animals would be moved to another area while treatment was in effect.

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

i. Describe procedures for providing weekend and holiday care. Indicate who (e.g., regular animal care staff, students, part-time staff, etc.) provides and oversees care and what procedures are performed. Indicate qualifications of weekend/holiday staff if not regular staff.

All facilities use regular animal care staff to provide animal health checks and essential care services on weekends and holidays. BRMS supervisors provide weekend and holiday oversight duties on a rotating basis.

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

Listings of individuals to contact, including veterinarians, investigators, and supervisors are posted in each facility. A research animal veterinarian is available for emergency care on a 24 hour on-call basis, including weekends and holidays.

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, etc.).

Species	Cage Card	Ear Punch	Ear Tag	Tattoo	Toe Clip
Cats	X			X	
Dogs	X		X	X	
Fish	X				
Swine	X	X	X	X	
Rabbits	X		X	X	
Rodents	X	X	X	X	X
Xenopus	X				

b. Record Keeping

Describe procedure(s) for maintaining individual records on animals. Identify the species for which individual records are maintained, individuals (titles, not necessarily names) responsible for maintaining the records, and where they are maintained and how veterinary and IACUC/OB access is assured.

Individual clinical records are initiated for all dogs, cats, swine, rabbits and other non-rodent USDA-covered animals upon arrival of animals at SMPH facilities. The medical records are maintained by research animal veterinarians and veterinary technicians. Records are stored in the animal facility. Documentation includes records of physical examinations, diagnostics, treatments, surgery reports, and medical progress.

Rodent and aquatic species' records consist of filed copies of Sick Animal Reports, which include documentation of follow-up care by the veterinary staff. Rodent diagnostic records and sick reports are kept separately in the veterinary technician offices.

Veterinary staff members can access the records at any time, and IACUC members can review records during semiannual facility inspections or at any time upon request.

Records of research activity performed by investigators are maintained by PIs and research staffs in PI laboratory or office space. Records must be available for review by research animal veterinarians and IACUC members during the semiannual IACUC inspections, or at any time as determined by the veterinary staff or the IACUC.

c. Breeding, Genetics and Nomenclature

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

PIs are responsible for proper selection of animal models that will allow attainment of scientific goals. RARC veterinarians are available for consultation regarding selection of animal models and can also provide advice to investigators on animal selection during protocol pre-review or review.

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.

PIs are responsible for proper use of nomenclature. RARC veterinarians are available for consultation and can also provide advice to investigators on nomenclature during protocol pre-review or review.

iii. For newly generated genotypes, describe how new phenotypes that negatively impact well-being will be monitored, managed and reported to the IACUC/OB in a manner to ensure the animals' health and well-being.

The ARROW electronic protocol system specifically asks investigators if complications can be expected from new genotypes/phenotypes. If complications are anticipated, these must be listed along with monitoring and management plans that are subject to IACUC and veterinary approval.

Animals are observed daily by animal care staff, investigative staff, or veterinary staff; any new phenotypes that have negative impact on animal well-being will therefore be identified. If adverse outcomes associated with a phenotype are identified, these are reported to the IACUC by the Senior Program Veterinarian.

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; 51-57]

1. Animal Procurement

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

All UW School of Medicine and Public Health animal purchases are processed by Biomedical Research Models Support (BRMS). Acquisition of animals is checked against what is allowed in approved animal-use protocols. Availability of sufficient and appropriate housing space is confirmed by BRMS through the animal procurement process.

The majority of animals are supplied by approved commercial vendors. Animals received from other sources must have veterinary approval. Approved Vendor status is granted to sources that have demonstrated through appropriate quality-assurance measures and past performance that their animals are free of disease. Examples of approved vendors are [redacted] and [redacted]. Non-commercial suppliers, such as other research institutions, are evaluated on a case-by-case basis by a research animal veterinarian.

Vendor health surveillance quality control reports, vendor past performance, animal health certificates, physical examinations, daily observation, and laboratory tests (e.g. PCR and serology) are methods used to evaluate the quality and health status of incoming laboratory animals. Rodent transfers from other institutions are approved on an individual basis based on pathogen surveillance reports; health monitoring of the colony must be submitted for veterinary review and approval prior to shipment of the 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).

All animal species are delivered by vendor trucks, air express, or contract couriers. Transportation of animals (terrestrial or aquatic) between UW campus facilities is by BRMS vehicles; BRMS operates dedicated, temperature-controlled vehicles for animal transport between UW buildings. Animals to be shipped are placed in purpose-designed shipping containers and are delivered to specified loading docks at animal-housing facilities, where BRMS personnel receive animals and transfer them to appropriate housing or quarantine rooms; the destination housing room is based on species, strain and source of animal, and on animal health reports from the sending institution or facility. Telephone communication between BRMS personnel and drivers of transport vehicles is used to minimize the time that any animal transport container or carrier is kept in a loading dock area.

Occasionally investigators transport small numbers of rodents or other small experimental animals; inclusion of this transport method must be in an IACUC-approved protocol. As per Policy 2011-043-v any personal vehicle must be temperature-controlled, animal transport containers must be appropriate and must be safely sealed, and containers must be away from public view.

B. Preventive Medicine

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

a. Describe methods used to monitor for known or unknown infectious agents.

Rodents: Exhaust Air Dust from ventilated cage racks or cage contents/components (bedding, filter tops, etc.) are evaluated by PCR for the presence of pathogens. Colony animals may also be evaluated by PCR (via direct swabs or collection of fecal pellets) or serologic testing. Additionally, as directed by a research animal veterinarian, sentinel rodents exposed to dirty bedding from colony animals may be used to monitor for pathogens. Techniques used to monitor for infectious agents include PCR, serology, and direct examination of tissues for ecto- and endo-parasites.

Other species: if an infectious agent is suspected, tissue, blood samples, fecal samples or direct swabs are submitted to testing laboratories for PCR, serology, bacterial culture, and/or other diagnostic testing.

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

Rodent facilities are designated according to pathogen status. Rodents entering highest-level Specific Pathogen Free facilities must arrive from approved vendors or have undergone rederivation. Rodents that leave these facilities

cannot return to main colony rooms and must be housed in other facilities or containment rooms if needed. Required Personal Protective Equipment (PPE) is posted at appropriate facility or room entryways.

Movement of personnel is to be in a "clean to dirty" sequence. If personnel must enter a high-SPF facility after entering an older facility with certain enzootic pathogens, steps such as showering and/or change-of-clothing are required. If unexpected pathogens are detected in a facility, signage is posted in individual rooms or hallways to indicate special status, including information on proper entry and exit procedures. Any rodent colony found to have a pathogen on the exclusion list for that facility typically has one of the following occur: a) Movement to a facility that allows the pathogen, b) Containment and treatment/burnout in situ (if feasible), c) Test and cull of colony animals, or d) rederivation of animals.

If clinical or laboratory assessments reveal presence of infectious agents in rodents or any other species, animals are treated as per veterinary evaluation if indicated. Animals are placed in containment housing or euthanized if necessary.

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

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

Animal care personnel receiving the shipment take the shipping or transport container to the vivarium where the animals are to be housed, place the animals in the appropriate primary enclosure, and immediately report any observed abnormal behavior or signs of disease to the veterinary staff. Non-rodent USDA-covered species are checked upon arrival by SMPH veterinary technicians, and also receive an examination by a veterinarian within 48 hours of receipt unless animals are to be used in an approved acute terminal study.

b. Describe quarantine procedures for each species that are purpose bred.

Rodents obtained from approved vendors are exempt from quarantine.

Rodents from non-approved vendors (such as other universities) must be approved for transfer by a research animal veterinarian following examination of recent pathogen screening reports from the source facility. Once approved for transfer, rodents are quarantined in the [redacted] quarantine hallway or other veterinary-approved location prior to entering standard housing rooms unless granted a specific exception by a veterinarian. Depending on the destination housing facility, rodents are assigned to Standard Quarantine and/or Rederivation Quarantine. Standard quarantine typically houses rodents for 2-3 weeks and includes PCR (fecal and fur swab) testing for excluded pathogens. Testing panels used are determined by source history and final housing location. Rederivation Quarantine rodents are maintained for approximately 3-6 months for embryonic rederivation. Rederivation is

performed in conjunction with BRMS staff and the Transgenic Animal Facility.

Other non USDA-covered species obtained from approved vendors may be exempt from quarantine upon arrival. Animals from non-approved vendors must be approved for transfer by a research animal veterinarian, and quarantined as per veterinary direction.

Aquatic/amphibian animals are quarantined as indicated by the disease status of the sending and receiving colonies. Animals may be treated for endo/ectoparasites as dictated by research needs and the health status of the sending and receiving colonies.

Only purpose-bred dogs, cats, and rabbits are accepted. Only Pasteurella-free rabbits are purchased. Newly arrived dogs, cats, rabbits, swine may be housed in a designated room that is separate from other colony animals as directed by a research animal veterinarian. With veterinary oversight, animals obtained from approved vendors may be exempt from any type of quarantine upon arrival.

Animals received in a particular shipment are handled separately from animals received in other shipments.

c. Describe the quarantine facilities. In your description explain any special measures used for quarantine/conditioning of each random source (not bred and raised specifically for research) species used.

A dedicated rodent quarantine corridor is located in the [redacted] facility.

An appropriate room for the quarantine of some USDA-covered species can be made available in the [redacted] facility or at other AAALAC-accredited animal programs on campus. If directed by a research animal veterinarian, some animals may be housed in designated rooms that are separate from other colony animals.

Random source animals are not currently used in the SMPH research program.

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

As per Policy 2015-055-v all vertebrate species arriving from outside sources are allowed a minimum of 48 hours to stabilize and acclimate to housing facilities before any survival procedure, unless an IACUC-approved protocol calls for a shorter time period or there is research animal veterinarian approval. It is recommended that animals intended for use in non-survival procedures receive a minimum of 48 hours acclimation prior to utilization in a research protocol. Rabbits are monitored for a minimum of 3 days post-arrival for inappetence secondary to shipping stress.

e. 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.

The animal population is routinely segregated by species, pathogen status, and occasionally by breeding status (i.e. breeding colonies may be maintained separately from non-breeding groups).

Whenever possible animals from a single source are housed separately from other animals until health status or vaccination regimens are completed.

Occasionally, separation criteria may be modified or waived to facilitate the needs of the research project as approved by the IACUC or a research animal veterinarian.

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

a. Describe isolation procedures and related facilities for animals.

In the event of the discovery of excluded pathogens in a facility, animals may be a) isolated *in situ*, with signage on the doors indicating appropriate procedures for personnel to follow or b) housed in specific containment rooms or facilities (e.g. rodent containment rooms in the [redacted] vivarium, large animal rooms in the [redacted] facility). After isolation of animals, procedures to test for pathogens and treat, rederive or euthanize animals are determined by RARC veterinarians.

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

Mice and rats may on occasion be housed in the same room in BRMS vivarium space or other IACUC-approved space if both species of animals are housed in cages with microisolator tops and are not placed in direct proximity to each other.

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

a. Describe 1) the procedure(s) for daily observation of animals for illness or abnormal behavior, 2) the observer's training for this responsibility, and 3) method for reporting observations (written or verbal). Include a description of the method for ensuring that reported cases are appropriately managed in a timely manner.

All animals are observed for morbidity and mortality on a daily basis by the animal care staff (Animal Research Technicians). Veterinary staff members monitor animals on a daily or regular basis if directed by a research animal

veterinarian. Investigative staffs also monitor animals during the course of active animal-use protocols.

Animal Research Technicians receive training from BRMS, RARC training staff and RARC Veterinary Staff on species-specific indicators of abnormal behavior, and on proper procedures for reporting sick animals.

All laboratory staff who work with animals must complete RARC training, including at minimum animal-use orientation and species specific training. Training includes information on identifying illness and abnormal behavior.

Methods of reporting observations:

All Species: Sick or injured animals are reported in accordance with established standard procedures as detailed in BRMS SOPs #201 and #210. Immediate direct reporting to the veterinary staff by phone or personal contact is required for USDA-covered species and any situation deemed serious or an emergency.

Rodents and aquatics: when a sick animal is observed a "Sick Animal Report" is initiated by the animal caretaker, as per BRMS SOP #201. A report can also be generated by laboratory or veterinary staff members if these individuals are the first to observe a sick animal. An internet-based electronic reporting system is in place, whereby a report is e-mailed to a dedicated e-mail address accessible to veterinary technicians and research animal veterinarians. The report is simultaneously e-mailed to all laboratory personnel who are listed as care contacts on the pertinent animal care and use protocol. A veterinary technician typically prints out the report and checks the animal(s) and then notifies a veterinarian and laboratory staff. The report becomes part of the clinical record. In urgent circumstances, the animal research technician or Laboratory Staff member will contact the veterinary staff immediately via phone or personal contact, prior to any report being filed. The veterinary staff is responsible for providing necessary medical care and coordinating with the laboratory for any additional treatments.

USDA-covered non-rodent species: Daily Animal Observation sheets, located at each animal room, are used by Animal Research Technicians to record any abnormal animal health observations. These notations are checked by the veterinary staff. For critical observations, the Animal Research Technician or laboratory staff member(s) are to contact the veterinary staff immediately, by phone or personal contact. On weekends, weeknights and holidays animal care staff or laboratory staff contact the veterinarian on-call.

Management of reported cases: The veterinary staff monitors the sick animal reporting system on an ongoing basis throughout all work days, and responds as is necessary. All veterinary staff members also are available by phone during work hours, and on-call veterinarians are always available via phone 24 hours/365 days. The veterinary staff ensures that all reported cases are appropriately managed in a responsive and timely manner.

b. Describe the methods of communication between the animal care staff/veterinarians and the researcher(s).

Contact information for all research laboratories is located in every animal housing area and is also contained within the electronic sick animal reporting database accessible by computer or mobile devices; upon assessment of sick animals, laboratory personnel are contacted by animal care and/or veterinary staff via the electronic sick animal reporting system, phone and/or verbally in person. The electronic sick animal reporting system automatically alerts veterinary staff members. Telephone and e-mail contact information for RARC veterinary staff stationed in the SMPH is also posted in multiple locations in animal housing facilities; veterinary contact information is also distributed to all laboratories.

c. Describe the procedure for providing veterinary medical care to ill animals and note who is contacted and the method of communicating (written or verbal) information to the veterinarian regarding sick animals.

When ill animals are identified, the veterinary staff is notified as described above (e-mail, phone, and/or direct interaction). Animals are evaluated by a veterinary technician or a veterinarian. When an animal is evaluated by a veterinary technician, this will be followed by a consult with a veterinarian unless a standard veterinarian-approved treatment plan for a common condition is followed. Veterinary medical intervention or diagnostics is implemented as needed under the direction of a research animal veterinarian. If action or treatment must be taken that may have an effect on the research being conducted, the veterinarian will consult with the investigator regarding possible courses of action if possible. If the situation is deemed to be urgent or if the investigator is unavailable, the veterinarian will make the decision on action to be taken rather than delay treatment or the implementation of diagnostic methods.

d. 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, etc.) for each species.

Rodents: PCR testing is used to screen mouse and rat rooms for common rodent pathogens and parasites. Other rodent species are screened at the direction of a research animal veterinarian. USDA-covered rodent species are monitored at least weekly by veterinary staff and nails and teeth trimmed as needed.

Dogs: Dogs receive physical examinations within 48 hours of arrival, and then annually. Animals are weighed and nails trimmed (if needed) at least quarterly. Dental prophylaxis is performed as needed. Vaccinations of DHPP are done as

needed at 8, 12 and 16 weeks of age, then 1 year from the last series-vaccination, then every 3 years. Rabies vaccinations are done at approximately 16 weeks of age, 1 year later, and then every 3 years. Vaccines may be withheld if scientifically justified by the proposed research or at the discretion of a research animal veterinarian.

Cats: Cats receive physical examination within 48 hours of arrival, and then annually. Animals are weighed and nails trimmed (if needed) at least quarterly. Dental prophylaxis is performed as needed. Vaccinations of FVRCP and Chlamydophila felis are done at 8, 12 and 16 weeks of age, then 1 year from the last series-vaccine, then every 3 years. Rabies vaccinations are done at approximately 16 weeks of age, 1 year later, and then every 3 years. Vaccines may be withheld if scientifically justified by the proposed research or at the discretion of a research animal veterinarian.

Rabbits: Rabbits receive physical examination within 48 hours of arrival and then annually. Animals are weighed and nails trimmed at least quarterly. Animals are monitored for shipping stress for a minimum of 3 days post-arrival.

Swine: Swine are obtained from the SPF UW-Swine unit at [redacted] or other approved commercial vendors. Preventative health programs, including serology, are performed at the UW-[redacted] facilities. Swine from commercial vendors are experimentally naïve. Animals are assessed by the research animal veterinarian prior to survival surgeries.

Other species: Preventative medicine programs for any other species will be determined by a research animal veterinarian.

C. Clinical Care and Management [Guide, pp. 113-115]

1. Emergency Care [Guide, p. 114]

a. Describe the procedures to ensure that emergency care is continuously available for animals during and outside of regular work hours.

An RARC research animal veterinarian is on-call 24 hours/day 365 days a year. An on-call paging center is used to contact the on-call veterinarian after-hours. Emergency contact information is posted in all animal facilities, and all personnel who work with animals are trained in the appropriate way to contact a veterinarian in emergency situations.

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

In emergency situations, an attempt will be made to contact the researcher to explain the situation and the treatment options if feasible. Research animal

veterinarians have full authority to treat animals in any way deemed necessary, or to euthanize animals, depending on circumstances.

2. Clinical Record Keeping [Guide, p. 115]

Describe the procedure for maintaining medical records and documenting treatment of ill animals including: clinical laboratory findings, diagnoses, treatments, medical progress records, etc. Identify individual(s) (titles, not necessarily names) responsible for maintaining such records and identify where the records are maintained and who has access to the records. Describe the role of the Attending Veterinarian in record keeping.

All clinical laboratory findings, observations, diagnoses, treatments, and medical progress notes are recorded in the animal's medical record. Individual medical records are initiated for all non-rodent USDA-covered species upon arrival of animals at SMPH facilities. The medical records are maintained by RARC research animal veterinarians and veterinary technicians. Active records are securely stored in the animal facility. The veterinary staff and appropriate laboratory staff have access to records. Documentation includes records of physical examinations, diagnostics, treatments, anesthesia/surgery reports, and medical progress. Archived records are stored in a locked, access-restricted storage room.

Rodent and aquatic species' records consist of filed copies of Sick Animal Reports, which include documentation of follow-up care by the veterinary staff. Rodent diagnostic records and sick reports are kept separately in the veterinary technician offices.

The Attending Veterinarian approves record-keeping policies and practices.

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

a. In-house diagnostic laboratory capabilities.

RARC veterinary staff at the SMPH has the capability to perform basic diagnostic clinical pathology including ear and skin cytology, internal and external parasite examination, urinalyses and PCV. Blood, tissue and/or microbiology samples collected by veterinary staff may be processed in-house prior to submission to the [redacted] or outside clinical pathology laboratories.

The [redacted] provides necropsy, histopathology, cytology, urinalysis, microbiology and parasitology services for all species for diagnostic and research purposes. The [redacted] is staffed by a board certified veterinary pathologist and trained technicians. The [redacted] has a floor model Tissue-Tek VIP Vacuum Infiltration tissue processor, a Tissue Tek TEC 5 Embedding System, Tissue Tek DRS 2000 Automatic Slide Stainer, a

new Leica manual rotary microtome, a histology coverslipping hood, and microwave and appropriate safety storage cabinets

b. Commercially provided diagnostic laboratory services.

Serologic and PCR testing of rodents is performed by [redacted] or [redacted].

Fish and amphibian cultures are sent to the Fish Laboratory at the [redacted] either directly or via RARC. Any difficult or possible emerging disease samples may be submitted to the National Veterinary Services Laboratory (NVSL) in Ames, Iowa.

Virology samples, including virus isolation capability on request, are sent out according to species. Most samples are sent to the [redacted], though others may also be sent to the National Veterinary Services Laboratory (NVSL), Ames, Iowa.

The RARC laboratory uses a number of outside laboratories when needed including [redacted] at [redacted], [redacted] in [redacted], [redacted] in [redacted], the [redacted] in [redacted], The [redacted], and the [redacted] in [redacted], [redacted].

c. Necropsy facilities and histopathology capabilities.

The RARC pathology laboratory is used for diagnostic necropsies for rodents and most other laboratory animals. Complete necropsies for all species, including histopathology with special stains and immunocytochemistry techniques, are available for diagnostic or research related activities. Board-certified pathologists are on staff at RARC. All small animal necropsies performed by RARC pathologists take place in the RARC necropsy suite with an enclosed hood table. Large animals are typically necropsied at the [redacted], though dedicated necropsy rooms are also present in the [redacted] and [redacted] facilities and can be used when needed. Histology is processed at RARC or by the [redacted].

d. Radiology and other imaging capabilities.

The [redacted] and the [redacted] can provide radiology, CT and ultrasound imaging services.

The University of Wisconsin School of Medicine and Public Health/The [redacted] can provide MRI, PET, fluoroscopic and CT imaging services.

4. Drug Storage and Control

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

Drugs are purchased directly from commercial suppliers or through the RARC Pharmacy Service.

To purchase protocol-approved controlled drugs, principal investigators or designee must hold an individual DEA license (federal), and non-clinician PIs also must hold a Controlled Substance Special-Use Authorization (state of WI). Research animal veterinarians holding DEA licenses also purchase controlled drugs for clinical use. Storage of controlled substances is in an appropriately secured lock-box or safe according to DEA requirement. Storage of controlled substances is checked by the IACUC during semiannual inspections.

Non-controlled drugs are stored in appropriate laboratory or vivarium locations according to manufacturer's recommendation.

b. Describe record keeping procedures for controlled substances.

As per DEA requirements, DEA registrants must keep detailed records of the use of controlled substances. The veterinary staff maintains records of controlled substances that are used under RARC veterinarian DEA licenses. Records of controlled substance use are stored with controlled substances in a safe or lock box, and are checked by the IACUC during semiannual inspections.

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

1. Pre-Surgical Planning [Guide, p. 124]
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 postoperative care.

Identifying personnel:
Personnel performing surgery are required to be listed by the Principal Investigator on the animal-use protocol, indicating their experience and training. The animal-use protocol is reviewed by the IACUC, and work is allowed only after approval. Principal investigators are responsible for compliance with this plan, and for ensuring their students and technicians are trained appropriately. All newly hired UW-Madison investigators and research staff members performing surgery are required to attend an RARC Laboratory Animal Surgery Course (experienced surgeons may be exempted with veterinary and IACUC approval).

When a researcher is identified through protocol review as performing surgery on a USDA-covered species on which they have never operated, they are required to be observed/assisted by a research animal veterinarian the first time they perform surgery on the new species, regardless of experience with other species.

Locating equipment and supplies:
Investigators are given instruction on how to locate equipment and supplies through the Laboratory Animal Surgery Course, facilities orientations, and/or consultation with the veterinary staff. Various surgical supplies are also available for purchase through the RARC pharmacy.

Veterinary involvement for selecting analgesic and anesthetic agents and facilities:
Veterinarians are involved in analgesic and anesthetic planning primarily through animal-use protocol pre-review and/or review. Veterinarians also meet directly with investigators to review and refine analgesia or anesthesia, at the request of the PI, the veterinarians, or the IACUC.

Pre-surgical Planning:
Pre-surgical planning is the primary responsibility of the surgeon and the research animal veterinarian. Surgical plans (including patient preparation, surgical techniques, anesthetic administration and monitoring, and use of analgesics) written by the researcher, must be in an Animal-Use Protocol, and this is reviewed and approved by at least one research animal veterinarian as part of a protocol pre-review process and/or as part of the IACUC review process. If questions about a surgical plan cannot be resolved by normal protocol review processes, a meeting between the investigator and a research animal veterinarian is mandated, either by the IACUC or the Attending Veterinarian, and the amended protocol is returned to the IACUC for review and approval. Staff veterinarians initially advise the respective investigator regarding proper selection of anesthetics, surgical technique, perioperative analgesia etc. during the protocol review process and as needed during the course of the study.

Pre-operative Care:
USDA-covered species are assessed by a research animal veterinarian prior to any survival surgery.

Post-operative Care:
Specific post-operative care is performed in accordance with approved animal care and use protocols. Independent of stated post-operative plans in a protocol, all USDA-covered species are monitored by the Veterinary Staff for a minimum of 3 days post-op. For rodents, cage card tags indicating that animals are in post-op recovery are available to be placed on the cages by laboratories.

2. Surgical Facilities [Guide, p. 116]

a. List building name(s) and room number(s) or other locations (coded, if confidential) where surgical procedures are performed. Include areas where surgical procedures are conducted in agricultural species. Indicate the type of species, nature of procedure (major/minor/emergency; survival and non-

survival, etc.). Indicate for each surgical area if the use is heavy (daily), moderate (weekly), or light.

Vivarium and USDA-covered species surgery sites:			
Location	**Equipment**	**Nature of procedures**	**Degree of Use**
[redacted]	Isoflurane vaporizer, portable warming unit available	Rodent surgery	Moderate
[redacted]	Isoflurane vaporizer, portable warming unit available	Rodent surgery	Light-Moderate
[redacted]	Isoflurane vaporizer, portable warming unit available	Rodent surgery	Moderate
[redacted]	Isoflurane vaporizer, warming units	Rodent surgery	Moderate
[redacted]	Isoflurane vaporizer, warming units	Rodent surgery	Light
[redacted]	Isoflurane vaporizer, warming units	Rodent surgery	Moderate
[redacted]	Isoflurane vaporizer, mechanical ventilator, blood pressure monitors, O2 monitors, warming blankets, IV fluid pumps	Primarily cardiac catheterization, cardiovascular surgery. Some terminal procedures	Moderate
[redacted]	Isoflurane vaporizers, warming units	Rodent surgery	Light
[redacted]	Isoflurane vaporizers, warming units	Rodent surgery	Heavy
[redacted] and	Isoflurane vaporizers, warming units	Rodent surgery	Moderate
[redacted]	Isoflurane vaporizer, warming units available	Rodent surgery	Moderate

Location	Equipment	Nature of procedures	Degree of Use
[redacted]	Isoflurane vaporizer, warming units available	Rodent surgery	Light
[redacted]	Isoflurane vaporizer, vital signs monitor, mechanical ventilator, IV fluid pumps and warming blanket are all available.	USDA-covered species; major and minor surgical procedures	Moderate
[redacted]	Isoflurane vaporizer, vital signs monitor, mechanical ventilator, IV fluid pumps and warming blanket are all available.	Non-survival surgical procedures	Light

Surgical procedures are also performed on non USDA-covered species in laboratories on campus outside of vivarium space. These rooms must be listed on an IACUC-approved protocol, and are inspected semiannually by the IACUC. Specific locations can be provided to site visitors during AAALAC inspection.

b. List the major surgical support equipment available at each location where survival or nonsurvival surgery is performed (e.g., gas anesthesia machines, respirators, etc.).

See chart in 2a above.

c. Describe any specialized considerations for designation of surgical areas (e.g., rodents, aquatics, farm animals, etc.).

Some animal care and use protocols call for surgery on non USDA-covered species in locations that are not dedicated surgical suites or procedure areas within a vivarium, such as in laboratories. This request is typically because of the need for specialized equipment or spaces in the laboratory area. These designated surgical areas are inspected semiannually by the IACUC, must meet minimum standards for rodent surgery (e.g. appropriately clean and orderly, not used for other activity during surgeries), and must be approved by the IACUC.

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, etc.).

Survival Surgery is defined as those procedures after which the animal is allowed to recover from anesthesia (i.e. regain consciousness).

Minor Surgery is defined as those surgical procedures that do not penetrate and expose a major body cavity and causes little or no physical impairment to the animal.

Major Surgery is defined as those surgical procedures that expose a major body cavity, result in a substantial physiologic or functional impairment to the animal, or involve extensive tissue dissection or transection.

Laparoscopic, arthroscopic or similar techniques are defined as major or minor depending on specific circumstances of the research protocol; for example, simple visualization of a structure or placement of an experimental device may be considered minor, whereas procedures that involve extensive tissue manipulation or resection may be considered major. The IACUC makes the final determination on the procedure's classification as major or minor surgery.

b. How is non-survival surgery defined?

Non-survival Surgery is defined as those procedures after which the animal is euthanized without recovery from anesthesia (i.e. a terminal procedure).

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

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

Aseptic technique for non-rodent mammalian surgery: Training is provided to personnel in proper aseptic surgical technique, including preparation of surgeon and patient, through the RARC training program and the RARC Laboratory Animal Surgery Course. Use of sterile instruments and surgical supplies is required, as is use of head cover, face mask, gown, and sterile gloves. Surgical sites are clipped and disinfected by surgical scrub, and draped with sterile material. Survival surgeries can only be conducted in approved, dedicated surgical suites.

Aseptic technique for rodent surgeries: Requirements for rodent surgery follow the 2016 ACLAM Position Statement on Rodent Surgery. Training of personnel in proper aseptic surgical technique, including preparation of surgeon and patient, is provided through the RARC training program and the RARC Laboratory Animal Surgery Course. Appropriate preparation and disinfection of the surgical site is required. At minimum, instrument tips are to be sterile; if multiple surgeries are performed during a single time period, methods such as hot bead sterilizers are employed to maintain instrument-tip sterility between surgeries. A dedicated area for surgery must be used, with the surrounding area clean and neat when any surgery is being performed. Investigators are required to wear a clean laboratory coat and gloves.

Aseptic technique for aquatic or other species: The species of animal determines the principles of aseptic technique employed; for example, surgical site preparation for Xenopus does not involve use of a disinfectant scrub in order to minimize disruption to the protective mucus layer. Use of appropriately sterilized instruments is required, however. Modified principles of aseptic technique for aquatic or other species is detailed in animal-use protocols and/or determined in consultation between investigative staffs and research animal veterinarians.

Practices employed in non-survival surgeries: At minimum, investigators performing non-survival surgery are required to wear gloves, use clean instruments, use a dedicated area for surgery, and keep the surrounding area clean and neat. Additional aseptic measures are required if the procedure is long enough for signs of infection to show.

b. Describe methods used to sterilize instruments and protective clothing. Indicate how effectiveness of sterilization is monitored and, if applicable, any approved alternate methods for instrument re-sterilization between serial surgeries. If used, include a description of approved liquid sterilants and instrument exposure time(s) required for each.

Methods Used to Sterilize Instruments and Protective Clothing: Steam autoclaves and ethylene oxide (ETO) sterilizers are the two methods that are employed. Indicator strips are used to ensure effectiveness of sterilization equipment. Glass bead sterilizers may be used to re-sterilize instruments between serial surgeries.

Liquid Sterilants: Liquid sterilants are typically not used as a sole means of sterilizing instruments for any major procedures. Occasionally, liquid sterilants such as Cetylcide® or other glutaraldehyde solution may be used to sanitize instruments. Manufacturers' recommendations for exposure times are followed, typically 10 – 15 minutes' minimum for most applications, but up to 10 hours for others; all instruments must be thoroughly rinsed with sterile water or saline prior to use.

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

Veterinary and Veterinary Technician assistance with surgery and anesthesia is provided to investigators. When a researcher is identified through protocol review as performing surgery on a USDA-covered species on which they have never operated, they are to be observed/assisted by a research animal veterinarian the first time they perform surgery on the new species, regardless of experience with other species. Appropriately trained and experienced laboratory personnel may under some circumstances be responsible for their own anesthesia and anesthesia monitoring activity. Additional specialized training, for example by PI request or by veterinary directive or IACUC, can be provided.

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.

Assessment of anesthetic depth prior to performing any surgical procedure is required in all instances for all species; this is usually assessed by checking for a withdrawal response (e.g. toe pinch) and adjunct methods such as palpebral reflex and jaw tone. Monitoring to assure appropriate anesthetic depth during surgery is also required. Parameters such as body temperature, heart rate and respiratory rate are to be monitored at least every 15 minutes for USDA-covered species.

Anesthesia records charts are used by laboratories performing surgeries on USDA-covered species. Parameters that are monitored include heart rate, respiratory rate, blood oxygen saturation, and body temperature. Anesthesia records are to be filed with the animal's clinical records. Records for rodent anesthesia and surgery are kept by the laboratories.

No distinction is made between survival and non-survival procedures regarding monitoring.

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.

Investigators and their staffs are responsible for post-op monitoring as is detailed in an approved animal care and use protocol, and also for reporting problems to the research animal veterinarians. The BRMS animal husbandry staff also observes the animals on a daily basis and reports any clinical signs of pain, distress, or post-op complications to the veterinary staff. Veterinary staff monitors non-rodent USDA-covered post-surgical animals for a minimum of 3 days after the procedure. For rodents, supplemental cage card tags that identify post-operative animals can be used by laboratory personnel.

For non-rodent USDA-covered species, clinical records – including surgery and anesthesia records – are kept in the animal facility. Records for non-USDA covered species are maintained by individual laboratories as part of complete experimental records.

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

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

Animals are monitored daily through visual inspection by animal care personnel trained in the recognition of pain and distress in animals. Personnel report any concerns to the veterinary staff as described in III.B.4.a ("Describe procedures for daily observation of animals for illness or abnormal behavior"). Veterinary and

laboratory staff members also provide additional monitoring. If the appearance or behavior of an animal indicates possible pain or distress, the veterinary staff takes appropriate action right away.

2. Describe how the IACUC/OB ensures that unnecessary pain and distress are avoided (e.g., pilot studies, monitoring by veterinary staff, animal use protocols, humane endpoints, other refinements, etc.).

A search for alternatives to procedures that may cause more than momentary pain and distress is required in the animal care and use protocol. Alternatives uncovered that do not allow the scientific needs of the study to be met are not considered viable alternatives. If alternatives exist that do not interfere with the scientific needs of the study, those alternatives must be used, or the reason for not using them must be explained and justified by the PI in the animal care and use protocol, and approved by the IACUC.

Specific humane endpoints must be established in the animal care and use protocol and approved by the IACUC. Appropriate anesthesia and analgesia regimens must also be described in the protocol and be approved by the Committee.

Animal care staff monitors animals daily, and investigative staffs monitor animals as per animal-use protocol or laboratory standard procedures. Veterinary staff monitors all ongoing cases, and post-surgical USDA-covered animals are monitored by the veterinary staff for a minimum of 3 days post-op.

The IACUC may require a pilot study for any novel proposal where there is insufficient understanding of the potential for unnecessary pain and distress.

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

1. List the agents used for each species. Dosages, routes of administration and drug combination should be included in guidelines and available at the time of the site visit. Describe also any non-pharmacologic means used to diminish pain and distress.

Agent	Rodent	Rabbit	Cat	Dog	Pig	Xenopus	Zebrafish
Isoflurane or sevoflurane	X	X	X	X	X		
Pentobarbital	X	X	X	X	X		
Xylazine	X	X	X	X	X		
Propofol			X	X	X		
Ketamine	X	X	X	X	X		
Ketamine + Dexmedetomidine	X	X	X	X			
Ketamine + Xylazine	X	X	X				
Ketamine + Acepromazine	X	X	X	X			
Telazol®					X		
Detomidine							

Agent	Rodent	Rabbit	Cat	Dog	Pig	Xenopus	Zebrafish
Tribromoethanol *(Note: use of TBE is limited to parameters described in Policy #2012-046-v)*	X						
Acepromazine	X	X	X	X	X		
Diazepam	X	X	X	X	X		
Etomidate + Fentanyl	X						
Midazolam	X	X		X	X		
Aspirin				X	X		
Chloral hydrate	X						
Urethane	X						
Morphine		X		X	X		
Hydromorphone				X			
Bupivicaine	X	X		X	X		
Buprenorphine	X	X	X	X	X		
Butorphanol	X		X	X	X		
Meloxicam	X	X	X	X	X		
Carprofen	X	X		X	X		
Ketoprofen					X		
Tramadol				X			
Flunixin meglumine		X			X		
Phenylbutazone					X		
Fentanyl				X	X		
Lidocaine	X	X	X	X	X		
MS 222						X	X

During protocol review, a veterinarian may direct a multi-modal anesthesia/analgesia approach, requiring combinations of general anesthetics, NSAIDs, opioids and local anesthetics.

Non-pharmacologic means to diminish pain and distress include placing feed and water in easily accessible locations, providing conspecific social interaction, providing appropriate post-operative thermal support, provision of additional bedding and nesting material, and the return of animals to the home cage (familiar environment) after surgery.

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

How Veterinarians Provide Input to Choice and Use of Drugs:
The veterinarians provide guidance on the use of anesthetics and analgesics primarily during protocol development, pre-review and review processes. In addition, they consult with investigators and research staff as requested and as part

of ad hoc training sessions. RARC training sessions on each species include anesthetic use and monitoring. An RARC formulary is on the RARC website and can provide additional guidance for investigators and veterinarians.

Training and Experience of Personnel Performing Anesthesia:
In most instances anesthesia is administered by trained research personnel. The protocol form asks for information regarding the training of individuals who will be participating in surgical procedures. This information is reviewed and approved by the IACUC. In instances where anesthesia is not provided by investigative staff, anesthesia is administered by a research animal veterinarian or veterinary technician.

3. Describe the monitoring of the effectiveness of anesthetics and analgesics, including who does the monitoring.

Monitoring the use of analgesics and anesthetics is a responsibility shared among the veterinarians, investigators, and the IACUC. The veterinarians examine written descriptions of the use of anesthetics and analgesics as part of the protocol pre-review and review process, and issues of concern are communicated to the investigator and resolved before the protocol is approved. Principal investigators are responsible for ensuring that approved anesthesia and analgesia protocols are carried out as written and for notifying the veterinary staff if they or their support staffs observe problems. Trained laboratory staff and/or veterinary staff monitor animals during anesthetic events to ensure adequate depth of anesthesia and animal well-being. If post-procedural animal behavior or clinical appearance suggests pain or distress, the veterinarians will investigate to ensure that adequate analgesia is being provided; if protocol-described analgesia is deemed insufficient, veterinarians will provide additional analgesia and require a protocol amendment describing a refined analgesia regimen. The IACUC reviews anesthesia and analgesia regimens as part of the protocol review process and may direct veterinarians to monitor procedures to ensure effectiveness.

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.

Any proposed use of neuromuscular blocking agents must be stated and justified in the animal care and use protocol, and this must be approved by the IACUC. Veterinarians evaluate the proposed use of neuromuscular blocking agents via protocol pre-review and/or review. Some form of adequate mechanical ventilation during neuromuscular blockade is necessary, and at minimum monitoring of heart rate is required, as elevated heart rate during procedures requiring neuromuscular blockade can be a sign of distress.

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

Yearly maintenance/calibration of inhalant anesthetic vaporizers is required, and verified during IACUC semiannual inspections.

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

1. Describe approved methods of euthanasia, including humane slaughter. Include consideration of species, age, condition (e.g., gestational period, or neonatal) and location(s) for the conduct of the procedure.

Methods used are all in accordance with the AVMA 2013 Guidelines on euthanasia. All methods of euthanasia used by researchers for any species must be described in the animal care and use protocol. Methods used for rodents are typically CO2 asphyxiation, barbiturate overdose, deep isoflurane anesthesia (followed by a secondary physical means of euthanasia), exsanguination while under a surgical plane of anesthesia, cervical dislocation, and decapitation. Physical methods of euthanasia without prior anesthesia must be justified in an animal-use protocol and approved by the IACUC. The primary method of euthanasia for non-rodent USDA covered species is barbiturate overdose, in many instances after pre-medication to prevent anxiety or while under anesthesia. Occasionally USDA-covered animals may be euthanized by KCl overdose or exsanguination while under a surgical plane of anesthesia if approved by the IACUC. For the euthanasia of fish and amphibians, there are SMPH and RARC instructions that detail use of topical agents, injectable agents, and physical methods for the euthanasia. The instructions include information on performing a secondary means of euthanasia to assure animal death.

For mouse, rat and hamster fetuses up to 15 days (i.e. E14 or less), and guinea pig fetuses up to 34 days (E33 or less), euthanasia of the mother or removal of the fetus are appropriate methods for fetal euthanasia (any loss of blood supply should ensure rapid death of fetuses). For mouse, rat and hamster fetuses E15 days to birth, and guinea pig fetuses E34 days to birth, a physical method of euthanasia (decapitation or cervical dislocation) is required in addition to euthanasia of mother or removal of fetus; careful injection of anesthetic agents may be used (e.g. IP injection of pentobarbital 800 mg/kg) prior to decapitation or cervical dislocation. For mice, rat and hamster neonates up to and including 10 days of age, decapitation, cervical dislocation or injection with a chemical anesthetic (e.g. pentobarbital 800 mg/kg IP) are acceptable means of euthanasia. Neonates 10 days of age or less are resistant to hypoxia; if CO2 is used, prolonged exposure time is needed to cause loss of consciousness or death. A secondary physical means of euthanasia (decapitation or cervical dislocation following loss of consciousness) is required when CO2 is used.

Euthanasia is performed inside SMPH vivaria, in rooms dedicated for this purpose or in appropriate procedure rooms. All rooms are inspected semiannually by the IACUC. Euthanasia of research animals is also performed in laboratories on campus outside of SMPH vivarium space. These rooms must be listed on an IACUC-approved Animal-Use Protocol, and are inspected semiannually by the IACUC to ensure appropriateness of the location.

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

CO_2 regulators are immediately replaced if there is any indication of improper function. A Guillotine-maintenance Policy 2015-056-v has been established to provide guidance on maintaining guillotines for laboratories that use the equipment.

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

All personnel who euthanize research animals must at very least verify cardiac and respiratory arrest; instruction on this to all personnel who may euthanize animals is provided during required RARC training classes. In many instances of rodent euthanasia (as is typically stated in Animal Care and Use Protocols) a secondary physical means of euthanasia such as bilateral pneumothorax, cervical dislocation or decapitation is employed.

IV. Physical Plant [Guide, pp. 133-151]

Repeat this section for each animal housing area, including agricultural settings, temporary holding areas for field studies, aquatic environments, and each IACUC/OB approved satellite housing facility. Include as an appendix the floor plans of each (if applicable) on 8.5" x 11" or A4 paper.

A. Location and Construction Guidelines

1. Note the location (building, floor, wing, etc.) of the animal facility(ies). Describe the management structure and program oversight for each of the areas listed in this section.

[redacted]. The animal facility is within the [redacted] of the [redacted]. [redacted]**:** The animal facility is within the [redacted] of the [redacted]. [redacted]**:** The animal facility is located on the [redacted] of the [redacted] and [redacted] modules. Isolation modules are located in [redacted] of the [redacted]. [redacted]**:** The animal facility is within [redacted] of the [redacted] within the [redacted]. [redacted]**:** The animal facility is within the [redacted] of the [redacted]. [redacted]**:** The animal facility is within the [redacted] of [redacted] facility. [redacted]**:** The animal facility is within the [redacted] of [redacted] [redacted]**:** The main animal facility is within the [redacted] of [redacted]. Small auxiliary animal rooms are located on [redacted] and [redacted] of [redacted]. [redacted]**:** The animal facility is within the [redacted] of the [redacted] building located in [redacted].

[redacted]: an aquatic animal facility is located on the [redacted] of the [redacted] building.

Program oversight of all the facilities is provided by the BRMS management team, the RARC veterinary staff, and the SMPH IACUC. A BRMS supervisor is assigned to each facility Monday through Friday, and an on-call supervisor provides necessary management activities on weekends and holidays.

2. Describe the physical relationship of the animal facilities to the research laboratories where animals may be used.

[redacted]: Research laboratories are located in the [redacted] building and the contiguous [redacted] building.
[redacted]: Research laboratories are located on the [redacted] and [redacted] in the [redacted].
[redacted]: Research laboratories are located in several modules within the [redacted] Building, inside the vivarium and on [redacted].
[redacted]: Research laboratories are primarily housed in the [redacted] building and the contiguous [redacted] building.
[redacted]: Research laboratories are located on the [redacted] of [redacted].
[redacted]: Research laboratories are located in the [redacted] building located [redacted] of animal facility, [redacted].
[redacted]: Research laboratories are located in [redacted] Hall on [redacted].
[redacted]: Research laboratories are located in the [redacted] the animal facility.
[redacted]: Research laboratories are located [redacted] animal facility.
[redacted]: Research laboratories are located [redacted] the aquatics housing units.

3. Describe the general arrangement of the animal facilities (e.g., conventional, clean/dirty corridor, etc.). For animals that are maintained in a laboratory in order to satisfy the scientific aims of a protocol, describe the housing and care provided and the maximum period of stay required.

[redacted]
[redacted]: Single corridor.
[redacted]: Dual corridor system is in place throughout the facility.
[redacted]: [redacted] are single corridor. The [redacted] vivarium has a clean and dirty corridor.
[redacted]
[redacted]: Single corridor.

[redacted]: Single corridor.
[redacted]: Dual corridor (clean and dirty) system.
[redacted]: Single corridor.
[redacted]: Aquatics housing units (tanks) are located on a rack system within the testing laboratory complex.

See Appendix 17 for a copy of Policy 2012-45-v (Laboratory Housing of Animals). This Policy describes the requirements for animal housing and care in these circumstances. This Appendix also lists the protocols that allow animals to be maintained in laboratories, describes the justification for laboratory housing, and provides HVAC information and maximum period of stay.

4. Describe finishes throughout the animal facility(ies) for floors, walls, ceilings, doors, alleyways, and gates. Note any areas that are not easily sanitized and describe how these areas are maintained.

Animal room floors are terrazzo, troweled-on epoxy, or concrete covered with seamless epoxy. Walls are glazed tile block, fiberglass board, or epoxy-painted plaster, sheetrock or concrete masonry unit (CMU) block. Ceilings are sealed sheetrock with epoxy paint or fiberglass board.

Corridor floors are terrazzo, sealed concrete or troweled-on epoxy. Walls are glazed tile block, fiberglass board, or epoxy-painted CMU block. Ceilings are suspended water-resistant panels or epoxy-painted sheetrock.

Doors are painted metal, painted wood, or fiberglass.

Gates are galvanized steel.

5. If exterior windows are present within the animal housing or procedure areas, describe IACUC/OB consideration regarding temperature and photoperiod control, as well as potential security risks.

[redacted]: Fish tanks are housed in a large [redacted] laboratory space with [redacted]-facing exterior windows. [redacted]. Fish tanks are housed on the opposite side of the room from the windows. Lights in the room and above the tanks are on a 16:8 light:dark cycle.

B. Functional Areas and Operations

1. Heating, Ventilation, and Air-Conditioning (HVAC) [Guide, pp. 139-140, 143]

a. Describe the mechanical systems used to provide temperature, humidity and air pressure control. Include details such as the use of variable air volume (VAV) systems, and additional key features of HVAC systems affecting performance.

Mechanical systems consist of air handling units with filtration, humidification, and heating and cooling coils to provide required conditioning

of air to each animal holding area. Both supply and exhaust air is balanced to maintain required room pressurization. Temperature is maintained in each space with re-heat coils controlled by a thermostat. See Appendix 16 for more information.

b. Describe construction features that minimize the potential for adverse consequences to animal well-being, such as re-heat coils that fail closed or that are equipped with high-temperature cut-off systems.

Mechanical systems are monitored by the HVAC control system which can either notify service personnel or shut the system or system components down in the event of a failure or operating condition outside of acceptable bounds. See Appendix 16 for more information.

c. Describe how critical air pressures, ventilation, and temperature are monitored and maintained in the event of a system or component failure.

Automatic environmental monitoring systems are in place in all facilities. If there is a systems failure, BRMS and RARC personnel are notified and campus Physical Plant personnel are contacted to respond to the situation as needed.

d. Describe procedures for monitoring animal facility mechanical systems and notifying appropriate personnel in the event of a significant failure that occurs outside regular work hours.

Room temperature, humidity and lighting in all housing rooms are continually monitored and recorded by an environmental monitoring system. Monitoring systems automatically send communications to pertinent personnel when set temperature parameters are exceeded. Automated communications are sent during or after regular work hours and continue to be sent until acknowledged.

2. Power and Lighting [Guide, p. 141]

a. Note if emergency power is provided for the animal facility and if so, what electrical services and equipment are maintained in the event the primary power source fails.

Emergency back-up power for lighting and HVAC is provided by re-routing through the campus power grid, backup diesel generators, or both.

b. Give history of power failures for the animal facility. Note frequency and duration. If emergency power was not available during a power failure, describe steps taken to ensure the comfort and well-being of the animals and the temperature extremes reached in the animal rooms during the failure.

On rare occasions, power outages may occur in campus facilities. These outages are typically brief and do not impact care or well-being of animals. In

the event outages are prolonged, animals are cared for according to the SMPH Animal Disaster Plan.

c. Describe lighting system(s) for the animal housing facility(ies). For each species or holding room type, list light intensity, photoperiod (Light:Dark), construction features (e.g., water resistance), and control (e.g., automatic versus manual, phasing). For systems automatically controlling photoperiod, describe override mechanisms.

The animal housing rooms feature covered, water proof, fluorescent lights on an automatic 12:12 photoperiod with a manual light switch override (where applicable), unless otherwise requested by PIs. The following chart lists light intensity measurements for representative rooms (for all species) from all SMPH facilities

Light Intensity Measurements by Facility June 2017

Facility	*Room Number*	*Species*	*Reading (Lux)*
[redacted]	[redacted]	Mice	240
		Mice	41
		Rat	79
		Zebrafish	53
		Mice	215
		Rats	257
		Xenopus	127
		Mice	136
		Rats	275
		Cats	275
		Mice	75
		Rats	168
		Rabbits	157
		Dogs	189
		Swine	246
		Mice	57
		Rats	44
		Zebrafish	89
		Mice	208
		Rabbits	221
		Zebrafish	113
		Mice	168
		Rats	222
		Mice	185
		Rat	219

3. 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)

Not Applicable.

4. Storage Areas [Guide, pp. 141-142]

a. Describe storage areas for feed and bedding, including temperature and vermin control.

Food and bedding in all facility storage rooms is stored on carts/pallets/racks away from walls. Opened bags of feed are stored in closed polycarbonate containers, and opened bags of bedding are stored in barrels with lids and wheels. The expiration date of feed is monitored, and expired feed is discarded. Temperature and humidity are monitored daily, with minimum and maximum readings being recorded. Temperatures in some feed storage rooms may marginally exceed 70°F. Feed is used and rotated in a regular and timely manner, generally within two weeks of arrival. The IACUC is informed of this situation annually. Performance indicators have not revealed any issues with feed quality. A licensed pest control company provides support services.

When required, e.g. brine shrimp cysts, food is stored in refrigerators or freezers.

b. Describe storage areas for cages, equipment, supplies, etc.

Cage and equipment storage areas have the same finishes/construction as the corridors and animal rooms. All rooms are covered under the SMPH comprehensive pest control program.

c. Describe storage areas for flammable or hazardous agents and materials (e.g., disinfectants, pesticides, fuel).

All hazardous agents including disinfectants and cage wash solutions are stored in designated areas per safety recommendations of UW Environment, Health and Safety. All compressed-gas cylinders are secured to the walls.

The UW – Madison Laboratory Safety Guide established by EH&S provides detailed information on chemical storage and management. This guide covers general storage principles, flammable storage limits, and chemical compatibilities. Basic principles of storage include flammables are to be stored in a UL-approved flammables storage cabinet, and hazardous chemicals are to be stored below eye level.

5. Facilities for Sanitizing Materials [Guide, pp. 153]

Describe for each cage sanitation area its location, the traffic flow pattern (soiled to clean, or in and out) within the facility, and kinds of equipment (tunnel washer,

bottle washer, rack washer, etc. and other related equipment such as bedding dispensing units).

[redacted]: Room [redacted] with one entrance is accessible through [redacted]. This cage wash room includes a rack washer and a [redacted]
[redacted]: Room [redacted] is divided into a soiled side and clean side that are accessible from hallway [redacted]. The cage wash room includes a tunnel washer, Garb-el with SafeAir dust collection system, bedding dispenser with a bedding dust collector, a rack washer, and a walk-in autoclave.
[redacted]: Room [redacted] is divided into a soiled side and clean side. The cage wash room has a cage dump station and rack washer. A steam autoclave is located in room [redacted].
[redacted]: Room [redacted] (clean side) is accessible through hallway [redacted]; Room [redacted] (soiled side) is accessible from hallway [redacted]. The cage wash room includes a tunnel washer, Garb-el with SafeAir dust collection system, a rack washer, bottle filler, bedding dispenser and an autoclave. Room [redacted] is accessible to the clean side through hallway [redacted] and to the soiled side through hallway [redacted]. This cage wash room includes a rack washer. Room [redacted] has a bottle filling station and a washing machine and dryer.
[redacted]: Rooms [redacted] (clean side) and [redacted] (soiled side) are accessible from hallway [redacted]. The cage wash room includes a dump station, rack washer, bottle washer, and autoclave.
[redacted]: Rooms [redacted] (clean side) and [redacted] (soiled side) are accessible from hallway [redacted]. The cage wash room includes a Garb-el with SafeAir dust collection system, a rack washer, autoclave and a bedding dispenser with a bedding dust collector.
[redacted]: Rooms [redacted] (clean side) and [redacted] (soiled side) are accessible from the main hallway. The cage wash room includes a Garb-el with SafeAir dust collection system, a rack washer, autoclave and a bottle filling station.
[redacted]: Room [redacted] is divided into a soiled side and a clean side. The clean side is accessed through the clean hallway and the soiled side is accessed through the soiled hallway. The cage wash room includes a tunnel washer with a Garb-el with SafeAir dust collection unit, bedding dispenser with a bedding dust collector, a rack washer, autoclave and a bottle filling station.
[redacted]: Rooms [redacted] (clean side) and [redacted] (soiled side) are accessible through hallway [redacted]. The cage wash room includes a Garb-el with SafeAir dust collection system, rack washer, autoclave and a bottle filling station.
[redacted]: Fish tanks and associated equipment are washed in a sink area within the testing laboratory.

C. Special Facilities [Guide, pp. 144-146, 150]

1. Specialized Types of Animal Housing

Note specialized types of available animal housing spaces such as barrier, hazard containment (infectious, radioactive, chemical), "animal cubicles" (also known as "Illinois Cubicles", "Horsfal Cubicles," and "animal modules"), or facilities designed specifically for housing certain species such as aquatic or agricultural animals (e.g., barns, feedlots). [Guide, pp. 160-161]

[redacted]: The Environmental Enclosure units consist of horizontally interlocking and vertically telescoping window panels that spaces designed to house cages for specific environmental studies. When closed, the windows provide an air barrier sufficient to continuously maintain the enclosure in a positive or negative differential pressure of at least +/- 0.05 inches of water.
[redacted]: Dedicated aquatics holding rooms with flow-through systems for zebrafish are present in this facility.
[redacted] This facility also contains gnotobiotic isolators for rodent housing. Aquatics holding rooms with flow-through systems for zebrafish housing are within the [redacted] vivarium.
[redacted]**:** Aquatics holding rooms with flow-through systems for zebrafish are present in this vivarium.
[redacted]**:** Suite [redacted] is the suite consisting of 7 cubicles. Aquatic holding rooms with flow-through systems for zebrafish housing are present in this vivarium.
[redacted]**:** A suite for containment housing of rodents is present in the vivarium. Dedicated aquatic holding rooms for Xenopus are located in [redacted] The [redacted] animal holding room [redacted] adjacent to the [redacted] vivarium serves as containment housing for animals exposed to radioactive tracers.
[redacted]**:** This facility has photocell cages that include an outer box, an inner cage, 24-hour camera monitoring and its own light/dark cycle.
[redacted]**:** Flow-through aquatic systems for the housing of fathead minnows (*Pimephales promelas*) are present in this facility.

2. Surgery [Guide, pp. 144-145]

a. Describe facilities for aseptic surgery, surgical support, animal preparation, surgeon's scrub, operating room, and postoperative recovery.

[redacted]
Post-operative recovery: [redacted], in surgery suite area, or occasionally in [redacted] animal housing rooms.

[redacted] **Area Surgical Suite**
The surgery suite is sub-divided into individual rooms:
Animal Preparation: [redacted]
Surgeon Scrub: [redacted]; physically separated from animal preparation room and operating room

Non-rodent Mammalian Operating Room (survival aseptic surgery): [redacted]

Surgical support: Supplies stored in wall-mounted cabinets or purpose-designed carts for storage of supplies; autoclave
Post-operative recovery: In surgery suite area or [redacted] vivarium.

Facilities for rodent and other non USDA-covered small animals are listed in III (Veterinary Care). D.2.

b. Describe construction features of the operating room(s), including interior surfaces, ventilation, lighting, and fixed equipment used to support surgical procedures and enhance contamination control.

[redacted] **Area Surgical Suite:** All surfaces and materials (i.e., floors, walls, casework, countertops, surgical tables, instrument stands, etc.) are monolithic, impervious to moisture and easily cleaned/ disinfected. Ceiling-mounted surgical lights. 100% supply and exhaust ventilation, positive pressure in operating room.

3. Other Specialized Animal Use Facilities [Guide, pp. 146-150]
Describe other facilities such as imaging, irradiation, and core behavioral laboratories or rooms. Include a description of decontamination and methods for preventing cross-contamination in multi-species facilities.

The [redacted] occupies a dedicated hallway in the [redacted] vivarium. This is a high-level SPF area for performing rederivations and generating transgenic animals. Daily monitoring, husbandry and care of animals take place when they are maintained in the [redacted]. Entry of personnel and animals is controlled and restricted.

The UW-Madison [redacted] is attached to the [redacted] vivarium. Rodents can be housed in the [redacted] in dedicated housing rooms ([redacted] and [redacted]). Daily monitoring, husbandry and care of animals take place when they are maintained in the [redacted].

X-Rad irradiators are located in the [redacted] and [redacted] vivaria.

A cesium irradiator occasionally used in animal studies is in room [redacted] of the [redacted] building. No animal housing or laboratory spaces are in this building.

All work surfaces are cleaned with approved disinfectant as indicated following use. Depending on facility of origin, animals may be required to return to containment rooms once taken to core or specialized areas.

4. Other Animal Support Facilities
Describe other facilities providing animal care and use support, such as food preparation areas, feedmills, abattoirs, etc.

Not Applicable.

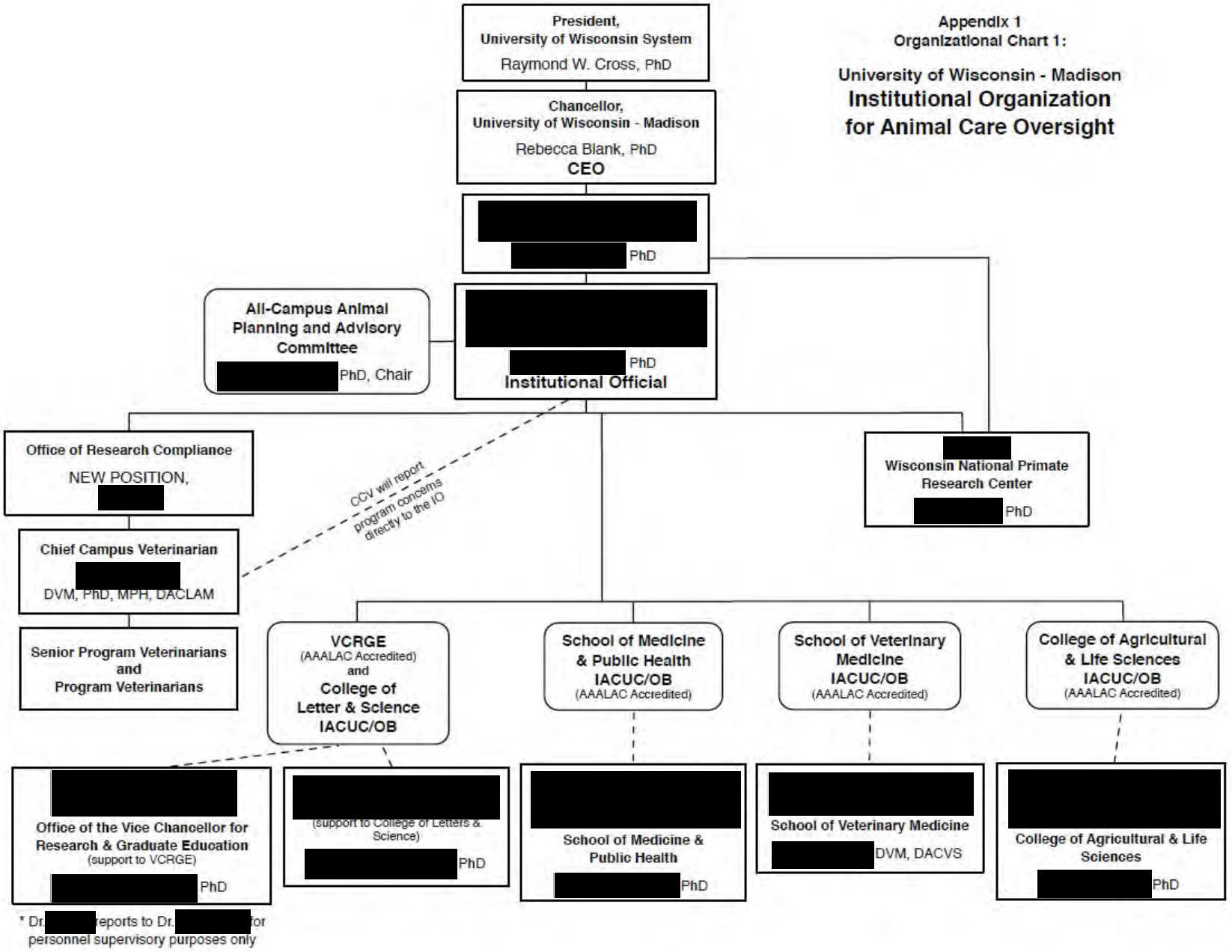
D. Security and Access Control [Guide, p. 151]
Describe such features as control of entry, perimeter fences, gates, entryways, cameras, guards.

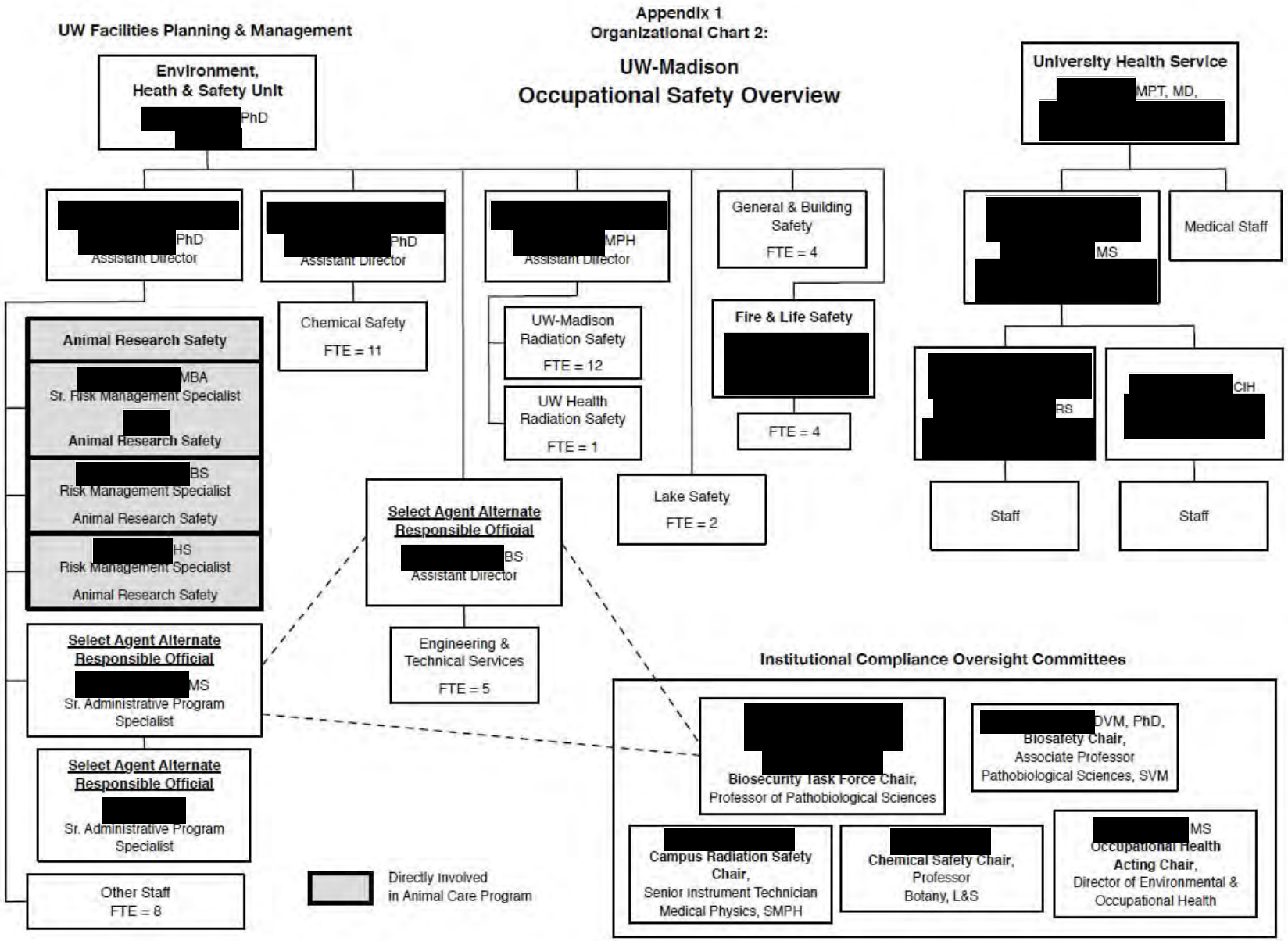
APPENDIX 1

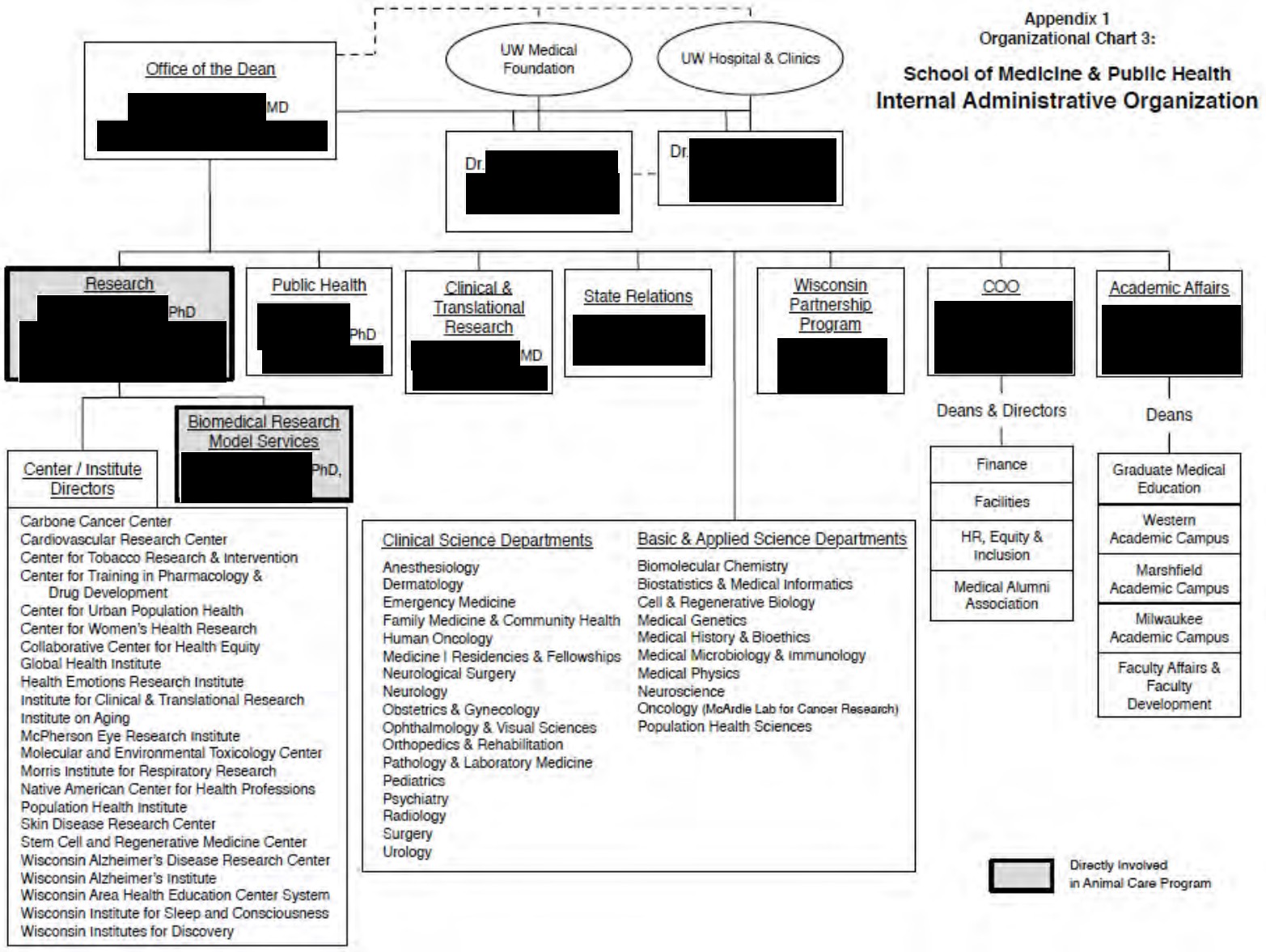
Organizational Charts

Appendix 1
Organizational Chart 1:

University of Wisconsin - Madison
Institutional Organization for Animal Care Oversight

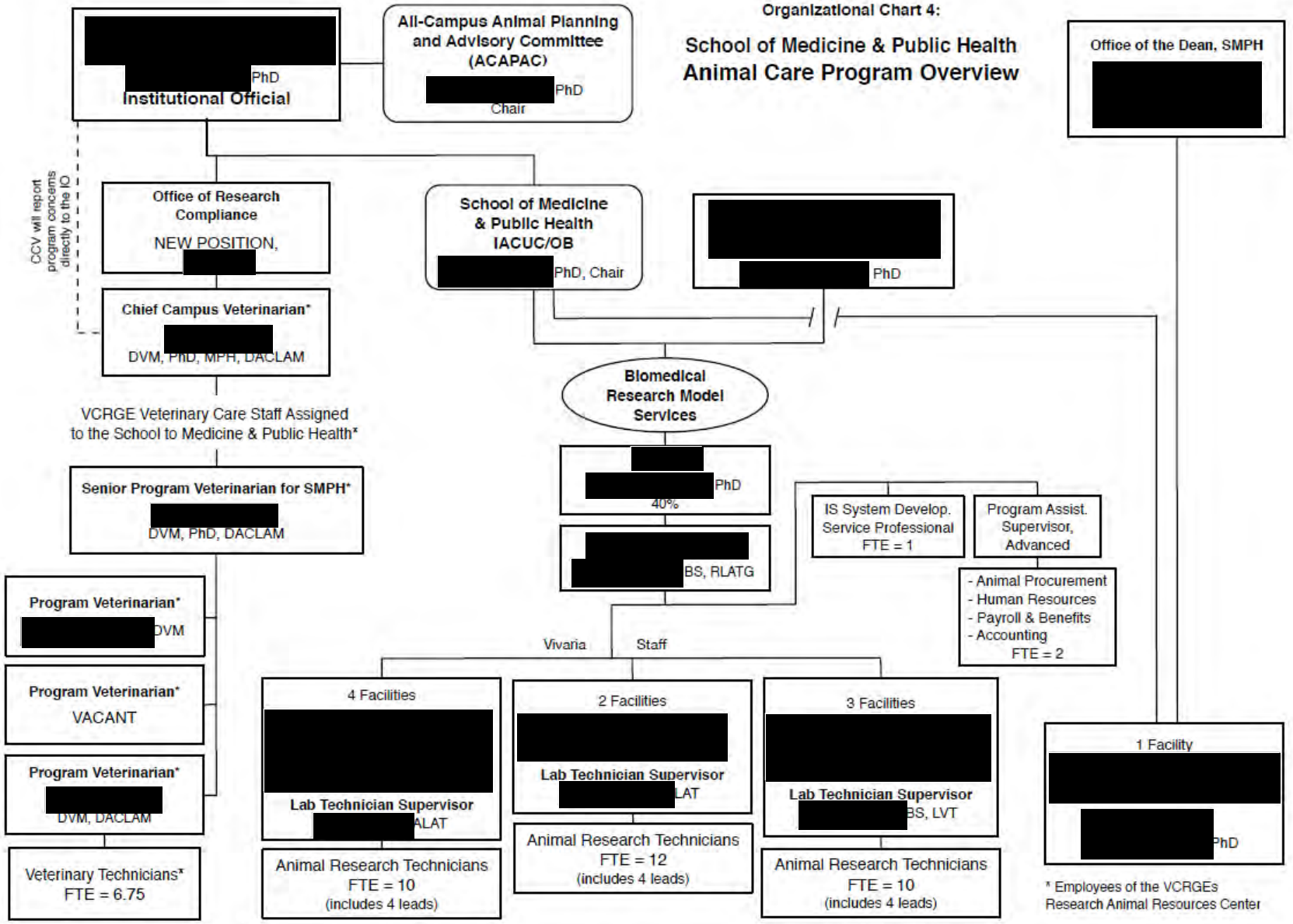






Appendix 1
Organizational Chart 4:

School of Medicine & Public Health Animal Care Program Overview



APPENDIX 2

Animal Usage Form

Animal Usage (Form B)

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

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

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Brain Plasticity and Epilepsy	M00054	[redacted]	Mus: 100 Rattus: 3360	D		X				
Low-Dose Tomosynthetic Interventional System for Quantitative Cardiac Imaging	M005012	[redacted]	Pig: 60	D					Phys	[redacted]
Zebrafish - [redacted] Laboratory	M005020	[redacted]	Zebrafish: 250,000	D					Phys	[redacted]
Endoplasmic Reticulum Stress, Inflammation and Type 1 Diabetes	M005064	[redacted]	Mus: 5850	D			X		Chem	[redacted]
Trans-vivo Delayed Type Hypersensitivity Assay to Monitor Human Immune Responses	M005082	[redacted]	Mus: 3510	C					Bio	[redacted]
Employing murine models to investigate mammalian development and regeneration	M005090	[redacted]	Mus: 304	D	X				Bio	[redacted]
Transcriptomic Analysis of Retinal Cell Types	M005100	[redacted]	African Grass Rat: 50	C						
Mechanisms for the modulation and initiation of autoimmunity in the Central Nervous System.	M005103	[redacted]	Mus: 1596	D					Bio Chem Phys	[redacted]
Roles of Extracellular Matrix and Regulatory Proteins in Development and Disease	M00511	[redacted]	Mus: 16,000	D						
Natural Variation in Recombination Rate in House Mice	M005110	[redacted]	House mouse: 100 Deer mouse: 50	C						
Genetics of Susceptibility to Estrogen-Induced Mammary Cancer	M005111	[redacted]	Rattus: 8914	D					Chem	[redacted]
Role of Aging and lipid signaling in Alzheimer's disease	M005120	[redacted]	Mus: 1665	C						

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Mechanisms and potential interventions for antibody mediated rejection after kidney rejection using a rat model	M005129	[redacted]	Rattus: 2696	D	X				Chem Phys	[redacted]
Analysis of Carcinogen-induced Liver Tumors	M005131	[redacted]	Mus: 380	C						
Antibody Transport Across the Blood-brain Barrier	M005138	[redacted]	Mus: 225 Rattus: 456	D					Phys	[redacted]
Gene x Environment Interactions on Breast Cancer Risk Loci during Windows of Susceptibility	M005142	[redacted]	Rattus: 26,880	E	X				Bio Chem	
Epigenetics of early life stress	M005144	[redacted]	Mus: 970	D				X		
Novel Bacterial Metabolites for Pathogen Inhibition	M005149	[redacted]	Mus: 240	C					Bio	[redacted]
Harvesting of oocytes from Xenopus laevis for research experiments	M005155	[redacted]	African Clawed Frog: 90	D	X	X				[redacted]
Mouse models of DNA damage signaling and neurodegeneration	M005156	[redacted]	Mus: 745	D			X		Phys	[redacted]
Rodent Quarantine	M005157	[redacted]	Mus: 5000 Rattus: 500	C						
The effect on phosphate uptake by acute kidney injury resulting in chronic ischemia/reperfusion nephropathy	M005159	[redacted]	Mus: 130	D	X		X			
Molecular Basis of Contractile Regulation in Striated Muscle	M005160	[redacted]	Rabbit: 6 Rattus: 400 Mus: 15,882	C					Chem	

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Genetic Analysis of Aging and Nutritional Interventions	M005161	[redacted]	Mus: 3274	D	X		X		Bio Chem Phys	[redacted]
The Role of GRAIL, A Novel E3 Ligase, in CD25+ T Regulatory Cells	M005162	[redacted]	Mus: 600	D					Phys	
Efficacy testing of selected chemopreventive agents in the Pten prostate cancer model	M005164	[redacted]	Mus: 360	C					Phys	[redacted]
Cytoskeletal Dynamics in Neuronal Development	M005165	[redacted]	Rattus: 256 Mus: 5085	D	X				Chem	[redacted]
The role of the Aryl hydrocarbon receptor (AHR) and related proteins in mammalian vascular development	M005166	[redacted]	Mus: 1835	C					Chem	
Characterization of the immune response in vocal fold injury and tissue regeneration	M005170	[redacted]	Pig: 50	D					Bio	[redacted]
Peripheral mechanisms in Parkinson disease	M005177	[redacted]	Rattus: 492	D			X		Phys	[redacted]
Epigenetics of somatic cell reprogramming	M005180	[redacted]	Mus: 3000	C						[redacted]

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Transgenic Mouse Colony, Rats, Transthoracic Aortic Constriction and Cardiomyocyte Isolation	M005182	[redacted]	Rattus: 238 Mus: 1751	D	X				Chem Phys	[redacted]
Combination microwave ablation and radiation therapy evaluation	M005184	[redacted]	Rabbit: 88	D	X	X			Phys	[redacted]
A temporospatial analysis of epithelial regeneration following vocal fold injury in a rat model	M005190	[redacted]	Rattus: 250	D						
Hedgehog pathway inhibitors in Pten mouse model	M005193	[redacted]	Mus: 160	C					Chem Phys	[redacted]
Characterization of a New Microwave Ablation Device	M005196	[redacted]	Pig: 60	D					Phys	[redacted]
Development of novel therapies for EBV-positive malignancies	M005197	[redacted]	Mus: 3436	C					Bio Chem	
Analysis of the Functions of Human Immune Cells In Vivo	M005199	[redacted]	Mus: 6220	E					Bio Phys	[redacted]
Investigational Pulmonary Ventilation and Perfusion Imaging Techniques in Swine	M005200	[redacted]	Pig: 45	D					Phys	[redacted]
Portal vein embolization in swine	M005203	[redacted]	Pig: 18	D					Phys	[redacted]
Atacicept is a potential intervention for antibody mediated rejection.	M005204	[redacted]	Rattus: 1926 Mus: 450	D	X	X				

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Genetic control of tumor development in mice	M005207	[redacted]	Mus: 200	C						
Regulation of pancreatic beta cell mass	M005210	[redacted]	Rattus: 200 Mus: 6692	D	X		X		Bio Chem	
Investigating hedgehog pathway inhibitors in the nude mouse model	M005212	[redacted]	Mus: 350	D	X				Bio Chem Phys	[redacted]
Epstein-Barr virus infection in humanized triple-knockout NOD/SCID/common gamma chain receptor (NSG) mice	M005214	[redacted]	Mus: 2560	C					Bio Chem	
Role of Collagen Type V Autoimmunity in Heart and Lung Graft	M005215	[redacted]	Mus: 2980	D	X	X				[redacted]
Human Bone Marrow Mesenchymal Stem Cell Injection in Scarred Vocal Fold: Bio-safety, Dosing and Efficacy	M005216	[redacted]	Rabbit: 86	D					Bio	[redacted]
Investigation of the Virulence of Toxoplasma gondii and its Protection against other Infections	M005217	[redacted]	Mus: 8000	D					Bio Phys	[redacted]
Breeding, induction of diabetes and tissue collection	M005221	[redacted]	Mus: 2327	D					Chem	
Novel Proteomics Technology to Identify Autism Biomarkers	M005223	[redacted]	Mus: 80	C						[redacted]
Studying Beta-Amyloid and mGluR5 in Neurological Disorders.	M005224	[redacted]	Mus: 2199	D	X		X			[redacted]

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Vascular, ventricular, and hemodynamic consequences of pulmonary hypertension	M005226	[redacted]	Rattus: 2520 Mus: 3120	D	X				Chem Phys	[redacted]
Seven Day Toxicity Test to Fathead Minnows (Pimephales promelas)	M005227	[redacted]	Fathead minnow: 156,000	E						
Acute (96 Hour) Toxicity to Fathead Minnows (Pimephales promelas)	M005228	[redacted]	Fathead minnow: 156,000	E						
Modulation of information coding by general anesthetics: Behavior and electrophysiology	M005231	[redacted]	Rattus: 170	D	X		X			[redacted]
Production of Teratomas from Human Pluripotent Stem Cells	M005235	[redacted]	Mus: 612	C					Bio	
BMP6 Treatment for Type 1 Diabetes-related Osteoporosis	M005238	[redacted]	Mus: 36	D			X		Phys	[redacted]
Regulation of Aqueous Humor Outflow through Trabecular Meshwork	M005242	[redacted]	Rattus: 272 Mus: 1081	D					Bio	[redacted]
Right Heart-Pulmonary Vascular Interaction in Bronchopulmonary Dysplasia	M005243	[redacted]	Rattus: 680	D					Phys	[redacted]
Myocardial protection by small molecules	M005249	[redacted]	Rattus: 204	D						[redacted]
Metabolic effects of postnatal hyperoxic exposure.	M005252	[redacted]	Rattus: 117	E			X			[redacted]
Promotion of Anti-Tumor Immune Responses	M005255	[redacted]	Mus: 996	D					Bio	

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Development of Methods to Improve Isolated Pancreatic Islet Function in Rodents	M005258	[redacted]	Mus: 558 Rattus: 75	D	X	X	X			[redacted]
Combination of PVE and Interlobar Zone MW Ablation to Accelerate Contralateral Lobe Hypertrophy	M005264	[redacted]	Pig: 12	D					Phys	[redacted]
Molecular mechanisms of traumatic brain injury	M005265	[redacted]	Rattus: 76 Mus: 542	D	X					
Image-Guided Thermal Tumor Ablation	M005266	[redacted]	Pig: 55	D	X				Phys	[redacted]
Genetic basis of zebrafish early development	M005268	[redacted]	Zebrafish: 57,650	D					Phys	[redacted]
Prevention of Bleeding Complications in Hemophilia B: Novel Factor IX Proteins with Resistance to Inhibition by Antithrombin and Heparin	M005271	[redacted]	Mus: 4000	D						[redacted]
Mice models of aortic aneurysm pathophysiology	M005274	[redacted]	Mus: 2600	D	X					
Integration of ascending and descending input to auditory cortex	M005279	[redacted]	Mus: 652	D	X					[redacted]
Systems Analysis of the Brain-Microbiome Interaction	M005280	[redacted]	Rattus: 184	D						

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
FAK inhibition in Triple Negative Breast Cancer	M005283	[redacted]	Mus: 2544	D					Bio Phys	[redacted]
Cellular basis of retinal degenerative diseases	M005285	[redacted]	Mus: 1852	C						
Molecular Mechanisms in CNS and Other Tissue Regeneration	M005286	[redacted]	Rattus: 1118 Mus: 291	D	X	X				[redacted]
Evaluation and development of experimental devices and imaging sequences for aneurysm occlusion	M005287	[redacted]	Canine: 47	D					Phys	[redacted]
Sleep deprivation: effects on synaptic plasticity, network excitability and Seizures	M005290	[redacted]	Rattus: 300 Mus: 2900	E	X	X			Chem	[redacted]
Toxicity of halogenated hydrocarbons in fish	M005292	[redacted]	Zebrafish: 3000	C				X		
Oral nanoformulated green tea for prostate cancer prevention.	M005301	[redacted]	Mus: 620	D			X		Bio Phys	[redacted]
Photochemoprevention by Naturally Occurring Agents	M005302	[redacted]	Mus: 1728	C						
Studies of the cochlear nuclei	M005303	[redacted]	Mus: 5600	D				X	Chem	[redacted]
Murine Models of Breast Cancer	M005311	[redacted]	Mus: 1980	D	X				Chem Phys	[redacted]
Citrullination and Rheumatoid Arthritis	M005313	[redacted]	Mus: 2180	D						

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
The role of Innate Lymphoid Cells in Decidual Function	M005318	[redacted]	Mus: 546	D					Chem Phys	[redacted]
Investigating viral and host factors affecting the pathogenicity of influenza virus infections	M005319	[redacted]	Mus: 1200	C					Bio Phys	[redacted]
Adeno-Associated Virus Glial Derived Neurotrophic Factor Delivery	M005323	[redacted]	Rattus: 340	D	X				Phys	[redacted]
Diffusion Tensor Imaging Analysis of Neuropsychiatric Disorders	M005327	[redacted]	Rattus: 520	D						
Role of endogenous Ras signaling in development and tumorigenesis	M005328	[redacted]	Mus: 7572	D	X				Bio Chem Phys	[redacted]
Development of Physiologic Imaging Using X-ray Technology	M005331	[redacted]	Canine: 50	D					Phys	[redacted]
Effects of Chronic Intermittent Hypoxia (CIH) of Sleep Apnea on Allergen - Induced Airway Inflammation in Rats	M005332	[redacted]	Rattus: 286	D						[redacted]
Transplantation of cells and/or tissues into the kidney capsule in mice	M005333	[redacted]	Mus: 396	D	X				Bio Chem	
Interventional strategies to determine and counter the effects of brain-death on islet and organ quality in a brain dead rodent model.	M005335	[redacted]	Rattus: 860	D					Bio	[redacted]
Effect of Chronic Corticosteroid Administration on Tongue Musculature	M005336	[redacted]	Rattus: 90	D			X			[redacted]

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Mouse Models of Human Cancer	M005342	[redacted]	Mus: 8605	C					Bio Chem	
Genetic Analysis of Brain Development	M005345	[redacted]	Mus: 3600 Rattus: 120	C	X				Bio Chem	[redacted]
Corneal Epithelial Proliferation and Neovascularization	M005359	[redacted]	Mus: 3996	D						[redacted]
Digital Tip Regeneration in a Mouse Model	M005363	[redacted]	Mus: 528	D					Chem Phys	[redacted]
Non-invasive assessment of effectiveness of resuscitation after cardiac arrest in a pig ventricular fibrillatory arrest model	M005369	[redacted]	Pig: 30	D						[redacted]
Institutional Clinical and Translational Science Award	M005372	[redacted]	N/A: Funding administration only	N/A: Funding administration only						
Erodible Multilayered Films: Controlled Release of Compounds From Surfaces Placed in Arteries.	M005380	[redacted]	Pig: 60	D					Phys	[redacted]
Microsurgical Training Course for Residents and Fellows	M005381	[redacted]	Rattus: 100	D						[redacted]
Role of Osteoclast Like Cells in the development of Aneurysm	M005383	[redacted]	Mus: 1584	D	X		X		Phys	[redacted]
Use of an epicardial patch in stem cell therapy of heart disease.	M005385	[redacted]	Rattus: 250 Mus: 250	D	X	X			Bio Phys	
Role of IgM in transplant glomerulopathy	M005387	[redacted]	Rattus: 593	D	X	X				
The Genetic Basis of Species Differences in House Mice	M005388	[redacted]	House mouse: 1425	D					Chem	[redacted]
Role of Growth Factors in Post Ischemic Neurogenesis	M005389	[redacted]	Rattus: 545 Mus: 650	D	X				Phys	[redacted]

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
In vivo Screening of New Therapeutic Gene Targets for Age Related Memory Loss	M005393	[redacted]	Rattus: 1100	D	X					[redacted]
Proteoglycans of the Plasma Membrane	M005394	[redacted]	Mus: 3577	D			X		Bio Chem Phys	[redacted]
Chemoprevention of lung cancer by naturally occurring agents	M005397	[redacted]	Mus: 1032	C						
Interaction of radiation with EGFR blockade or anti-angiogenic treatments	M005404	[redacted]	Mus: 2696	D					Phys	[redacted]
Cell motility mechanisms using zebrafish	M005405	[redacted]	Zebrafish: 1,480,000	D					Bio Chem Phys	[redacted]
Treatment for neuropathic pain through gene therapy targeting the DRG	M005407	[redacted]	Rattus: 180	E			X			[redacted]
Molecular mechanisms of cerebral ischemia	M005413	[redacted]	Rattus: 375 Mus: 1053	D	X	X			Phys	
Surgical procedure for directed subretinal bleb formation	M005414	[redacted]	Rabbit: 24	D					Phys	

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Cardiovascular Core Phenotypic Analysis of Rats and Mice	M005416	[redacted]	Mus: 1077 Rattus: 165	D	X	X		X	Bio Chem Phys	[redacted]
Cardiac Positron emission tomography/Magnetic resonance imaging (PET/MR Imaging)	M005418	[redacted]	Pig: 20	C					Phys	[redacted]
Effect of Vitamin D and Analogs on Renal Interstitial Fibrosis/Tubular Atrophy	M005421	[redacted]	Mus: 262 Rattus: 672	D	X					
Light Stimulus Tests of Neural Electrodes	M005428	[redacted]	Mus: 282	D	X				Phys	[redacted]
GOSS Right ventricle-pulmonary vascular interactions after postnatal hyperoxia exposure	M005429	[redacted]	Rattus: 366	D	X				Phys	[redacted]
Study of retinopathy models	M005434	[redacted]	Mus: 1090	D					Bio	[redacted]
Mechanisms, Consequences, and Treatment of Bronchopulmonary Dysplasia.	M005439	[redacted]	Rattus: 380	D					Chem	[redacted]
Functional Analysis of the Rat Mammary Carcinoma Susceptibility Loci using Xenografts	M005440	[redacted]	Mus: 2520	C					Bio	

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
In vivo study of the new derivatives for biocompatibility and potential for tissue regeneration in mice.	M005442	[redacted]	Mus: 92	C						
Rat models for breast cancer susceptibility	M005444	[redacted]	Rattus: 26,880	E	X				Chem Phys	
Flavonoid treatment for neuropathic pain acting through inhibition of MEK	M005451	[redacted]	Rattus: 1728	E	X				Bio	[redacted]
TBI (Traumatic brain injury) and posttraumatic epilepsy in plasticity susceptible and resistant rats	M005457	[redacted]	Rattus: 385	D	X					[redacted]
Manipulating mouse embryos with CRISPR (clustered regularly interspaced short palindromic repeats)	M005461	[redacted]	Mus: 774	D	X					
Analysis of the oncogenic properties of Lrp5 and Sdc1	M005471	[redacted]	Mus: 508	D			X		Chem Phys	[redacted]
Tumor cell heterogeneity and metabolism in lymphoma	M005474	[redacted]	Mus: 555	C						
In vivo models to study genesis and immunotherapy of multiple myeloma and lymphoma	M005476	[redacted]	Mus: 3156	D	X				Bio Phys	[redacted]
Topical Protection Against Radiation and Chemotherapy Treatment	M005479	[redacted]	Mus: 180 Rattus: 600	C					Chem Phys	
Positional Cloning of Spontaneous Dominant Leukemia	M005484	[redacted]	Mus: 1505	D					Bio Chem Phys	[redacted]
Optical imaging of tumor therapies	M005485	[redacted]	Mus: 1938	D					Bio Chem Phys	[redacted]

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Lingual and Laryngeal Muscle Plasticity	M005486	[redacted]	Rattus: 392	D	X		X		Phys	[redacted]
Using senescence induction and epigenetic modifiers to improve prostate cancer therapy	M005488	[redacted]	Mus: 1804	D					Bio	[redacted]
Glucose Secretagogue Metabolism in Pancreatic Islets	M005489	[redacted]	Mus: 600 Rattus: 1200	C			X			[redacted]
Mouse cardiac electrophysiology and arrhythmia research	M005490	[redacted]	Mus: 770	D						[redacted]
Harvesting tissue from guinea pigs for study of translational control of membrane excitability	M005492	[redacted]	Guinea pig: 64	D						[redacted]
Molecular Level Analyses of the Blood-Brain Barrier	M005497	[redacted]	Mus: 640 Rattus: 852	D						[redacted]
Small Animal Imaging with Hyperpolarized Contrast Agents	M005500	[redacted]	Rattus: 75 Mus: 150	C			X		Phys	[redacted]

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Real time PET/MRI imaging of pulmonary embolism using a porcine model: Pilot project investigating the binding of 64Cu-FBP8 fibrin-targeted thrombus imaging to acute and subacute pulmonary embolism	M005501	[redacted]	Pig: 5	D					Phys	[redacted]
Effect of Mechanical Forces on Organs Development	M005502	[redacted]	Mus: 158	C						
Validation of Uveitis Models	M005508	[redacted]	Rattus: 76 Mus: 70	D					Chem	
Prostate Cancer Chemoprevention and Treatment	M005510	[redacted]	Mus: 1680	C					Bio Phys	[redacted]
Vascular, Ventricular and Hemodynamic Consequences of Aging	M005511	[redacted]	Mus: 798	D						
Swine Models of Cardiovascular Disease	M005512	[redacted]	Pig: 70	D	X	X			Bio Phys	[redacted]
Skin Cancer Mechanisms and Management	M005515	[redacted]	Mus: 1320	C					Bio	[redacted]

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Control of Gene Expression in the Developing Mouse	M005520	[redacted]	Mus: 27,123	D	X		X	X	Bio Chem	[redacted]
Mechanisms of genitourinary diseases BPH and prostate cancer	M005521	[redacted]	Mus: 1974	D					Bio	[redacted]
Molecular Biology of Retinal Ganglion Cell Death After Optic Nerve Injury	M005525	[redacted]	Rattus: 100 Mus: 7640	D	X				Bio Chem Phys	[redacted]
Novel Treatments for Spinal Cord Injury and Neuropathic Pain	M005530	[redacted]	Rattus: 320	D	X					[redacted]
Canine Models of Pulmonary Hypertension	M005531	[redacted]	Canine: 35	D	X				Phys	[redacted]
UW [redacted]	M005532	[redacted]	Mus: 550 Rattus: 50	D			X		Phys	[redacted]

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Biology of vocal fold injury, repair, and scar formation	M005534	[redacted]	Rattus: 950 Mus: 890	D	X				Bio Chem Phys	[redacted]
Stress, behavioral inhibition and the vulnerability to psychiatric illness.	M005541	[redacted]	Rattus: 90 Ferret: 6 Mus: 180	D	X		X	X	Chem	[redacted]
Development of Neurons in the Gut	M005542	[redacted]	Mus: 538	D					Chem	[redacted]
Noninvasive Liver Ablation Using Focused Ultrasound Histotripsy	M005544	[redacted]	Pig: 32	D					Phys	[redacted]
The ionic properties of vertebrate hair cells	M005550	[redacted]	Mus: 6771	C						[redacted]
Molecular Imaging of Breast Cancer	M005554	[redacted]	Mus: 2160	D	X		X		Bio Chem	
Rodent Models for Cardiovascular Research	M005555	[redacted]	Rattus: 38 Mus: 1665	D	X				Chem Phys	[redacted]
Mechanisms of laryngeal and lingual muscle regenerative capacity	M005557	[redacted]	Rattus: 120	C			X		Phys	[redacted]
Creation and Analysis of Brain Tumor Xenografts in Rodents (2016 renewal)	M005558	[redacted]	Mus: 2550 Rattus: 250	D	X	X			Bio Chem Phys	[redacted]

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Mechanisms underlying intracellular trafficking in physiology and neurodegenerative diseases like Alzheimer's and Parkinson's diseases.	M005559	[redacted]	Mus: 4950	C						[redacted]
Vocal fold mucosal transplant in dogs	M005561	[redacted]	Canine: 22	D					Bio	[redacted]
Stem Cell Therapies for Cartilage Regeneration	M005566	[redacted]	Mus: 30	D	X					
Animal model of Neisseria infection	M005567	[redacted]	Mus: 2004	E					Bio	
Developing Comparative and Functional Genomic Approaches to Study Schistosoma	M005569	[redacted]	Mus: 5090	D	X			X		
Hormones and the Lower Urogenital Tract	M005570	[redacted]	Mus: 3970	D	X	X	X		Bio Chem	[redacted]
Proteoglycans in Cancer	M005571	[redacted]	Mus: 454	D					Bio Chem	

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Normal and Accelerated Assessment of Neural Interfaces	M005572	[redacted]	Mus: 270 Rattus: 235	D	X				Phys	[redacted]
Comparative genomics of stem cells in cestodes	M005573	[redacted]	Rattus: 258	D						
Insulin Gene Therapy in Rodents	M005577	[redacted]	Rattus: 4100 Mus: 4100	D	X	X	X		Bio	[redacted]
Mouse Models of Gastrointestinal Cancers for Translational Studies	M005580	[redacted]	Mus: 10,560	D			X		Bio Chem Phys	[redacted]
Murine 3D Engineered Cardiac Tissue Model of Cardiomyopathy	M005581	[redacted]	Rattus: 140 Mus: 4786	D						
Multifunctional drug nanocarriers for targeted drug delivery	M005585	[redacted]	Mus: 215	D					Bio Phys	[redacted]
The Aryl Hydrocarbon Receptor in Inflammatory Skin Disease	M005586	[redacted]	Mus: 600	C						[redacted]
Mouse models of ocular disease	M005587	[redacted]	Mus: 2595	D					Phys	
Cardiomyopathies of the Nuclear Lamina	M005588	[redacted]	Mus: 3150	D	X			X	Phys	[redacted]
Molecular and cellular mechanisms of membrane trafficking	M005589	[redacted]	Mus: 5256	D			X		Bio Chem	[redacted]

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Interventional Strategies to Modulate the Innate and Acquired Immune Response to Ischemia/Reperfusion and Cold Preservation Injury in Transplantable Organs	M005596	[redacted]	Rattus: 500 Mus: 594	D	X				Bio	[redacted]
Mechanisms of lung injury and fibrosis	M005597	[redacted]	Mus: 424	D					Chem	[redacted]
Gut microbial metabolism and health	M005599	[redacted]	Mus: 2060	D			X		Bio	[redacted]
Obtaining brain tissue from mice for research experiments	M005600	[redacted]	Mus: 448	D						[redacted]
Aneuploidy and Cancer	M005601	[redacted]	Mus: 2000	D					Bio Chem	[redacted]
Elucidating the control and function of the transcription factors GATA-1 and GATA-2	M005602	[redacted]	Mus: 7226	D					Chem	
Optimizing combination embolization-ablation strategies	M005606	[redacted]	Pig: 50	D	X				Phys	[redacted]
Mechanisms of Airway Dysfunction	M005607	[redacted]	Mus: 150 Rattus: 150	D					Bio	[redacted]
Repair of the Mouse Achilles Tendon	M005611	[redacted]	Mus: 1400	D	X				Bio Chem	
Anesthetics and Ion Channel Modulation	M005613	[redacted]	Mus: 4992	D	X	X			Bio	[redacted]

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Segmental Femoral Defect Fracture Healing in Rats	M005616	[redacted]	Rattus: 95	D	X				Phys	[redacted]
Microsurgery Training Course	M005619	[redacted]	Rattus: 72 Mus: 24	D						[redacted]
Surgery Skills Practicum	M005621	[redacted]	Pig: 72	D						[redacted]
Cytochromes P450: Expression and Regulation	M005625	[redacted]	Mus: 1108	D			X		Chem	
Studies of Vocalization and Swallowing in Mouse Models of Down Syndrome	M005627	[redacted]	Mus: 416	C			X		Phys	[redacted]
Steroid Hormone Action in Murine Tumorigenesis	M005628	[redacted]	Mus: 2200	D					Bio Chem Phys	[redacted]
Development of Multimodality Molecular Imaging Agents for Animal Studies	M005630	[redacted]	Rattus: 240 Mus: 4500	E	X		X		Bio Chem Phys	[redacted]
Toxicity and Pharmacokinetics of Combination Antifungal Therapy	M005637	[redacted]	Rattus: 76	D						
Impact of Exercise on Neuropsychiatric Disorders	M005641	[redacted]	Rattus: 600	D						

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Mechanisms of Granuloma Pathogenesis	M005644	[redacted]	Mus: 3003	D	X				Bio Chem Phys	[redacted]
Histoplasma capsulatum pathogenesis	M005645	[redacted]	Mus: 420	D					Bio	
Transplantation of human pluripotent stem cell derived beta cells into rodents to treat diabetes	M005646	[redacted]	Rattus: 75 Mus: 1025	D	X	X	X		Bio	[redacted]
Immune Function of Engineered Novel Fusokines.	M005647	[redacted]	Mus: 2079	D					Bio Phys	[redacted]
YY1 functions in hematopoietic development and malignancies	M005660	[redacted]	Mus: 908	D					Bio Chem Phys	[redacted]
Effects of positive pressure ventilation versus negative pressure ventilation on lung development	M005664	[redacted]	Rattus: 213	D	X				Chem	
Characterization of Retinal Response to Axotomy and Optic Nerve Injury	M005665	[redacted]	Rattus: 2688	D						[redacted]
Oxidative Stress in Models of Neurodegenerative Disease	M005668	[redacted]	Mus: 18,450	D			X		Bio Chem	[redacted]
Control of laryngeal gene expression in the developing mouse	M005669	[redacted]	Mus: 5607	C					Chem	
Combining Radiation and Immunotherapy to Elicit in Situ Vaccination	M005670	[redacted].	Mus: 2270	D	X				Bio Chem Phys	[redacted]
Developmental genetics of planar cell polarity in mouse skin	M005675	[redacted]	Mus: 1450	D					Chem	[redacted]
Autologous injection of fascia into the lamina propria for vocal fold scar in rabbit	M005681	[redacted]	Rabbit: 76	D						

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Cardiovascular Core Microsurgery Training	M005685	[redacted]	Mus: 1800 Rattus: 900	D	X				Phys	
Characterization of anti-tumor immune responses in mice	M005690	[redacted]	Mus: 8212	D					Bio	
Sleep, sensory disconnection and synaptic homeostasis	M005697	[redacted]	Mus: 1244	D	X	X		X	Phys	[redacted]
Interrogation of genomic and proteomic landscape with drug and radiation treatments	M005699	[redacted]	Mus: 2400	D					Bio Phys	[redacted]
Studies on the chemopreventive and chemotherapeutic properties of naturally occurring agents	M005708	[redacted]	Mus: 804	C					Chem	
Aminothiol Suppression of DNA Damage	M005714	[redacted]	Mus: 375	D					Phys	
Genetic Mouse Models for Primary Congenital Glaucoma - Basic	M005719	[redacted]	Mus: 288	C						
Retinal Development and Angiogenesis, and its Correlation to Lung and Kidney Injury and Inflammation in a Neonatal Mouse Model of Oxygen-induced Retinopathy.	M005730	[redacted]	Mus: 4904	D					Phys	[redacted]
Membrane Excitability and Secretion from Nerve Endings	M00664	[redacted]	Mus: 4306 Rattus: 1500	C					Chem	[redacted]
Regulation of ocular lens development by growth factors	M00712	[redacted]	Mus: 8625 Rattus: 645	D					Bio Chem Phys	[redacted]
Molecular Genetics of Papillomaviruses	M00843	[redacted]	Mus: 79,474	D					Bio Chem Phys	[redacted]
Immunology and pathogenesis of systemic fungal infections	M00969	[redacted]	Mus: 135,608	D					Bio Phys	
In Vivo ANalysis of Immune Stimulatory Agents Metastatic Cancers	M01055	[redacted]	Mus: 2736	D					Bio Phys	[redacted]

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
The Role of the Ah Receptor and Related PAS Proteins in Mammalian Health and Disease	M01162	[redacted]	Mus: 5859	D					Chem	
Biochemical Function of Synaptotagmin in Excitation-Secretion Coupling	M01221	[redacted]	Mus: 16,700 Rattus: 902	D					Bio Chem	[redacted]
In Vivo Experimental Cancer Immunotherapy	M01246	[redacted]	Mus: 6950	C					Bio Chem Phys	[redacted]
Immunotherapy of Metastatic Cancer in Mice	M01247	[redacted]	Mus: 2160	D					Bio Chem Phys	[redacted]
Mechanisms Behind Tolerance and Sensitization to Non-Inherited Maternal Antigens	M01253	[redacted]	Mus: 7480	D		X			Bio	[redacted]
Molecular Mechanisms of Cerebral Ischemia	M01305	[redacted]	Rattus: 732	E					Bio	
Study of Cardiac Disorders With Genetically Altered Rodents	M01427	[redacted]	Mus: 1975	D		X			Phys	[redacted]
Thrombospondin-1 and Retinal Neovascularization	M01441	[redacted]	Mus: 38,790 Rattus: 360	D					Bio Chem Phys	[redacted]
Roles of Cardiac Factors in Heart Development and Disease	M01461	[redacted]	Mus: 3620 Rattus: 200	D					Chem Phys	
Regulation of Axon Guidance by Second Messengers	M01479	[redacted]	Xenopus: 274	C					Bio	[redacted]

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Mechanisms of NF-kB Activity	M01662	[redacted]	Mus: 7468	D					Bio Chem Phys	[redacted]
Understanding Breast Density, Focal Adhesion Signaling, and Stromal Factors in Mammary Tumorigenesis	M01668	[redacted]	Mus: 3386	D					Bio Chem Phys	
Development of Skin substitutes for Chronic Wounds	M01725	[redacted]	Rattus: 600	D					Bio Chem	
Gene Expression Evaluation in Xenograft Tumors and Evaluation of Pharmacokinetics of Digitoxin Analogues and Other Compounds	M01732	[redacted]	Mus: 4251	D					Bio Chem	
Naturally Occurring Agents for Prostate Cancer	M01744	[redacted]	Mus: 1244	D					Bio Phys	[redacted]
Hematopoietic Differentiation of Human Embryonic Stem Cells	M01769	[redacted]	Mus: 1698	D					Bio Phys	
Molecular Genetics of Age Dependent Synaptic Defects and Neurodegeneration	M01771	[redacted]	Mus: 5100	D					Phys	[redacted]
Characterizing Knockout Mouse Models Following the Deletion of Genomic Regions…	M02036	[redacted]	Mus: 17,856	D					Bio	
Pluripotent Stem Cells	M02059	[redacted]	Mus: 7211	D					Bio Chem Phys	[redacted]

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Structural and Functional Characterization of a Novel model for Glaucoma Research	M02065	[redacted]	Feline: 140	D					Phys	[redacted]
Targeting of Phosphoinositide Signaling in Cell Migration and Tumor Progression	M02066	[redacted]	Mus: 420	D					Bio	
Therapy for Hind Limb Ischemia	M02249	[redacted]	Mus: 800 Rattus: 200	D					Bio Phys	
Testing the Synaptic Homeostasis Hypothesis and the Role of Sleep During Development	M02250	[redacted]	Mus: 1230	D				X		[redacted]
Plasticity and Learning in a Corticostriatal Network	M02251	[redacted]	Rattus: 1200	D			X		Bio	
Characterization of Epithelial-Mesenchymal Interactions During Colon Development	M02258	[redacted]	Mus: 5136	D					Chem Phys	
Overcoming Acquired Resistance to Cetuximab	M02269	[redacted]	Mus: 3832	D					Bio Chem Phys	[redacted]
Immunobiology and Cell Biology of Trypanosomiasis	M02270	[redacted]	Mus: 12,600 Rattus: 180	D					Bio Chem	[redacted]
Genetic Analysis of Limb Regeneration	M02272	[redacted]	Ambystoma: 1381	D		X			Bio Phys	[redacted]
Effects of Tumor Suppressor Genes and Oncogenes on Cancer Development in Mice Implanted with Cancer Cells	M02275	[redacted]	Mus: 3600	D					Bio Chem Phys	[redacted]

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
The Molecular Mechanisms of Abdominal Aortic Aneurysm	M02284	[redacted]	Mus: 19,414	D					Bio Chem Phys	[redacted]
PKC-delta in Intimal Hyperplasia After Vascular Bypass	M02285	[redacted]	Mus: 1210 Rattus: 1484	D					Bio Chem Phys	
Optimizing Anti-Angiogenic Therapy	M02289	[redacted]	Mus: 466	D					Bio Chem Phys	
The Role of Macrophage Inhibition by the Rat Healing Ligament	M02292	[redacted]	Rattus: 712	D					Bio Phys	[redacted]
Studies on the Intersection Between Central Tolerance, Peripheral Tolerance and the Aryl Hydrocarbon Receptor	M02293	[redacted]	Mus: 11,864	D					Bio Chem	[redacted]
Investigations of Candidate Glioma Genes	M02297	[redacted]	Mus: 7665	D					Chem	[redacted]
Neurosensory Biology of the Mouse	M02298	[redacted]	Mus: 1120	D					Bio Phys	[redacted]
The Role of NOX in Kidney Disease Progression	M02305	[redacted]	Mus: 268	D					Phys	[redacted]
Creating a Humanized Mouse Model to Study Complex Human Biological Systems	M02311	[redacted]	Mus: 2503	D		X			Bio Phys	[redacted]
SMPH Protocol Title 1	M02319	[redacted]	Mus: 15,564	D					Bio	SMPH Location 1 SMPH Location 2
UW Small Animal Imaging Micro MRI	M02321	[redacted]	Marmoset: 5 Mus: 30 Rattus: 30	C					Phys	[redacted]
SMPH Protocol Title 2	M02324	[redacted]	Mus: 28,300	E					Bio	
Effect of Topical Medications on IOP, Anterior Segment Anatomy and Aqueous Humor Outflow…	M02328	[redacted]	Feline: 60	D					Phys	

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Treatment of Psoriasis by Naturally Occurring Agents	M02329	[redacted]	Mus: 1680	C					Chem	
Simultaneous PET and MRI Brain Imaging of Rats	M02337	[redacted]	Rattus: 39	D					Phys	[redacted]
SMPH Protocol Title 3	M02346	[redacted]	Mus: 3354	D					Bio	
Thyroid Cancer Stem-like Cells	M02447	[redacted]	Mus: 1200	D					Bio	[redacted]
A Mouse Model for Prostate Development, Inflammation, BPH and Cancer	M02448	[redacted]	Mus: 4365	D		X			Bio Chem	[redacted]
Estrogen Receptors in Mammary Gland Development and Tumorigenesis	M02456	[redacted]	Rattus: 1179	D					Chem	
Immune Responses Against Mycobacterial Infection:	M02457	[redacted]	Mus: 2580	D					Bio	[redacted]
The Use of Notch Mediating Compounds to Improve Cutaneous Wound Healing	M02460	[redacted]	Mus: 774	D					Chem	
Investigating Signaling Pathways Mediating Bleomycin-Induced Pulmonary Fibrosis in a Murine Model	M02464	[redacted]	Mus: 1966	D					Chem	[redacted]
The Role of the Aryl Hydrocarbon Receptor in Colon Tumorigenesis	M02465	[redacted]	Mus: 9192	D					Chem	
Virulence Factors in Fungi	M02468	[redacted]	Mus: 4500	E					Bio Chem	
Effect of Chronic Intermittent Hypoxia on Lung Fibrosis	M02469	[redacted]	Rattus: 400	D					Chem Phys	[redacted]

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Acoustoelastic Evaluation of Flexor Tendon Healing in a Rabbit Model	M02471	[redacted]	Rabbit: 32	D					Phys	[redacted]
Rational Molecular Multi-targeting in High-risk Cancer	M02472	[redacted]	Mus: 644	D					Bio Chem Phys	[redacted]
Induced Pluripotent Stem Cells for Tendon Repair	M02477	[redacted]	Rabbit: 166	D					Bio Phys	[redacted]
Molecular Genetics of Murine Papillomavirus	M02478	[redacted]	Mus: 7806	D					Bio Chem Phys	[redacted]
Immunotherapy of Cancer After Bone Marrow Transplant	M02489	[redacted]	Mus: 2986	C					Bio Chem Phys	[redacted]
Pathology of Vaccinia Virus Keratitis	M02491	[redacted]	Mus: 280	D					Bio	
In Vivo Evaluation of Tumor-targeted Multifunctional Metallic Nanoparticles	M02493	[redacted]	Mus: 880	D					Bio Chem Phys	[redacted]
In Vivo Evaluation of Novel Adoptive Immunotherapies for Cancer	M02496	[redacted]	Mus: 1728	C					Bio Chem Phys	[redacted]
Listeria Monocytogenes Virulence and Induction of Protective Immunity	M02501	[redacted]	Mus: 9846	D					Bio	[redacted]

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Characterization of Vocalization and Swallowing Deficits in DJ-1 and PINK1 KO Rat Models of Parkinson Disease	M02505	[redacted]	Rattus: 326	D			X		Chem Phys	[redacted]
The Effect of Decreasing Choroidal Blood Flow on Retinal Function	M02510	[redacted]	Rabbit: 42	D					Phys	[redacted]
Mechanisms of Neuropathic Pain in the Dorsal Root Ganglia	M02512	[redacted]	Mus: 600	D					Bio	[redacted]
Murine Wound Models	M02515	[redacted]	Mus: 4489	D					Bio Chem Phys	
Platform for MR-Guided Neurotherapeutic Drug Delivery	M02516	[redacted]	Pig: 16	D					Phys	[redacted]
Radiation Responses of HPV-associated Malignancies	M02518	[redacted]	Mus: 1464	D					Bio Chem Phys	[redacted]
Molecular Elucidation of Physeal Growth Acceleration After Periosteal Resection	M02520	[redacted]	Mus: 166 Rabbit: 228	D		X			Chem Phys	[redacted]
Targeting Oncogenic Signaling Pathways in Lymphoma;	M02609	[redacted]	Mus: 1280	D					Bio	

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Potential Tumor Imaging and Therapy Agents	M02616	[redacted]	Mus: 1644 Rattus: 258	C					Phys	[redacted]
Novel Cell Delivery Method for Brain Tumor Therapy	M02618	[redacted]	Pig: 8	D					Phys	[redacted]
Melanoma Tumor Development and Progression	M02619	[redacted]	Mus: 746	D					Bio Chem	
Cardiovascular Changes Caused by Sustained Atrial Fibrillation	M02623	[redacted]	Pig: 52	D					Phys	[redacted]
Feasibility Study of In Vivo Chemotherapeutic Assessment Device for Multiplexed Drug Delivery in Xenograft Tumors	M02624	[redacted]	Mus: 306	D					Bio Chem	
Mouse L1210 Leukemia Model	M02632	[redacted]	Mus: 310	E					Bio Chem Phys	
Kaposi Sarcoma Herpes Virus Infection in Humanized Triple-Knockout NOD/SCID/Common Gamma Chain Receptor (NSG) Mice	M02633	[redacted]	Mus: 40	C					Bio	

Protocol Title	IACUC No.	Principal Investigator	Species: Animals Approved per 3 years	Pain & Distress Category	SS	MSS	FFR	PR	HAU	NCF
Stem Cell Therapies in Regenerative Bone Tissue Engineering	M02634	[redacted]	Mus: 94	D					Bio Phys	[redacted]
The Role of Autophagy in Anal Cancer Prevention and Treatment	M02635	[redacted]	Mus: 30,178	C					Bio Chem Phys	[redacted]
Modulation of Sarcomere Function by Small Molecules to Treat Heart Disease	M02636	[redacted]	Canine: 12	C					Phys	
Uptake of C11-meta-hydroxyephedrine in the Myocardium Following Myocardial Infarction in an Animal Model	M02642	[redacted]	Rattus: 24 Pig: 30	D					Phys	[redacted]
Role of Cell Cycle Inhibition in Neuroprotection/Neurogenesis	M02645	[redacted]	Mus: 330 Rattus: 90	D					Bio Chem Phys	[redacted]
Stem and Progenitor Cells in Neonatala Lung Injury	M02648	[redacted]	Mus: 8144	D					Bio	

APPENDIX 3

Summary of Animal Housing and

Support Sites

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, etc.), the total square footage/meters (or acreage) for animal care and use, and the total square footage/meters (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, HVAC, service corridors, etc. and additional areas to be considered are enumerated in the Guide). If more than one facility/site, note the approximate distance (yards/miles or meters/kilometers) each facility is from a reference point such as from the largest animal facility. A campus/site map (with a distance scale) may be included as an Appendix to provide this information. Provide floor plans of each area as an Appendix. In Section II.B., describe the general types of animal housing facilities available (e.g., conventional, hazard containment, gnotobiotic, barrier, barns, etc.) and other details of the facilities. See Instructions, Appendix 1 - 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*)	Distance from main facility (campus/site map(s) also may be provided in lieu of this information)	Approx. sq.ft./m (acreage) animal housing	Approx. sq.ft./m (acreage) support/ procedure space	Species housed	Approximate Daily Animal Census by species ***As of May 2017***	Person in charge of site
[redacted]	Located at [redacted]	7,518 ft²	3,913 ft²	Rodents	Mice: 112	[redacted]
[redacted]	Located [redacted]	3,396 ft²	6,198 ft²	Rodents	Mice: 3575 Rats: 78 Zebrafish: approx. 10,000 at any given time	[redacted]
[redacted]	Located [redacted]	9,464 ft²	16,459 ft²	Rodents, Rabbits, Swine and Canine	Mice: 3464 Rats: 438 Rabbits: 44 Swine: 1 Canine: 0	[redacted]
[redacted] Floors	Located [redacted]	10,439 ft²	4,997 ft²	Rodents, cats	Mice: 7568 Rats: 663 Cats: 18	[redacted]

Appendix 3 (continued)

Animal Housing and Support Sites

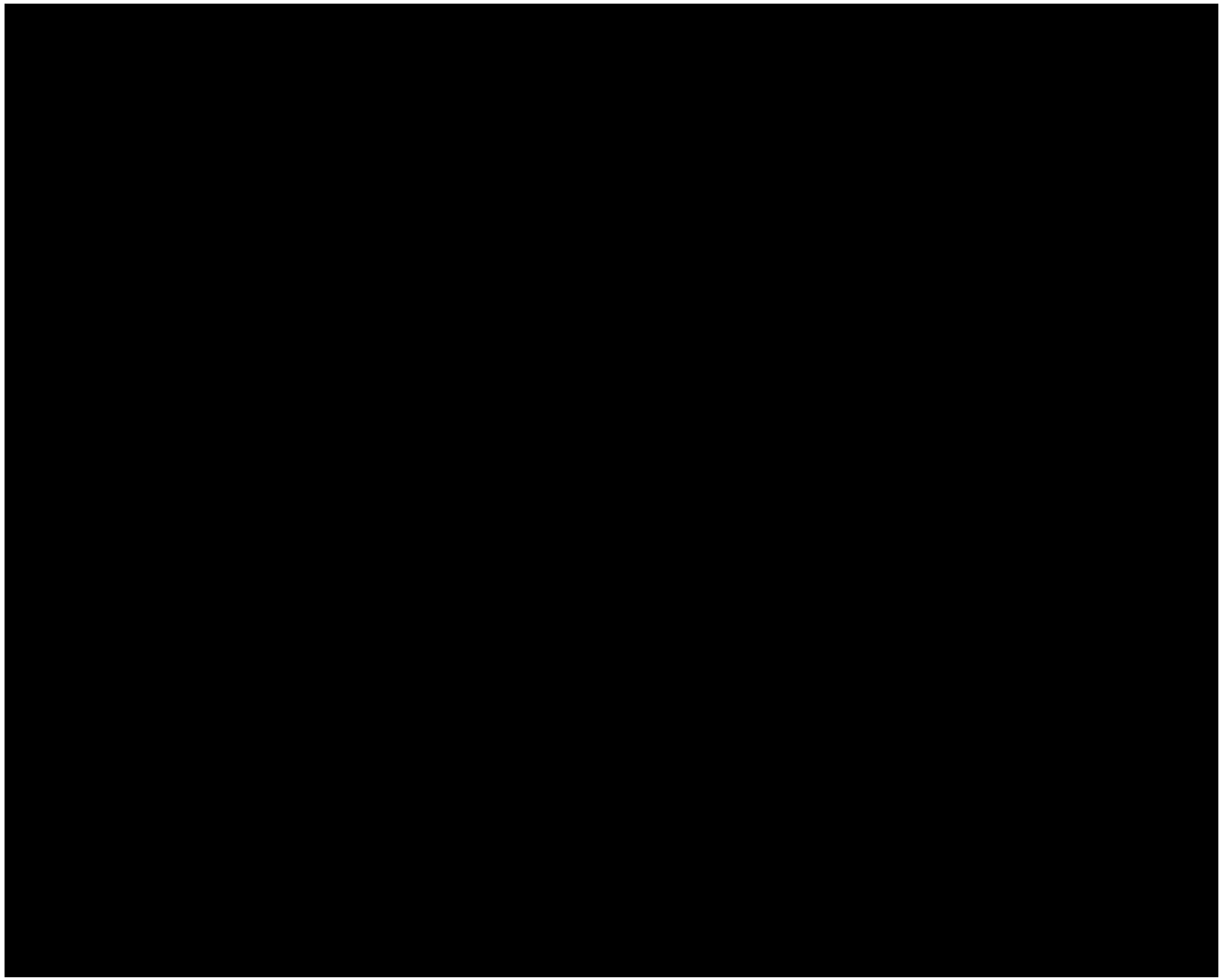
Location (building/site/farm name*)	Distance from main facility (campus/site map(s) also may be provided in lieu of this information)	Approx. sq.ft./m (acreage) animal housing	Approx. sq.ft./m (acreage) support/ procedure space	Species housed	Approximate Daily Animal Census by species ***As of May 2017***	Person in charge of site
[redacted]	Located [redacted].	2,981 ft²	6,937 ft²	Rodents, Rabbits & Zebrafish	Mice: 3335 Rats: 0 Rabbits: 2 Zebrafish: approx. 5,000 at any given time	[redacted]
[redacted]	Located [redacted]	12,645 ft²	7,175 ft²	Rodents & Zebrafish	Mice: 1260 Rats: 9 Zebrafish: approx. 2,000 at any given time	[redacted]
[redacted]	Located [redacted]	4,620 ft²	4,135 ft²	Rodents	Mice: 3835 Rats: 3 Zebrafish: approx. 2,000 at any given time	[redacted]
[redacted]	Located [redacted]	800 ft²	600 ft²	Fathead Minnow	Fathead Minnow: approximately 1000 at any given time	[redacted] (PI)
[redacted]	Located [redacted]	20,700 ft²	13,800 ft²	Rodents & Xenopus	Mice: 21,260 Rats: 888 Xenopus: 80	[redacted]
[redacted]	Located [redacted]	6,188 ft²	5,557 ft²	Rodents	Mice: 1880 Rats: 153	[redacted]
Totals:		**78,751 ft²**	**69,771 ft²**			
Total animal housing and support space:		**148,522 ft²**				

*Please state name and acronyms used for building names, if not coded for confidentiality.

APPENDIX 4

Line Drawings

[redacted]



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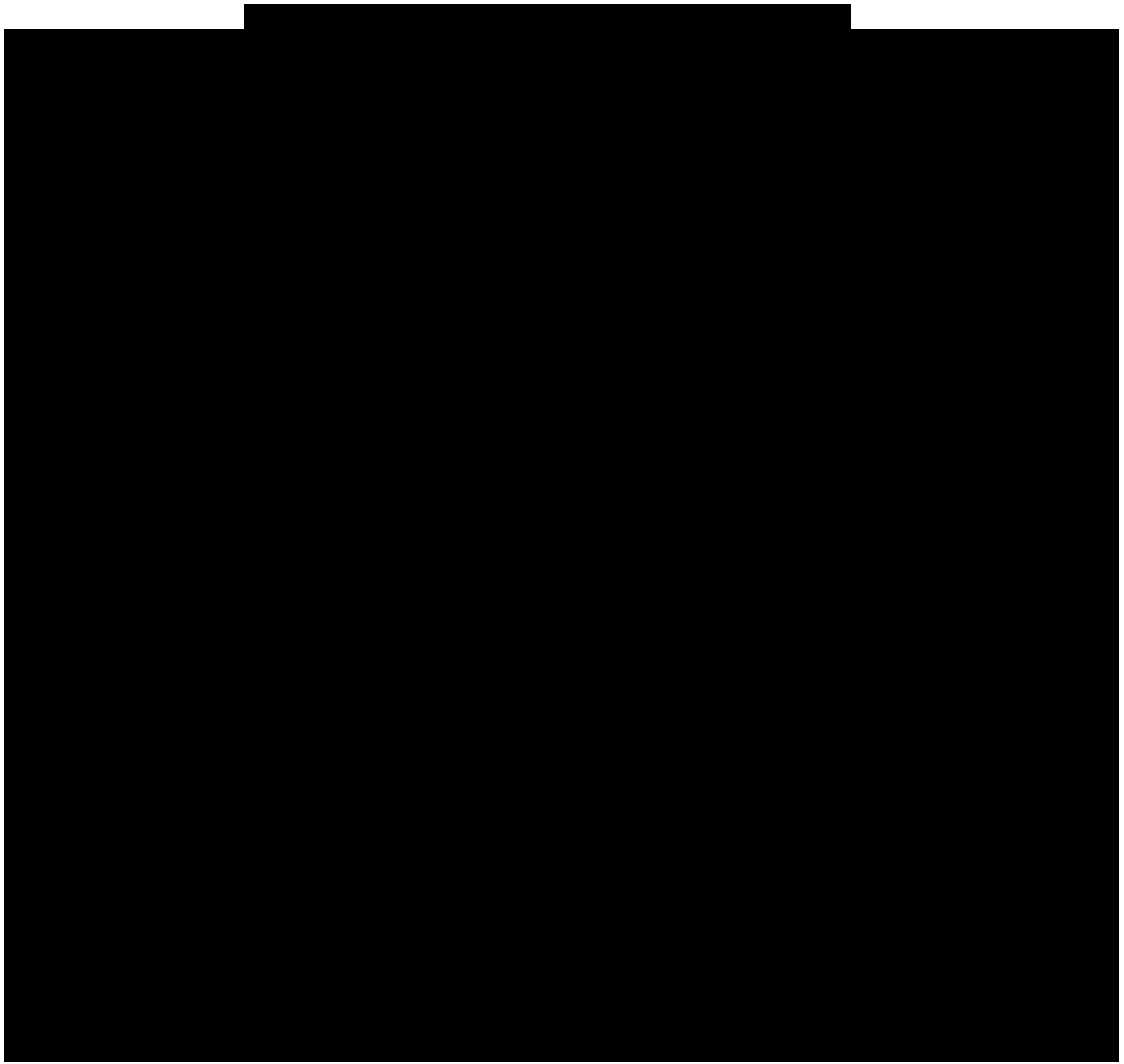

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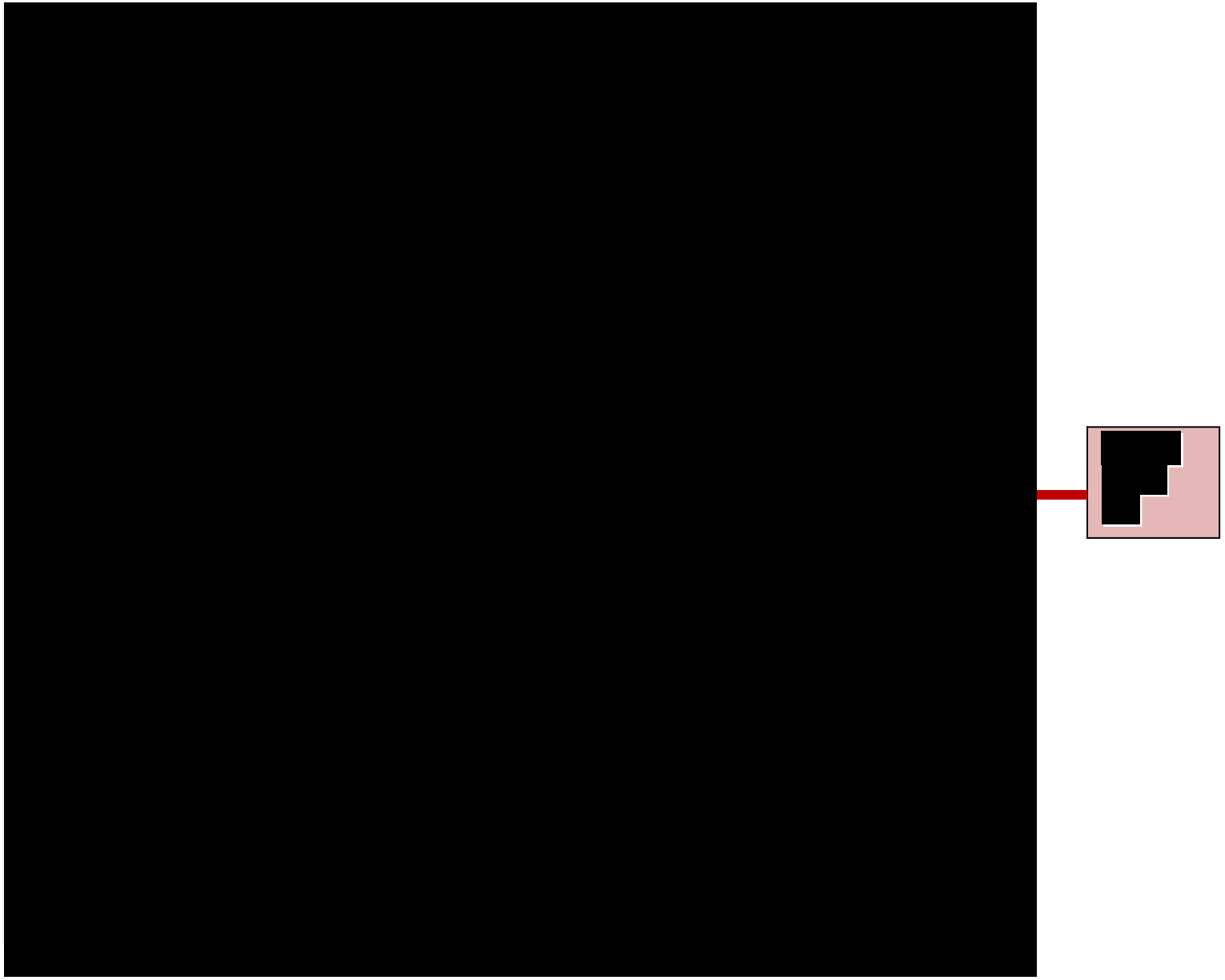

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[redacted]***OOR***

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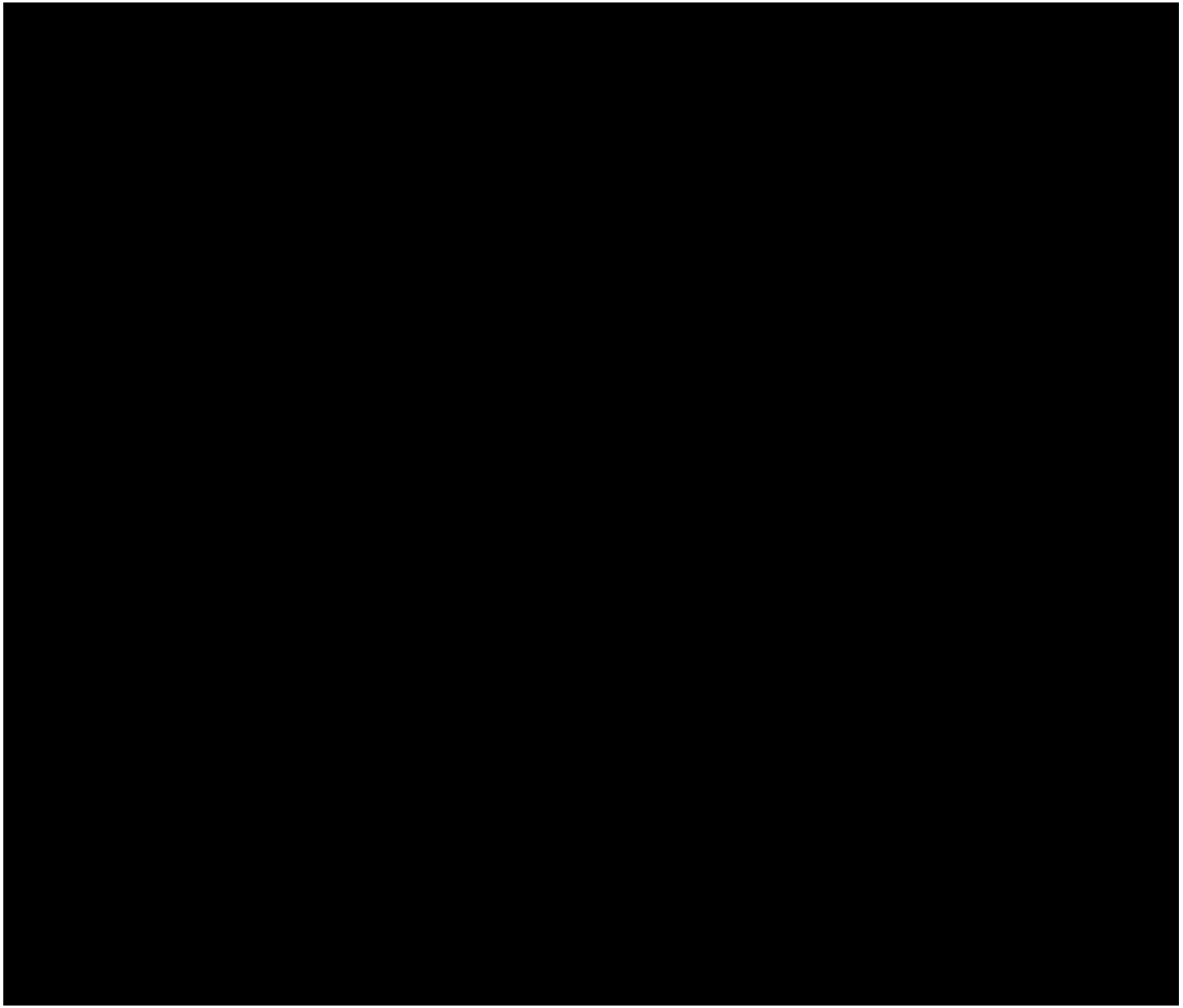

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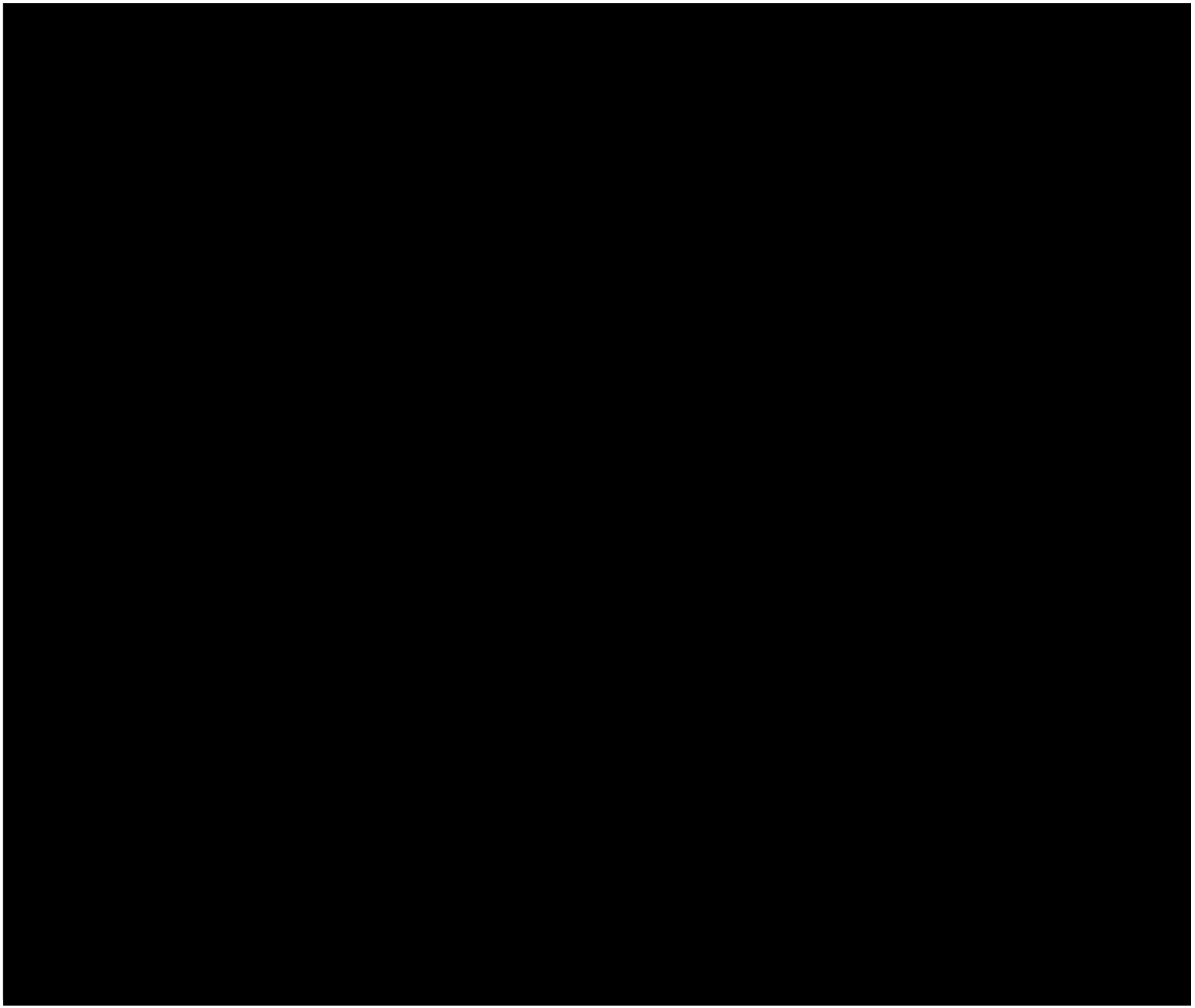

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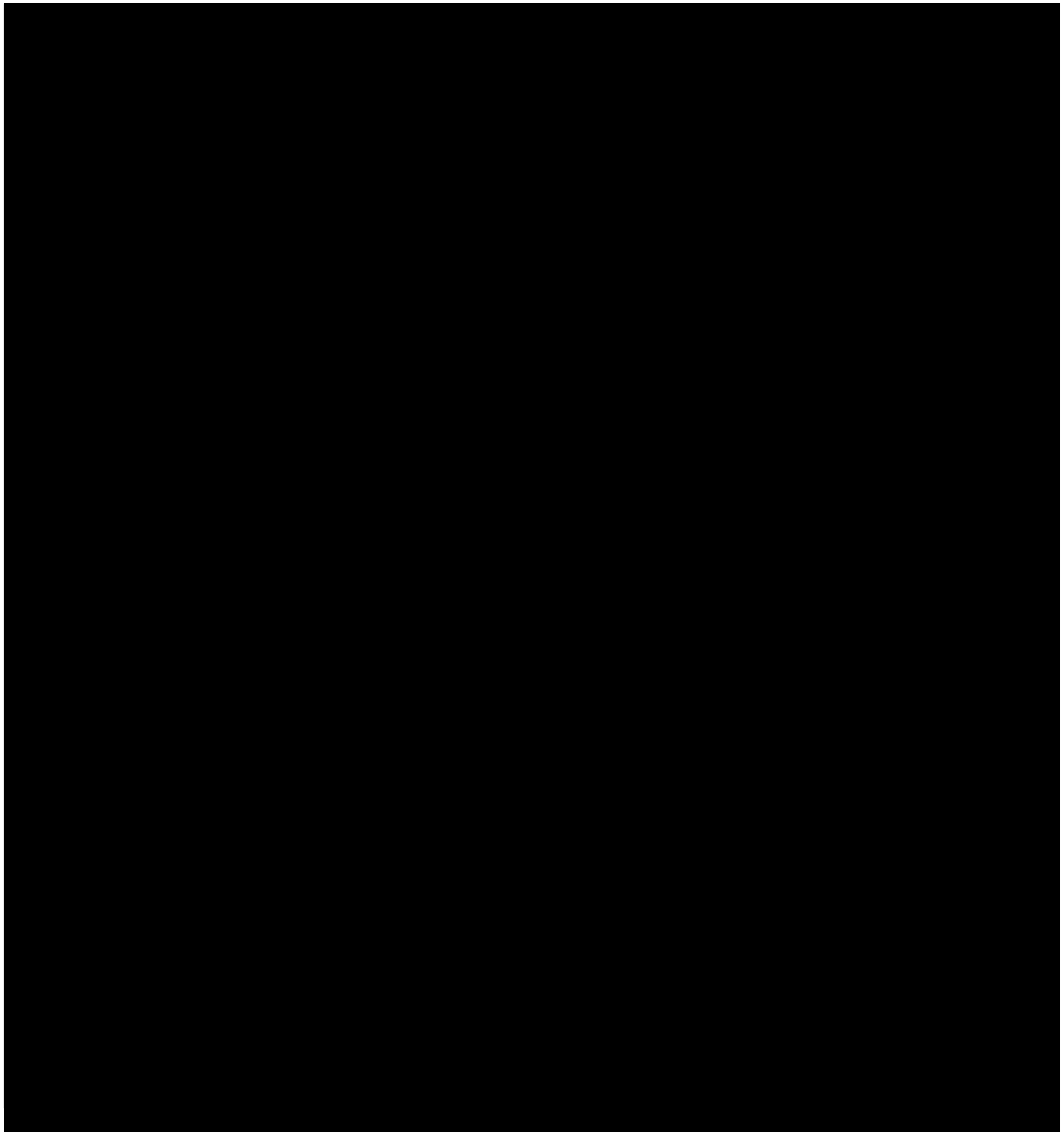

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[redacted]

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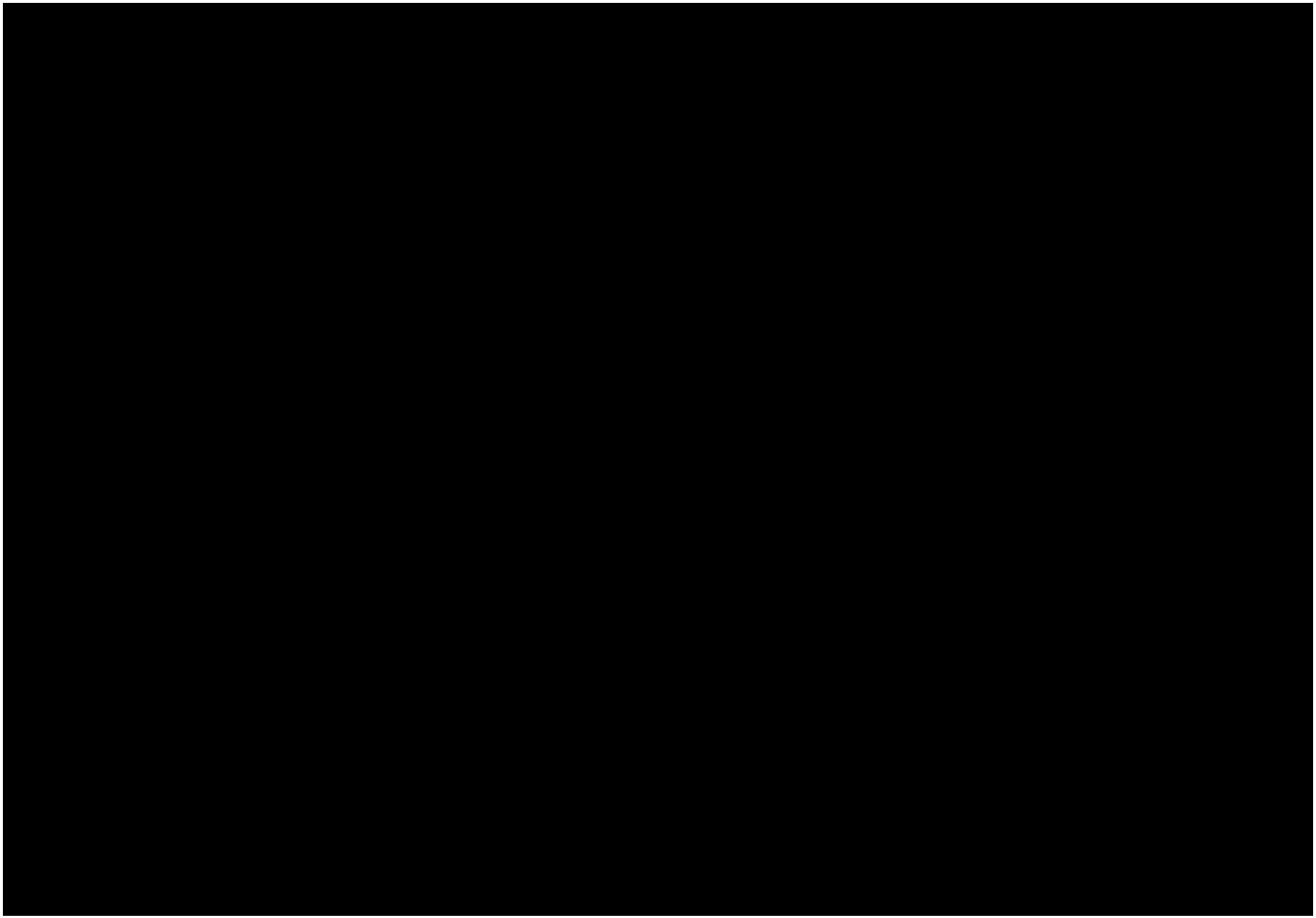

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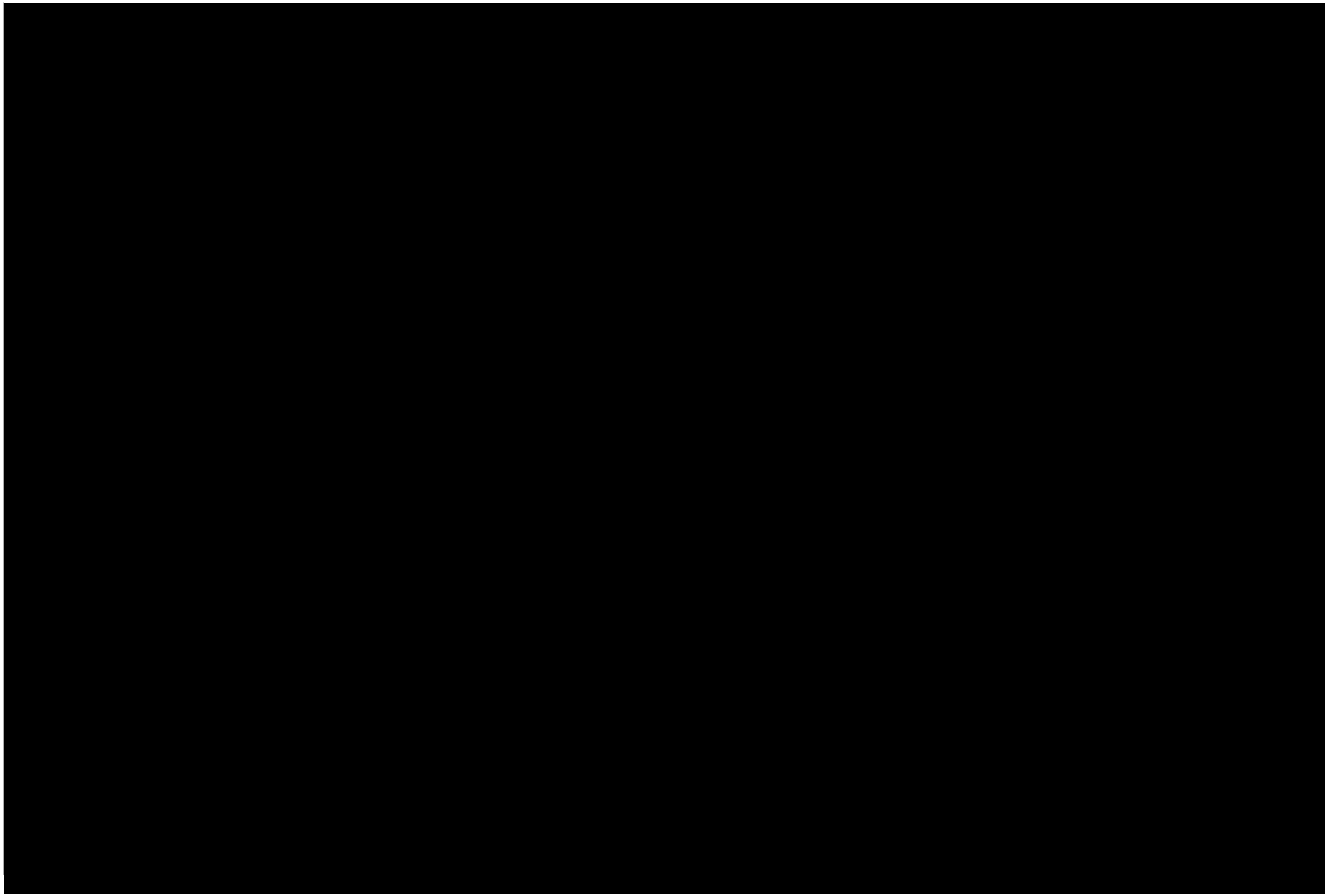

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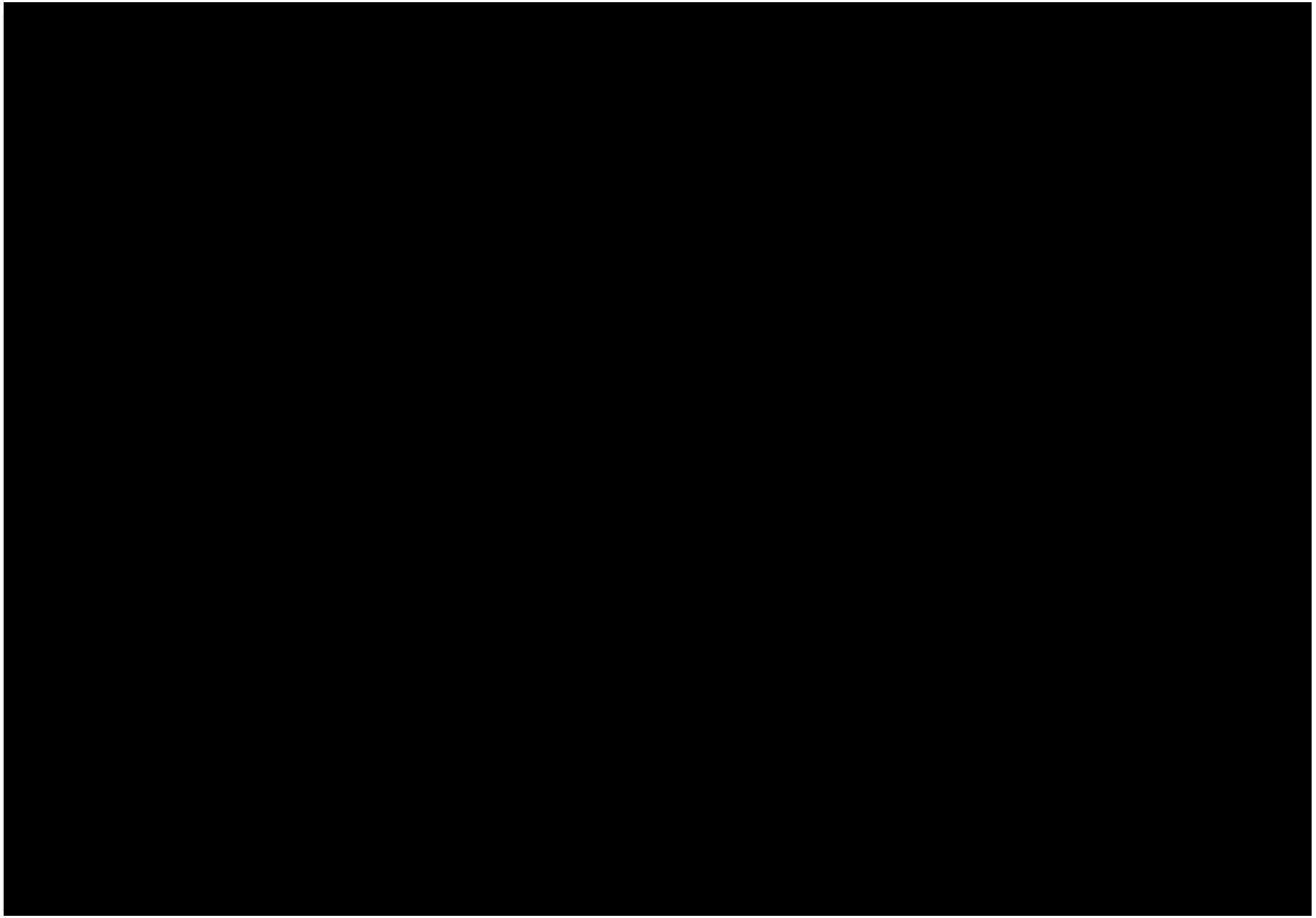

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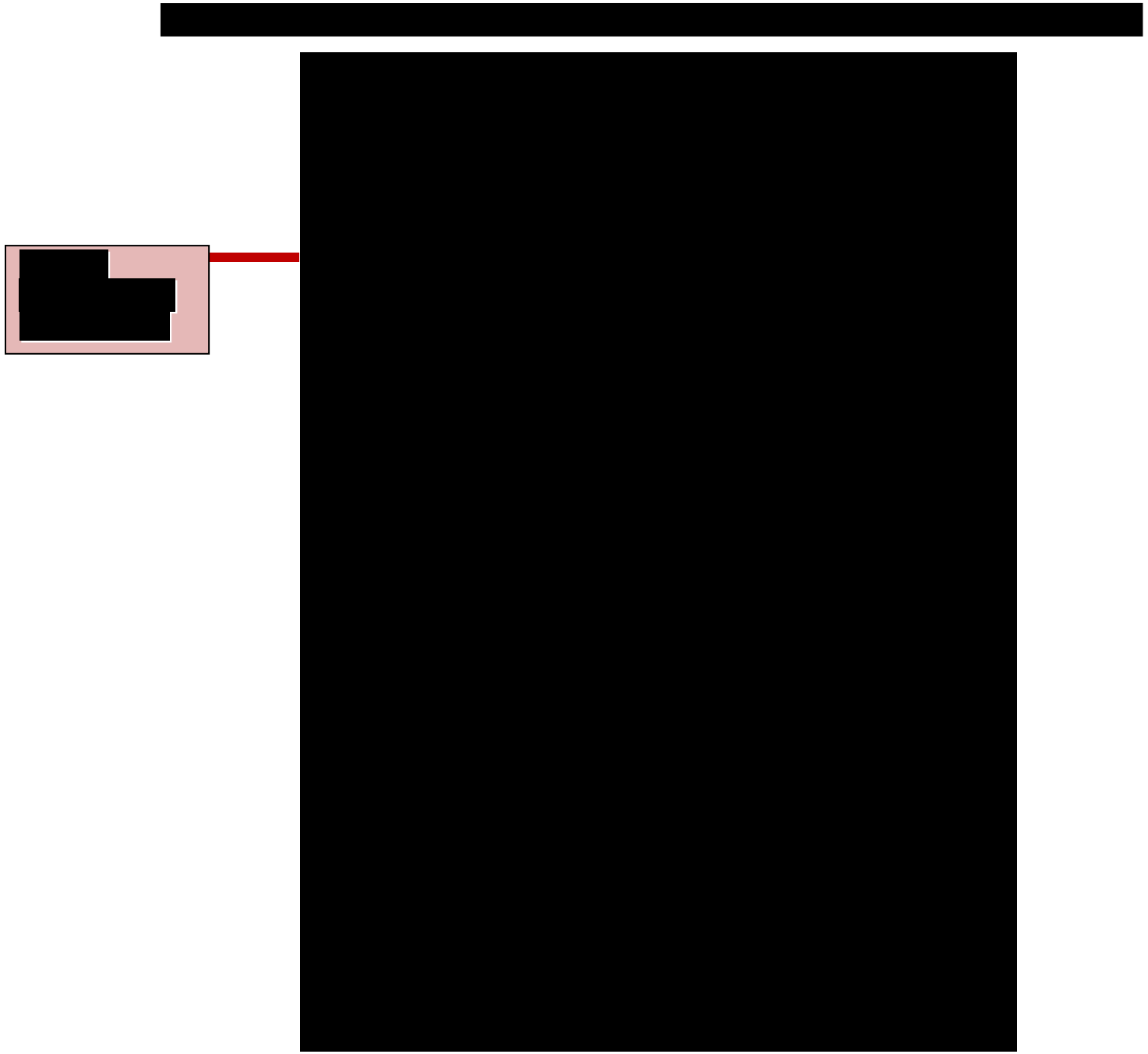

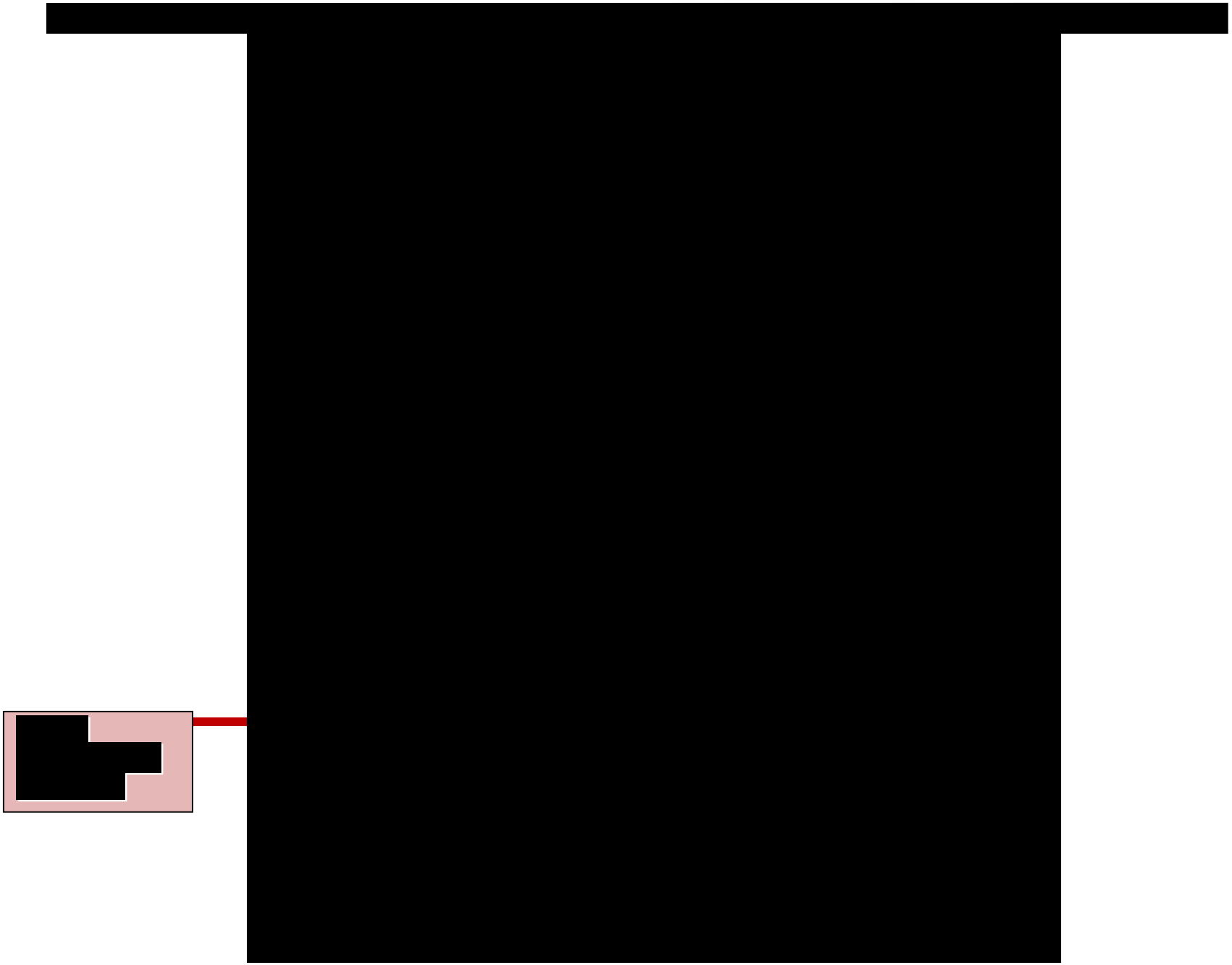

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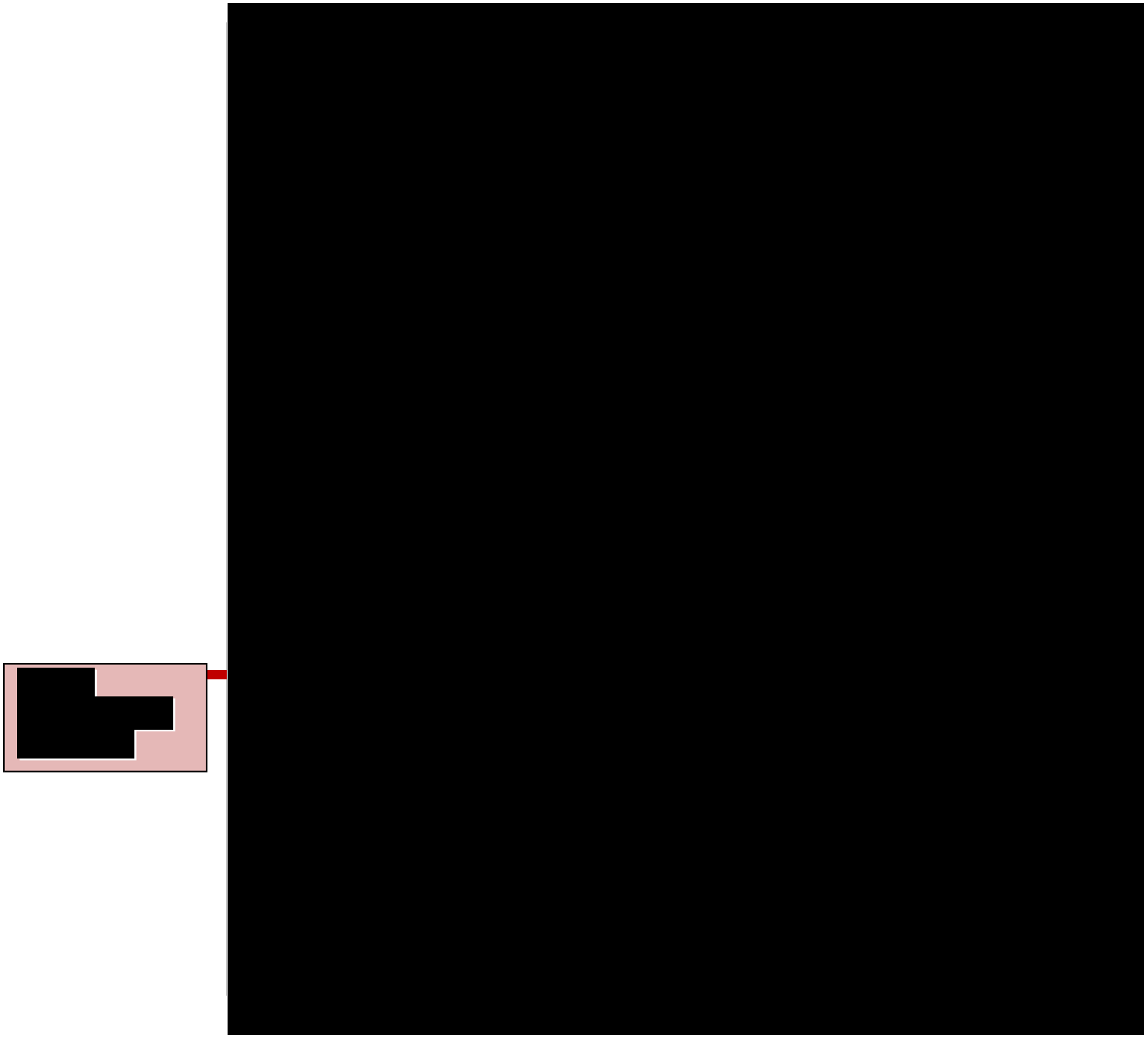

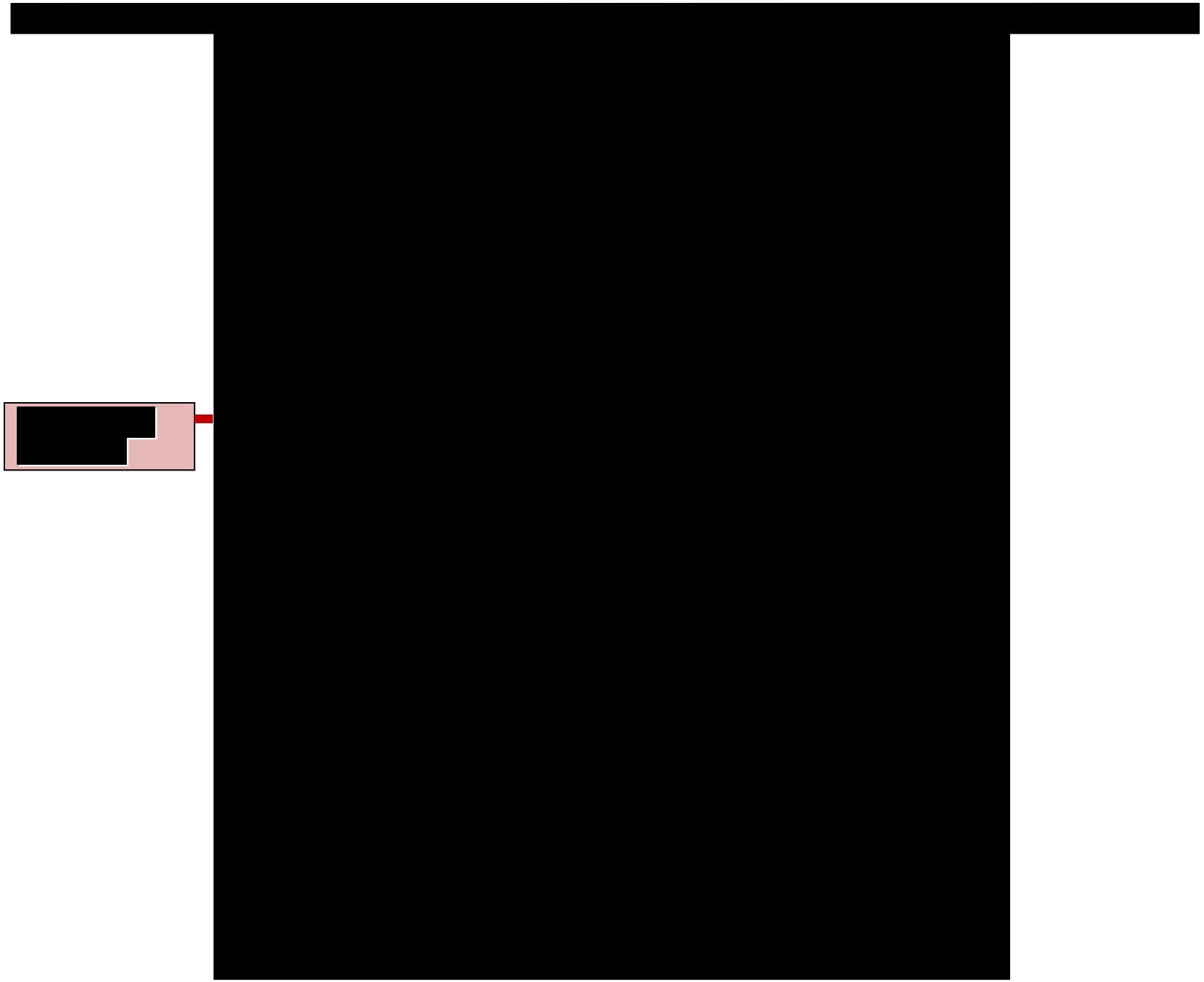

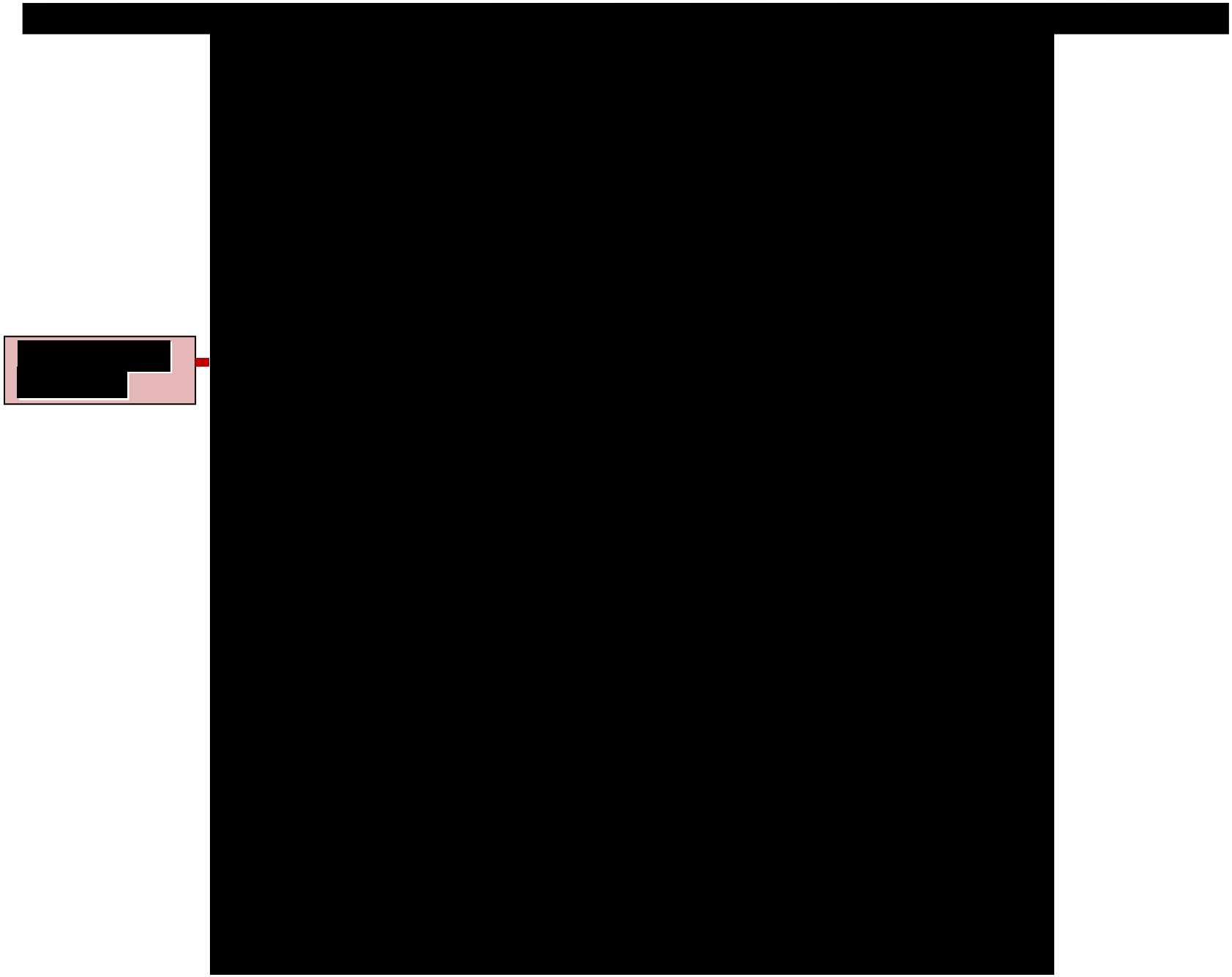

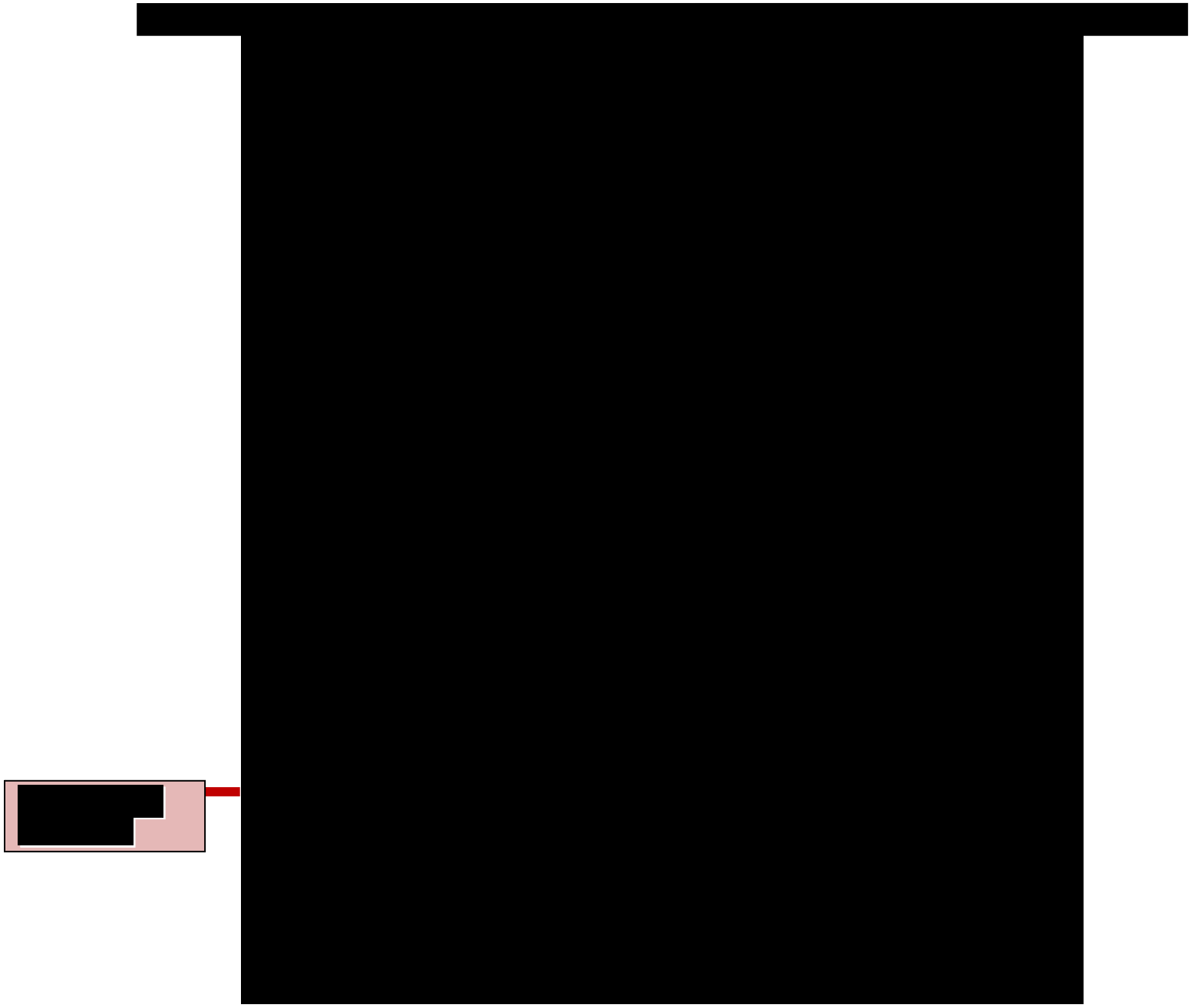

[redacted]

APPENDIX 5

Medical Evaluation Forms

5A: Baseline Questionnaire
5B: Annual Questionnaire

APPENDIX 5A

Medical Evaluation Form

Baseline Questionnaire

University Health Services at UW-Madison

UHS UNIVERSITY HEALTH SERVICES

Welcome, Harry Spyder | Logout

Compose New Secure Message

Recipient: HIM OM
Message Type: OM ACRQ-Baseline
Subject: OM ACRQ-Baseline

Items marked with ** are required.

Reviewed 6-2012

ANIMAL CONTACT RISK QUESTIONNAIRE

This questionnaire is designed to collect information to assist with assessing possible health impacts of working with animals. This questionnaire is an important part of the University's ability to monitor health status associated with work activities and to comply with requirements of regulatory, accreditation and funding agencies. Information in this form will be reviewed by licensed medical providers. You will be contacted if there is any further evaluation or intervention needed for you to be medically safe in your work environment.

It is important that all questions be answered completely. If you do not have all of the information to complete the questionnaire you can save it and edit it at a later time. If you experience changes to your medical status, you should contact University Health Services Occupational Health 608-265-5610.

IMPORTANT NOTE: MyUHS has a time out feature that after 20 minutes of inactivity data may be lost or submission of forms incomplete. It is recommended that you complete all required steps in a continuous session.

BEFORE PROCEEDING YOU MUST COMPLETE THIS SECTION

UHS WILL NOT NOTIFY YOUR SUPERVISOR UNTIL THE TWO ADMINSITRATIVE FORMS LISTED BELOW HAVE BEEN COMPLETED.

☐ I certify that I have completed and submitted the Notice of Privacy and Consent to Treat form.**

☐ I certify that I have completed and submitted the Release of Information form**

To confirm completion of these forms click the back button on your web browser which will take you to the MyUHS list of forms.

If you start completing this form without checking these boxes first you may potentially lose the data you entered.

SUPERVISOR CONTACT INFORMATION

** Name of primary supervisor, sponsoring PI for visitors or course instructor for students.

Phone number of primary supervisor

e-mail address of primary supervisor

Name of additional supervisor or secondary contact.

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Phone number of additional supervisor (if applicable)

e-mail address of additional supervisor (if applicable)

Address and Phone Number

Work Address

Phone Number

Part A: OCCUPATIONAL AND ENVIRONMENTAL RISK FACTORS

1. Animal Contact Setting

Check all that apply

☐ I have no contact with animals or animal tissues through my employment or studies at UW-Madison

☐ I have contact with animals or animal tissues through a university offered course or courses
List course name(s) or number(s)

☐ I have contact with university owned animals or animal tissues through my employment as an Animal Research Technician, Laboratory Veterinary Technician, Laboratory Animal Veterinarian, or similar animal care-taker position (e.g. Farm Animal Workers)

☐ I have no direct contact with animals or animal tissues, but I currently work or may work in areas where animals are used or housed (this includes administrative, facility, maintenance, and safety personnel who provide service support to animal care facilities, including equipment and devices housed there)

☐ I am the PI for an animal use protocol or have contact with animals in teaching or research through an approved animal care and use protocol
List protocol number(s) if known

☐ I am a veterinary medical student

☐ I have contact with client-owned animals in the Veterinary Medical Teaching Hospital (VMTH) (This includes: faculty with clinical duties, staff veterinarians, and residents; veterinary technicians and barn personnel; reception, medical records, and other VMTH office staff; pharmacists, pharmacy staff, and central supply staff; VMTH employed facility and maintenance personnel)

☐ I am a member of an animal care and use committee (this includes lay or community members)

Additional Comments Regarding Animal Contact Setting

2. Species of Animal and Type of Contact

Read the key and indicate the type of contact for each animal species

Type of Contact Key
1. No contact of any kind with the species
2. No direct contact (typically an inspector, administrative staff or physical plant employees)
3. Animal husbandry or animal care
4. Contact with unfixed tissues or body fluid only

5. Handle, restrain, administer substances to animals, etc. in teaching or research
6. Collect tissues or body fluid specimens, perform surgery or other invasive procedures, provide veterinary care or necropsy

**Wild Rodents
☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Rat
☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Any/all species of client owned animal(s)
☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Hamsters, gerbils, or guinea pigs
☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Mice
☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Reptiles
☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Frogs and/or other amphibians
☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Fish
☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Birds, Poultry
☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Dogs
☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Cats
☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Rabbits
☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Ferrets
☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Pigs
☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Goats
☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Sheep
☐1 ☐2 ☐3 ☐4 ☐5 ☐6

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**Horses

☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Cattle

☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Old World Monkey (e.g.: Macaque)

☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Other Non-Human Primate

☐1 ☐2 ☐3 ☐4 ☐5 ☐6

**Other Wild Mammal

☐1 ☐2 ☐3 ☐4 ☐5 ☐6

Specify Other Type of Wild Animal

Other Type of Animal

☐1 ☐2 ☐3 ☐4 ☐5 ☐6

Specify Other Type of Animal

Additional Comments Regarding Animal Exposure

3. Hazards Associated With Animal Contact

Complete the following section for each agent you are exposed to in conjunction with animal studies. You MUST place a response in each row. For any yes response please specify the specific agent(s) in the text box provided (if known).

**Infectious agent(s)

○ Yes ○ No ○ Unsure

**Human cells or tissues

○ Yes ○ No ○ Unsure

**Recombinant DNA

○ Yes ○ No ○ Unsure

**Genetically altered material(s)

○ Yes ○ No ○ Unsure

**Radioactive material

○ Yes ○ No ○ Unsure

**Toxic chemicals

○ Yes ○ No ○ Unsure

**Anesthetic gases

○ Yes ○ No ○ Unsure

**Carcinogen, mutagen or teratogen

○ Yes ○ No ○ Unsure

Other agent

○ Yes ○ No ○ Unsure

Additional Comments Regarding Hazards

4. Personal Protection Equipment

For each type of Protective Equipment check "Yes" for the items you currently use or will be using (if known) when doing your work and "No" for items you do not use.

**Disposable gloves

○ Yes ○ No

Type of gloves

☐ Nitrile ☐ Vinyl ☐ Latex ☐ Not sure what type

**Heavy leather gloves

○ Yes ○ No

**Laundered gown or lab coat

○ Yes ○ No

**Disposable gown or lab coat

○ Yes ○ No

**Tyvek Sleeves

○ Yes ○ No

**Head Cover

○ Yes ○ No

**Face Shield

○ Yes ○ No

**Safety Glasses

○ Yes ○ No

**Safety Goggles

○ Yes ○ No

** Disposable Coveralls

○ Yes ○ No

** Laundered Coveralls

○ Yes ○ No

** Boots

○ Yes ○ No

** Shoe Covers

○ Yes ○ No

** Dedicated Footwear

○ Yes ○ No

** Hearing Protection

○ Yes ○ No

** Surgical Mask

○ Yes ○ No

** Respirator/Mask

○ Yes ○ No

If yes, answer a. - d.

a. *Type of Respirator/Mask*

☐ N-95 ☐ N-100 ☐ Half-Face ☐ Full-Face ☐ PAPR ☐ Unsure

b. *Date (approximate) of last medical clearance to wear a respirator*

c. *Period of approval* --select one--

d. *Date (approximate) of last mask fit test*

** Other personal protective equipment/item

○ Yes ○ No

Additional Comments Regarding Protective Equipment

PART B: PERSONAL HEALTH HISTORY

Immunization Status and History

** 1. Have you been immunized against tetanus?

○ Yes ○ No ○ Don't Know

Year of last tetanus immunization:

Tetanus immunization should be updated every ten years

** 2. Have you been immunized against hepatitis B?

○ Yes ○ No ○ Don't Know

Year of last hepatitis B immunization:

For personnel with a reasonable possibility of exposure to human blood or other potentially infectious human material, hepatitis B vaccine is available at no charge. Contact UHS at 608-265-5610 for further information.

**3. Have you been immunized against rabies?

○ Yes ○ No ○ Don't Know

Year of initial rabies immunization:

If your rabies vaccination was more than two years ago, have you had your titre checked within the past two years?

○ Yes ○ No ○ Don't know

Year of last rabies titre check

If you are a veterinarian, vet tech or vet student or have contact with wild caught animal(s) a rabies vaccination or titer should be completed within the last two years.

Tuberculin Surveillance and History

Tuberculin testing must be completed every 6 months for those working in primate facilities.

Alternatively, those with a history of positive reaction to the TB skin test will need to arrange a medical evaluation annually and secure a written fitness for duty statement from University Health Services or their personal medical provider.

**1. Date of last tuberculosis skin test (Purified Protein Derivative)

Results of last TB skin test

○ Negative ○ Positive ○ Unsure

Facility where test was administered

**2. Have you received the tuberculosis vaccine Bacillus Calmette Guerin (BCG)?

○ Yes ○ No ○ Unsure

Year of last BCG vaccination

**3. If you have tested positive to the tuberculosis skin test in the past, have you ever received medical clearance indicating that you are free of active tuberculosis"

○ Yes ○ No ○ Don't know ○ Not applicable (never had positive test)

If yes, date of last medical clearance

Have you ever received a Quantiferon gold or T-spot test?

○ Yes ○ No ○ Unsure

If yes, indicate date and result

4. Please check any of the following symptoms you have experienced since your last TB skin test

☐ Persistent cough (>3 weeks duration)
☐ Hemoptysis (coughing up blood)
☐ Weight loss (unplanned)
☐ Lethargy/weakness/easy fatigability
☐ Night sweats
☐ Fever
☐ Chills
☐ Loss of appetite
☐ None

Additional Comments on TB Surveillance and History

Environmental Allergies, Asthma, Skin Problems, and General Health Status

The Occupational Health Program is able to assist personnel with allergy or asthma symptoms. Personnel protective equipment, respirator use, and area ventilation support is available upon request. An assessment by a board certified occupational health physician that specializes in work related allergies and asthma can be provided at no charge. Contact the Occupational Health Program at 608-265-5610 for more information and assistance.

**1. Are you allergic to any animals?

○ Yes ○ No ○ Don't know

If no, skip to 2

List the animals:

Have you been seen by a healthcare provider for animal allergies?

○ Yes ○ No ○ Don't know

**2. Have you developed any symptoms or illness as a result of your exposure to animals?

○ Yes ○ No ○ Don't know

If no, skip to 3

Describe the symptoms you experience when exposed to specific animal(s):

**3. Do you have any other known allergies?

○ Yes ○ No ○ Don't know

If no, skip to 4

List the causes of the allergies:

List the symptoms that occur when you are suffering from your allergies:

List the treatments that relieve your allergies:

**4. Do you have asthma?

○ Yes ○ No ○ Don't know

If no, skip to 5

List the cause(s)/trigger(s) of the asthma if known:

**5. Do you have asthma (or any difficulty breathing) related to the animals that you currently work with?

○ Yes ○ No ○ Don't know

If no, skip to 6

Have you been seen by a healthcare provider for this? ○ Yes ○ No

**6. Do you experience shortness of breath?

○ Yes ○ No ○ Don't know

If no, skip to 7

Explain:

**7. Do you have any skin rashes related to your work (e.g. reactions to latex, dry or cracked skin, other rashes)?

○ Yes ○ No ○ Don't know

If no, skip to 8

Explain:

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**8. Do you have any chronic medical illnesses?

○ Yes ○ No ○ Don't know

If no, skip to 9

Explain:

**9. Are you currently under the care of a healthcare provider for acute or chronic medical conditions (high blood pressure, diabetes, arthritis, heart conditions, headaches, lung, kidney, cancer or immunosuppression)?

○ Yes ○ No ○ Don't know

If no, skip to 10

Explain:

**10. Do you take any medications (prescription drugs or over the counter) on a regular basis? You do not need to list medications for sexual functioning or for mental health diagnoses unless they cause drowsiness or confusion.

○ Yes ○ No ○ Don't know

If no, skip to 11

If you take medications and do not want to list them on the form, then you must
Check the box below that says "will schedule an appointment"
After completing and submitting the form, call 265-5610 to make your appointment for ACRQ review of medications
NOTE: Your ACRQ clearance will not be completed until after your appointment.

☐ Will schedule an appointment

List medications:

**11. Do you have house pets that could be responsible for allergic symptoms or represent a disease transmission hazard?

○ Yes ○ No ○ Don't know

If no, skip to next section

Explain:

Additional Comments on General Health

Individuals Working with Sheep

You may skip to the next section if you do not work with sheep

Work with sheep has been associated with exposure to Coxiella burnettii, an organism known to cause a disease called Q-Fever. This illness can be severe in individuals with pre-existing health conditions or who may be pregnant.

1. Do you have a history of known heart valvular disease (heart murmurs) or congenital heart disease?

○ Yes ○ No ○ Don't know ○ Not applicable (do not work with sheep)

2. Do you now have or have you ever had Q-fever (Coxiella burnettii infection)?

○ Yes ○ No ○ Don't know ○ Not applicable (do not work with sheep)

Additional Comments on Working With Sheep

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Individuals Working with Non-Human Primates

Skip to the next section if you do not work with non-human primates

1. Have you had naturally acquired measles (rubeola)?

○ Yes ○ No ○ Don't know ○ Not applicable (do not work with NHP)

If no, skip to 2

Year of measle illness:

2. Have you had measles immunization?

○ Yes ○ No ○ Don't know ○ Not applicable (do not work with NHP)

If no, skip to next section.

Year of measle immunization:

Additional Comments Regarding Working With Non-Human Primates

PART C: HEALTH CONCERNS

**1. Do you have any health or workplace concerns not covered by the questionnaire that you feel may affect your occupational health and that you would like to confidentially discuss with the Occupational Health Provider?

○ Yes ○ No

If Yes, explain in text box below

For certain types of animal work, individuals who are immune-compromised, pregnant, considering getting pregnant, breast-feeding or who have certain medical conditions may have additional concerns other than allergies. These individuals are encouraged to consult with their personal healthcare providers regarding such matters. They are also welcome to speak with the occupational medicine provider to discuss any health or workplace concerns not covered by this questionnaire. The Occupational Health Program has additional specialized medical resources available for your assistance.

If you have any disability for which you believe you will require an accommodation in order to perform your job, it is your responsibility to inform your supervisor and request a workplace accommodation.

PART D: CERTIFICATION SIGNATURE

**Acknowledgement of form completion:

☐ I have read the information provided on this form. **

☐ I have completed this form to the best of my recollection. **

☐ I am aware that deliberate misrepresentation may jeopardize my health.

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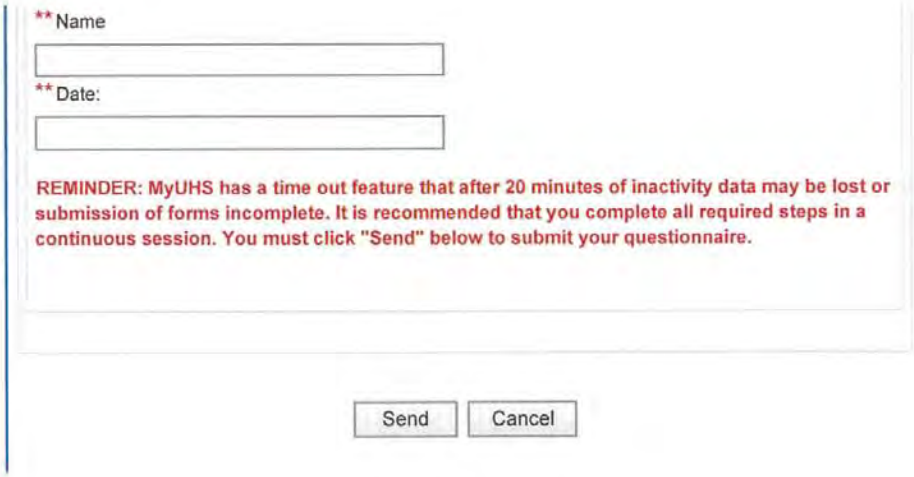

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APPENDIX 5B

Medical Evaluation Form

5B: Annual Questionnaire

University Health Services at UW-Madison

UHS UNIVERSITY HEALTH SERVICES

Welcome, Harry Spyder | Logout

Compose New Secure Message

Recipient: HIM OM
Message Type: OM ACRQ-Annual
Subject: OM ACRQ-Annual

Items marked with ** are required.

ANIMAL CONTACT RISK QUESTIONNAIRE - ANNUAL

To assure occupational health annual risk assessment for those identified by UW Madison ACAPAC policy (and compliance with AAALAC and Federal agencies such as NIH), an Animal Contact Risk Questionnaires MUST be completed annually.

Prior to contact with animals the Baseline ACRQ is completed. If you have NEVER completed an ACRQ please exit this form and complete the ACRQ Baseline.

If you are unsure which form to complete, contact UHS Occupational Medicine at 608-265-5610.

IMPORTANT NOTE: MyUHS has a time out feature. It is recommended that you complete all required steps in a continuous session.

Supervisor Contact Information

This information will be used to determine who your compliance reports will be sent to

** NAME OF *PRIMARY* SUPERVISOR, SPONSORING PI FOR VISITORS OR COURSE INSTRUCTOR FOR STUDENTS:

PHONE NUMBER OF *PRIMARY* SUPERVISOR, PI OR INSTRUCTOR:

** E-MAIL ADDRESS OF *PRIMARY* SUPERVISOR, PI OR INSTRUCTOR:

NAME OF *ADDITIONAL* SUPERVISOR or *SECONDARY* CONTACT:

PHONE NUMBER OF *ADDITIONAL* SUPERVISOR OR *SECONDARY* CONTACT (if applicable):

E-MAIL ADDRESS OF *ADDITIONAL*SUPERVISOR (if applicable):

Your Contact Information

**WORK ADDRESS:

**PHONE NUMBER:

PART A: OCCUPATIONAL AND ENVIRONMENTAL RISK FACTORS

Animal Contact Setting

Enter any information that applies to your employment or academic status

JOB TITLE(S):
DEPARTMENT(S):
WORK LOCATION/UNIT(S):
PROTOCOL NUMBER(S):
ACADEMIC MAJOR:
COURSE NAME/NUMBER:

Check all that apply. Some individuals may be in more that one UW status

**UW STATUS:

- ☐ UW Employee
- ☐ Undergraduate Student
- ☐ Contract worker (working at UW but employed/paid by another entity)
- ☐ IACUC member
- ☐ Graduate student
- ☐ Affiliate/Other (e.g. guest, visiting scientist/scholar)

Affiliates must provide specific information regarding work and role in the text box below

PLEASE DESCRIBE YOUR ROLE AND THE TYPE OF WORK OR ACADEMIC EXPOSURE YOU HAVE TO ANIMALS, ANIMAL TISSUE OR BODILY FLUID. ***If you have multiple roles or are both a student and UW employee describe each role (e.g. ART at LAR, undergrad student/Zoology major, 2nd year vet student, Vet tech at SVM, PI, IACUC member)***

Working Conditions

**HAVE YOUR WORK ACTIVITIES OR WORKING CONDITIONS CHANGED SIGNIFICANTLY SINCE YOUR LAST ACCRQ REVIEW?

○ Yes ○ No

PLEASE EXPLAIN ANY CHANGES OR ANY CONCERNS YOU HAVE REGARDING YOUR WORKING CONDITIONS:

Animal Species

**HAS THE TYPE OF CONTACT OR ANIMAL SPECIES YOU WORK WITH CHANGED?

○ Yes ○ No

If YES, indicate all animal contact you currently have below.
If NO: skip to the next section "Hazards associated with animal contact"

Read the key and indicate the type of contact for each animal species below. Species you do not have contact with may be left blank.

Type of Contact Key

1. No contact of any kind with the species
2. No direct contact (typically an inspector, administrative staff or physical plant employees)
3. Animal husbandry or animal care
4. Contact with unfixed tissues or body fluid only
5. Handle, restrain, administer substances to animals, etc. in teaching or research
6. Collect tissues or body fluid specimens, perform surgery or other invasive procedures, provide veterinary care or necropsy

RATS
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
MICE
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
HAMSTERS, GERBILS OR GUINEA PIGS
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
RABBITS
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
HORSES
☐1 ☐2 ☐3 ☐4 ☐5 ☐6

PIGS
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
GOATS
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
SHEEP
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
CATTLE
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
DOGS
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
CATS
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
FERRETS
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
OLD WORLD MONKEY (eg: Macaque)
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
OTHER NON-HUMAN PRIMATES
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
BIRDS, POULTRY
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
REPTILES
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
FROGS AND/OR OTHER AMPHIBIANS
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
FISH
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
ANY/ALL SPECIES OF CLIENT OWNED ANIMAL(S)
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
WILD RODENTS
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
OTHER TYPE OF WILD MAMMALS
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
Specify Other Type of Wild Mammal
OTHER TYPE OF ANIMAL
☐1 ☐2 ☐3 ☐4 ☐5 ☐6
Specify Other Type of Animal

Hazards Associated With Animal Contact

**HAVE ANY OF THE HAZARDS YOU WORK WITH CHANGED?

○ Yes ○ No ○ Unsure

If YES, check any type of hazard you currently encounter or have possible exposure to in your work or academic activities
If NO: skip to the next section "Personal Protection Equipment"

☐ INFECTIOUS AGENT(S)
List agent(s)
☐ HUMAN CELLS OR TISSUES
List agent(s)
☐ RECOMBINANT DNA
List agent(s)
☐ GENETICALLY ALTERED MATERIAL(S)
List agent(s)
☐ RADIOACTIVE MATERIAL(S)
List agent(s)
☐ TOXIC CHEMICALS(S)
List agent(s)

☐ ANESTHETIC GAS(ES)
List agent(s)

☐ CARCINOGEN(S), MUTAGEN(S), TERATOGEN(S)
List agent(s)

☐ OTHER
List agent(s)

Personal Protection Equipment

** IS YOUR PERSONAL PROTECTIVE EQUIPMENT DIFFERENT THAN REPORTED IN PRIOR ACRQ?

○ Yes ○ No ○ Unsure

Please list any changes since last ACRQ

** DO YOU WEAR A RESPIRATOR? *Surgical masks do not qualify as respirators*

○ Yes ○ No ○ Unsure

If yes, what type(S)?

☐ N-95 ☐ N-100 ☐ Half-Face ☐ Full-Face ☐ PAPR ☐ Unsure what type

If yes, have you been fit tested for this respirator in the past year?

○ Yes ○ No ○ Don't know

PART B: PERSONAL HEALTH HISTORY

Environmental Allergies, Asthma, Skin Problems

** 1. HAVE YOU DEVELOPED ANY NEW ALLERGIES IN THE PAST YEAR?

○ Yes ○ No ○ Unsure

If yes, explain:

** 2. ARE YOU ALLERGIC OR POSSIBLY ALLERGIC TO ANY ANIMAL(S) THAT YOU CURRENTLY WORK WITH?

○ Yes ○ No ○ Unsure

If yes, list the animal(s) and symptoms you experience:

** 3. ARE YOU ALLERGIC TO PETS OR ANY OTHER ANIMALS OUTSIDE YOUR WORK ENVIRONMENT?

○ Yes ○ No ○ Unsure

If yes, list the animals and symptoms you experience:

** 4. DO YOU HAVE OTHER KNOWN ALLERGIES?

○ Yes ○ No ○ Unsure

If yes, list the allergies and symptoms you experience?

**5. LIST ANY MEDICATIONS OR OTHER TREATMENTS THAT RELIEVE YOUR SYMPTOMS (enter none if applicable):

**6a. DO YOU HAVE ASTHMA OR BREATHING PROBLEMS?

○ Yes ○ No ○ Unsure

**6b.DO YOU HAVE ASTHMA OR BREATHING PROBLEMS RELATED TO THE ANIMALS YOU CURRENTLY WORK WITH?

○ Yes ○ No ○ Unsure

If yes to question 6a or 6b, list the cause(s) or trigger(s) of the asthma including animals or other agents in your workplace. If you do not know write "unknown"

If yes to question 6a or 6b, have you been seen by a healthcare provider for this?

○ Yes ○ No

**7.DO YOU HAVE ANY SKIN PROBLEMS RELATED TO YOUR WORK (e.g. reactions to latex, dry or cracked skin, other rashes)?

○ Yes ○ No ○ Unsure

If yes, describe:

General Health Status

**1. HAVE YOU BEEN DIAGNOSED WITH ANY NEW MEDICAL PROBLEMS SINCE YOU LAST ACRQ?

○ Yes ○ No ○ Unsure

If yes, describe:

**2. DO YOU HAVE A HISTORY OF HEART DISEASE OR ANY CHRONIC MEDICAL CONDITIONS e.g. high blood pressure, diabetes, arthritis, headaches, lung, kidney, cancer, immunosuppression?

○ Yes ○ No ○ Unsure

If yes, describe:

**3. DO YOU TAKE ANY MEDICATIONS (PRESCRIPTION DRUGS OR OVER THE COUNTER) ON A REGULAR BASIS? YOU DO NOT NEED TO LIST MEDICATIONS FOR SEXUAL FUNCTIONING OR FOR MENTAL HEALTH DIAGNOSES UNLESS THEY CAUSE DROWSINESS OR CONFUSION. ○ Yes ○ No ○ Unsure

If no, skip to the next section

If you take medications and do not want to list them on the form, then you must
Check the box below that says "will schedule an appointment"
After completing and submitting the form, call 265-5610 to make your appointment for ACRQ review of medications
NOTE: Your ACRQ clearance will not be completed until after your appointment.

☐ Will schedule an appointment

List medications:

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PART C: HEALTH CONCERNS

**DO YOU HAVEANY HEALTH OR WORKPLACE CONCERNS NOT COVERED BY THE QUESTIONNAIRE THAT YOU FEEL MAY AFFECT YOUR HEALTH AND THAT YOU WOULD LIKE TO DISCUSS CONFIDENTIALLY WITH AN OCCUPATIONAL HEALTH PROVIDER?

○ Yes ○ No

If Yes, explain:

PART D: ADDITIONAL INFORMATION

The Occupational Health Program is able to assist personnel wth allergy or asthma symptoms. Personnel protective equipment, respirator use, and area ventilation support is available upon request. An assessment by a board certified occupational health physician that specializes in work related allergies and asthma can be provided at no charge. Contact the Occupational Health Program at 608-265-5610 for more information and assistance.

For certain types of animal work, individuals who are immune-compromised, pregnant, considering getting pregnant, breast-feeding or who have certain medical conditions may have additional concerns other than allergies. These individuals are encouraged to consult with their personal healthcare providers regarding such matters. They are also welcome to speak with the occupational medicine provider to discuss any health or workplace concerns not covered by this questionnaire. The Occupational Health Program has additional specialized medical resources available for your assistance.

If you have any disability for which you believe you will require an accommodation in order to perform your job, it is your responsibility to inform your supervisor and request a workplace accommodation.

It is important that all questions have been answered completely. If you experience changes to your medical status, you should contact University Health Services Occupational Medicine 608-265-5610.

PART D: CERTIFICATION SIGNATURE

**ACKNOWLEDGEMENT OF FORM COMPLETION

☐ I have read the information provided on this form.
**

☐ I have completed this form to the best of my recollection.
**

☐ I am aware that deliberate misrepresentation may jeopardize my health.

**NAME

**DATE

REMINDER: MyUHS has a time out feature. It is recommended that you complete all required steps in a continuous session. You must click "Send" below to submit your questionnaire.

6-25-15

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Send Cancel

APPENDIX 6

IACUC Membership Roster

INSTITUTION NAME: **School of Medicine and Public Health Animal Care Committee-University of Wisconsin-Madison** DATE 21 June 2017
MEMBERSHIP OF INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE ASSURANCE NUMBER: A3368-01

MEMBER NAME	DEGREE & CREDENTIALS	POSITION TITLE	AFFILIATION WITH INSTITUTION	ADDRESS & PHONE OF CHAIR
Voting				
[redacted]	PhD	Professor	Neuroscience	[redacted]
[redacted]	PhD	Associate Professor	Anesthesiology	
	BS, MBA	[redacted]	Animal Research Safety (Biological Safety Office, Environmental Health and Safety)	
[redacted]	PhD	Associate Professor	Medicine	
	MS	Distinguished Researcher	Surgery	Vice chair
	PhD	Professor	Pharmacy	
	DVM	Laboratory Animal Veterinarian	RARC	
	PhD, DVM, DACLAM	Senior Program Veterinarian	RARC	
	PhD	Professor Emeritus	Neuroscience	
	BA	[redacted]	Nonscientist	
	PhD	Senior Scientist	Neurological Surgery	
	DVM, Dipl. ACLAM	Laboratory Animal Veterinarian	RARC	
	PhD	Professor	Dermatology	
	JD	Retired	Nonscientist	
		[redacted]	Nonaffiliated	
Voting Alternates				
[redacted]	BS	Alternate for [redacted]	Animal Research Safety	
	BS	Alternate for [redacted]	Animal Research Safety	
	DVM, MPH, PhD, Dipl.ACLAM	Chief Campus Veterinarian; Alternate for [redacted]	RARC	
Ex officio - Voting				
none				
Ex officio - Non-voting				
[redacted]	MS	Animal Program Assessment Specialist	RARC	
[redacted]	MS	[redacted]	RARC	
	PhD	Animal Program Assessment Specialist	RARC	
[redacted]	BS	Animal Program Assessment Specialist	RARC	
	MA	[redacted]	RARC	
	PhD		RARC	

*indicates Chairperson **indicates nonaffiliated member ***indicates nonscientific member n=15, quorum=8

APPENDIX 7

Blank IACUC Protocol Forms:

7A: *Online Biomedical Protocol Form (ARROW)*
7B: *Online Other Miscellaneous Protocol Form (ARROW)*
7C: *Blank Paper Protocol Form*

APPENDIX 7A

Online Biomedical Protocol Form (ARROW)

Please Note:
Some boxes are checked on the following form to enable all sections and questions to appear.

Online ARROW Biomedical Protocol Application

PRINTED ON: 4/10/2017

University of Wisconsin-Madison Institutional Animal Care and Use Committee (IACUC) IACUC Protocol Application	Protocol # : IS00002435 Date Approved : N/A Expiration date : N/A

PRINTED ON: 4/10/2017

PROTOCOL BASICS

1. **Protocol title**
   Give your protocol a title.
   *

2. **PI name**
   Click Change to choose a different name. If you can't find the name you want, email arrow_help@rarc.wisc.edu.
   * [redacted]

3. **PI Status**
   Is the named PI (select one):
   *
   - ○ Faculty
   - ○ Emeritus appointment
   - ◉ Other

4. **PI department**
   Enter the PI's department name.
   * RARC

5. **Protocol renewal**
   Is this application a renewal of a previously approved paper protocol?
   * ○ Yes ◉ **No**

   Previous protocol
   If yes, please provide the current protocol number (e.g., M01234 or V00789).

6. **Protocol writers**
   Other than the PI, who can write and modify this protocol? Add up to two names by typing the last name in the search box and selecting from the drop down or clicking on the "Add" button to locate the person. If you can't find a name you want, please email arrow_help@rarc.wisc.edu
   Person
   There are no items to display

7. **Email contacts**
   Select up to two (2) email contacts by typing the last name in the search box and selecting from the drop down or clicking on the "Add" button to locate the person. If you can't find the name you want, please email arrow_help@rarc.wisc.edu.
   Person
   There are no items to display

8. **Emergency contacts**
   Select up to two emergency contacts (at least one contact is required) who are authorized to act in an animal emergency if the Principal Investigator is not available. These must be individuals who understand the research and can answer questions in a PI's absence. Type the contact's last name in the search box and select from the drop down or click the "Add" button to locate the person
   *
   Person
   [redacted]

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FUNDING

Identify all funding sources that support your protocol.
If you have questions about grant-protocol congruence, email or submit the Congruence Review Request Form to congruence@rarc.wisc.edu.

1. **Research and Sponsored Program (RSP) – managed funding**

   Do you have a grant or contract funding this project (federal or non-federal)?

   PI Name Award Number (MSN #) Project Title Sponsor Reference Number Project ID Sponsor (Source)
   There are no items to display

2. **Other funding**

   Add other funding.

Project Title	PI Name	Award Number (MSN #) / Project ID (PRJXXX)	Start Date	End Date	Grant Status	Sponsor (Source)

   There are no items to display

3. **Public Health Service (PHS) funding**

   Are any of the funding sources above directly from or subawards from NIH, NSF, or other Public Health Service (PHS) agencies? See [https://en.wikipedia.org/wiki/United_States_Public_Health_Service] for a list of PHS agencies.

   * ○ Yes ◉ **No**

PROTOCOL TYPE

1. **Select agents**

   Does this protocol involve the administration of biological select agents/toxins or is your proposed work conducted in a Registered Space? See the CDC's Select Agents and Toxins List for guidance.

   Note! Controlled substances such as Ketamine and Pentobarbital are NOT select agents. If you are working with controlled substances, select "No."

   If you are unsure about the status of your agent or if you'll work in Registered Space, contact [redacted]

   * ○ Yes ◉ **No**

2. **Infectious disease**

   Does this protocol include work with infectious disease?

   * ○ Yes ◉ **No**

3. **Protocol type**

   What type of protocol are you submitting? Select one.

   * Biomedical Research and Basic Biology and/or Teaching and/or Colony Management

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VA ACORP

1. **VA ACORP**

Is your work also described in an approved Veterans Administration Animal Component of Research Protocol (ACORP)?

* ○ Yes ◉ No

VA researchers must complete this entire UW protocol application to provide answers about procedures and/or housing at UW facilities.

ACORP files

If yes, add the current approved ACORP(s).

There are no items to display

SIGNIFICANCE and JUSTIFICATION

1. **Significance of work**

Using nontechnical (lay) language that a high-school student would understand, briefly describe the goals of your study including an explanation of how your work will advance knowledge, improve human or animal health, or benefit society. Do NOT use technical language that would be used in a grant application.
At the end of your response, describe briefly and in nonscientific language how you plan to interpret the collected data to meet the goals of the study.

*

2. **Justify use of animals**

Explain why you must use live vertebrate animals instead of nonanimal alternatives such as computer simulation or in vitro systems.

*

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EXPERIMENTAL NARRATIVE

1. **Experimental narrative**

In language that scientific colleagues outside your discipline would understand, please provide a global, chronological summary of your experiments that focuses on the experience of the animals from initial assignment to final disposition. Your answer should allow IACUC members to understand the experience of all animals assigned to this protocol. Briefly outline all proposed surgeries, non-surgical procedures, and other manipulations, but do not include experimental details here. You will provide specific protocol details such as breeding schemes, blood draw amounts, complete surgical descriptions, euthanasia methods, drug dosages, drug routes, etc., later in this protocol.

You do not need to describe animal housing arrangements or other standard husbandry practices here unless those practices will differ from the practices supported by the normal operations of the vivarium staff. If you are unsure if your study-specific husbandry practices are different from the standards provided by the vivarium staff, consult with an RARC research animal veterinarian, WNPRC veterinarian, or the supervisor of the animal facility.

2. **Supporting publications/manuscripts (optional)**

List the title/name of manuscripts, abstracts, or other references supporting your research that the IACUC may find helpful in evaluating this protocol. Do not list standard husbandry references.

3. **Summary files**

Attach file(s) with timelines, illustrations, figures, or other supplemental information that provides an overview of the protocol. Do not attach copies of grant applications.

There are no items to display

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DUPLICATION SEARCH

Describe the search terms and strategy you used to determine that your experiments will not be unnecessarily redundant.

1. **Duplication databases**
   List two or more databases searched (e.g., AltWeb, Biological Abstracts, NORINA, PubMed, etc.):
   * .
2. **Duplication years covered**
   Indicate the timeframe covered by search (yyyy-yyyy):
   * .
3. **Duplication recent search**
   Indicate the date of the most recent search (mm/dd/yyyy):
   * 4/10/2017
4. **Duplication keywords**
   List the keywords used for search:
   * .
5. **Duplication other**
   List any other methods you used to determine that you did not unnecessarily duplicate other research and/or involve animals in teaching. This should be secondary to the database search. Examples of other sources are conference attendance, professional expertise, specific journal articles, training, etc.
6. **Duplication narrative**
   Provide a brief narrative description of how the search results were evaluated to avoid unnecessary duplication. Please state if the research proposed in this protocol was determined to be novel. **If not**, describe why it is necessary to repeat previously published findings as part of this research endeavor.
   * .

SELECTED SPECIES

You must click on the Species Details button next to each species' name below to answer a series of questions about it.

When you are finished answering questions for all species, click Continue or save and exit.

You can exit before answering all questions and return later to finish.

To REMOVE a species, click the trash can icon on the applicable row below. You must have more than one species to remove one.

To add additional species not shown below, check the box: No

Species Details	Species	Max. Number	Surgery?	MSS?	Breeding?	GM?	USDA Code	Print	Complete?
Species Details	Laboratory mouse	0	yes	yes	yes	yes	B		

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SELECT STUDY TEAM

1. **Study team**

   Add all research personnel, including the PI, who will work with animals under this protocol. Do NOT include animal facility supervisors, professional animal care staff, or research animal veterinary staff. DO add protocol writers and email contacts if they will work with animals. If a study team member or a lab member won't be handling animals for over 30 days, or you can't find a name in the drop down, email arrow_help@rarc.wisc.edu.

   *

	Name	Office phone	Lab phone	Cell phone	Email
View	[redacted]	[redacted]			[redacted]@rarc.wisc.edu

2. **Study team groups**

   List GROUPS that will work with animals on this protocol (e.g., 4th year veterinary students, SPI). Do NOT name individuals. Do NOT include assignments.

   .

3. **PI oversight**

   If the PI (him or herself) will not be handling or working with a live species, explain how the PI will provide the oversight necessary for compliance with animal program regulations and requirements.

4. **Supervisor/trainer for staff with < 1 yr experience**

   For any individuals added to the study team who may not have at least one year of experience, please state who will train and supervise.

   * .

5. **Confirm Training**

   Please confirm that all study team members have completed the Animal Contact Risk Questionnaire and are medically cleared to handle animals. For assistance, contact [redacted] at University Health Services, [redacted]

   * .

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ASSIGNMENTS AND QUALIFICATIONS

Click ADD to associate members with species and painful procedures.
To see an individual's education and experience, click the icon next to their name on the ADD pop-up (go to Help for how profiles are managed).
To remove a member, return to the Select Study Team page.

NOTE: ALL study team members MUST be assigned to at least one species.
ALL painful/distressful procedures and surgeries must be associated with at least one staff member.

1. **Study team member assignments**

View

Name	[redacted]
Species	Laboratory Mouse
Painful nonsurgical procedures	, .
Surgeries	. (Minor survival)
RARC classes	Animal User Orientation - 2017-02-27 UW Animal Program Emergency Orientation - 2016-10-24 Guidelines for Working with Wildlife - 2014-12-30 Animal User Orientation -... **read more...**
Education	*No Value Entered*
Experience	I know how to use guinea pigs. And cats. And abominable snowmen. [redacted] provided hands-on training for using Sasquatch. Boop boop.

2. **Protocol-specific experience/training not included above for any study team member may be included here.**

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OCCUPATIONAL HEALTH AND SAFETY OF PERSONNEL

Use of hazardous materials requires separate review and approval by EH&S. The Principal Investigator is responsible for obtaining all relevant approval(s) prior to initiating work with hazardous materials.

1. **Occupational hazards**

Are any of the following used in the research involving live animals under this application? Check all that apply:
(If you have any questions regarding this section, please contact biosafety@fpm.wisc.edu.)

- [x] Biological hazards (zoonotic agents, human or animal pathogens, human cells, prions, etc.)
- [x] Chemical hazards (carcinogens, flammables, highly reactive, corrosives, etc.)
- [x] Physical hazards (UV light, magnetic fields, noise, electric shock, temperature, etc.)
- [x] Radiation and/or radioactive materials (irradiation, administration of radionuclides, etc.)
- [x] Recombinant materials (Transgenic animals and/or recombinant materials [viral vectors, microbes, cells, etc.] administered to animals)
- [x] Wildlife hazards
- [x] Other. If checked, you must describe in box below.
- [ ] NONE. None of the hazards listed above apply to research performed on living animals under this application.

Other hazards

If the type of hazard is not listed above, please briefly describe.

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BIOLOGICAL HAZARDS

Biological hazards or biohazards includes all microorganism and toxins produced by microorganisms that are human pathogens regardless of their transmissibility, invasiveness, virulence or lethality. Include human or primate-derived cells, tissues or other materials, as well as prions, and pathogenic fungi. Also include zoonotic pathogens (i.e., pathogens transmissible from animals to humans).

Note that most uses of biological hazards also require an approved UW-Madison Biosafety Protocol from the Office of Biological Safety (OBS). Contact OBS if assistance is needed to complete this section.

1. **Biohazard OBS**

   Is this work with biological hazards covered by an approved Biosafety Protocol?

   * Yes

   BH-OBS number

   If yes, please provide the OBS protocol number(s)

   .

2. **Biohazard table**

   The table below lists biohazards that have been added.

   *

   Biohazard details

   View

Biohazard name	.
Species	Laboratory mouse
Biosafety level	ABSL 1
Biohazard Risk	.
Containment animals	No special containment needed
PPE needed	Exam gloves - Nitrile
Waste	No special precautions needed for waste/dirty bedding
Carcasses	No special precautions needed for disposal use facility standard method

Upload files

Please upload files (optional).

There are no items to display

3. **Biohazard safety signage**

   Upload any biohazard safety signage associated with this protocol.

   There are no items to display

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CHEMICAL HAZARDS

Chemical hazards include chemicals that present a health hazard or physical risk. Chemicals that present a health hazard include carcinogens, drugs, mutagens, and teratogens. They also include chemicals that are irritants or toxins to the skin, eyes, lungs, neurologic system, or any other body part or system. Physically hazardous chemicals include flammables, combustibles, oxidizers, strong reactives, and compressed gas.

Note that the use of chemical hazards must be addressed in the Laboratory Chemical Hygiene Plan (CHP). Read additional information through the help icon above or contact the Chemical Safety Department (265-5000 or chemsafety@fpm.wisc.edu).

1. **Chemical Hygiene Plan**

   INFORMATIONAL: To ensure accurate and timely safety precautions for you and your lab staff, and to meet the Occupational Safety and Health Administration (OSHA) Laboratory Standard, every laboratory must have a Laboratory Chemical Hygiene Plan (CHP). If your laboratory does not have a CHP, contact the Chemical Safety Office to request the template form (265-5000 or chemsafety@fpm.wisc.edu). the Chemical Safety Office staff are also available to review existing CHP for completeness and accuracy.

   CHP files

   You may attach your current Chemical Hygiene Plan (CHP) here for reference. The ACUC will not review the CHP.

   There are no items to display

2. **Chemical detail table**

   The table below lists chemical hazards that have been added.

   *

   Chemical hazard details

   View

Regimen/Substance	.
Drugs and Compounds	.
Containment Preparation	No special containment needed
Species	Laboratory mouse
Containment Animals	No special containment needed
PPE needed	Exam gloves - Nitrile
Waste	No special precautions needed for waste/dirty bedding
Carcasses	No special precautions needed for disposal use facility standard method
Chemical Risk	.
Chemical SDS	Yes

3. **Chemical safety signage**

   Upload any chemical safety signage associated with this protocol.

   There are no items to display

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PHYSICAL HAZARDS

Physical hazards include ultraviolet and visible light, cold heat, noise, and vibration. It also includes non-ionizing radiation (electric fields, infrared, microwave, magnetic fields, static electricity, radio frequency, etc.). These become hazards when they are of sufficient intensity and/or duration to cause potential physical harm.

Contact Animal Research Safety for help completing this section.

1. **Physical hazards table**

The table below lists physical hazards that have been added.

Physical hazards list

View	Physical hazard name .
	Physical hazard risk .
	Physical hazard handling .

2. **Physical safety signage**

Upload any physical safety signage associated with this protocol.

There are no items to display

RADIOACTIVE HAZARDS

Radioactive hazards includes sources of ionizing radiation (X-rays, alpha, beta, etc.). Include radio labeled tracers and other administered radionuclides.

Note that use of radioactive materials also requires an approved Form 99A from the UW-Madison Office of Radiation Safety (ORS). Contact ORS for help completing this section.

1. **Rad 99A**

Is this work with radioactive material covered by an approved Form 99A from Radiation Safety?

* Yes

If yes, please provide date of approval.

.

2. **Rad housing return**

Will any animals containing radioactive material be returned to housing in an animal-care facility or laboratory?

* Yes, returned to animal-care facility housing

If yes, please explain.

.

Upload files

Please upload files (optional).

There are no items to display

3. **Radiation safety signage**

Upload any radiation safety signage associated with this protocol.

There are no items to display

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RECOMBINANT MATERIALS

Recombinant materials include any animal that carries fragments of one or more other species' genome by means of recombinant DNA technology. The donor organism(s) may be single or multi-celled. The offspring of such recombinant animals should also be included here.

Note that use of recombinant material also requires an approved UW-Madison Biosafety Protocol from the Office of Biological Safety (OBS). Contact OBS if assistance is needed to complete this section.

1. **Recomb OBS**

   Is this work with recombinant material covered by an approved Biosafety Protocol?

   * Yes

   OBS number

   If yes, please provide the OBS protocol number(s).

   .

2. **Recombinant materials table**

   The following recombinant materials were added.

   *

   Recombinant material details

   View

Recomb material	.
Biosafety level	ABSL 1
Recombinant hazard animal	Laboratory mouse
Containment animals	No special containment needed
PPE needed	Exam gloves - Nitrile
Waste	No special precautions needed for waste/dirty bedding
Carcasses	No special precautions needed for disposal use facility standard method

3. **Recombinant material safety signage**

   Upload any recombinant material safety signage associated with this protocol.

   There are no items to display

FINISH PROTOCOL

Note: To complete and submit the protocol, please choose from the steps below:

1. Select 'Hide/Show Errors' to check for any errors or omissions.
2. Select 'Exit' and you will be redirected to the protocol workspace.
3. If you are ready to submit, click "Ready to Submit", and then follow the instructions on the pop up window.

PLEASE NOTE: ONLY THE PI MAY SUBMIT THE INITIAL NEW OR RENEWED PROTOCOL.

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Laboratory mouse: JUSTIFY SPECIES CHOICE

1. **Justify species choice**
   Why is this species the most appropriate for your protocol?
   * .

Laboratory mouse: NUMBER OF ANIMALS

1. **Maximum 3-year total**
   During the entire three-year period of your protocol, what's the total maximum number of animals of this species that you'll use? Include control and replacement animals, breeding colony animals, all preweaned animals used for tissue samples, and euthanized animals.
   * 0
2. **Animal number justification**
   Why does your protocol need this maximum number? For each group, provide a statistical justification or cite your past experience. See ACAPAC policy 2013-051 for guidance and its Companion SOP for examples of acceptable justifications.
   *
   .
3. **Number files**
   Attach file(s) that support your determination of animal numbers. If possible, use tables to organize your information.
   There are no items to display

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Laboratory mouse: BIO SPECIES SOURCE

1. **Bio species source**

Check all sources that apply for this species.

*

- [x] Investigator at UW-Madison / including another protocol held by PI (please check for maximum flexibility in animal transfers)
- [ ] Approved vendor (e.g. Jackson labs, RARC breeding service, etc.)
- [ ] Bred under this protocol
- [ ] Investigator at non-UW Madison institution (Covance, other university)
- [ ] Unapproved vendor
- [ ] Capture or collection from wild (free-living) population
- [ ] Herd, flock, etc
- [ ] Client/privately owned animals
- [ ] Other

Bio unapproved or other source

If source is unapproved vendor or other, describe.

Laboratory mouse: PRIOR USE

1. **Prior use**

Were any of these animals used in another protocol?

* ○ Yes ◉ **No**

Prior describe

If yes, describe the prior use and explain how you have determined that the previous use of these animals will not compromise the research proposed in this protocol or the animals' health.

Consider previous nutritional manipulations, blood draws, drugs and materials administered, and other manipulations that might have compromised the animals' fitness for this protocol, or how the proposed study may adversely impact animals given their health history and assignment to earlier projects.

Animals that have undergone a major surgical procedure, permanent physiologic alteration, or substantial impairment on a previous protocol are not eligible for major surgical procedures on subsequent protocols.

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Laboratory mouse: BREEDING AND GENETICALLY MODIFIED Y/N

1. **Breeding**

   Does your protocol design include breeding of this species?

   * (•) Yes ( ) No

2. **Genetically modified**

   Will any of this species be genetically modified either through a breeding scheme on this protocol or through purchase of already genetically modified animals?

   * (•) Yes ( ) No

Laboratory mouse: BREEDING

1. **Breeding scheme**

   Describe your breeding scheme. Include number of females per male, continuous or interrupted mating, age range at weaning or separation (if appropriate), and criteria for culling old breeders.

   * .

2. **Breeding excess outcome**

   What will you do with animals that are bred in excess or that do not meet phenotype or genotype requirements?

   * .

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Laboratory mouse: GENETICALLY MODIFIED OR TRANSGENIC ANIMALS

1. **GM title**
   Provide the type, name, or brief descriptor of the genetically modified or transgenic (see help text for definition of transgenic) animals.
   *

2. **GM genetic modifications**
   Do the parental transgenic animals contain a transgene that is under the control of a gammaretroviral long terminal repeat (LTR) or more than one-half the genome of an exogenous eukaryotic virus?
   ○ Yes ◉ **No**

3. **GM complications**
   Do you expect complications with the phenotype of genetically modified or transgenic animals?
   *
   ◉ Yes
   ○ Unknown (new phenotype)
   ○ No

   GM manage
   If "Yes" is selected for "GM complications", describe the complications and how you will manage them.

   GM unknown
   If "Unknown (new phenotype)" is selected for "GM complications", how will you monitor animals with unknown potential complications?

4. **GM pain/distress**
   Will the phenotype be associated with any pain or distress to the genetically modified or transgenic animals?
   * ◉ **Yes** ○ No

   GM monitor
   If "Yes" is selected for "GM pain/distress", describe how you will monitor and treat pain or distress.

Laboratory mouse: SUBSTANCE ADMINISTRATION CHECKLIST

1. **Substance administration checklist**
   If you will administer substances, check all purposes that apply. Include delivery of materials to animals via injection, infusion, inhalation, implantation, ingestion of food/water, and other means. Include administration of radionuclides. Include nonstandard diets under all other substances.
   *
   ☑ analgesics/anesthetics/sedatives to relieve pain or distress caused by nonsurgical and/or surgical procedures
   ☑ euthanasia substance(s)
   ☑ all other substances
   ☐ I will not administer any substances.

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Laboratory mouse: SUBSTANCE ADMIN: ANALGESIC/ANESTHETIC/SEDATION

Used to relieve pain or distress an animal may experience as a result of the procedures and manipulations described in this species/group. For guidance on organizing information, click on the help icon above.

1. **Analgesic/anesthetic/sedation table**

Regimens

View	Regimen	.
	Drugs and Compounds	.
	Description	.
	Monitoring Plan	*No Value Entered*

Laboratory mouse: SUBSTANCE ADMIN: EUTHANASIA

If a substance is used to euthanize this species, it should be entered here. Include CO_2.

1. **Euthanasia substance table**

Regimens

View	regimen	.
	Drugs and Compounds	.
	description	.

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Laboratory mouse: SUBSTANCE ADMIN: ALL OTHER SUBSTANCES

For each substance or regimen, click "Add" to answer questions about its administration.

Describe the materials delivered to animals via injection, infusion, inhalation, implantation, ingestion in food or water, nonstandard diets, and by other means. Include administration of radionuclides via injection or in food.

Do not include substances used for **clinical relief** of pain or distress (anesthesia/analgesia) or for euthanasia of this species. See help for additional guidance.

1. **All Other substances table**

*

View

Substance name	.
Drugs and Compounds	.
category	.
Dosing details	.
purpose of use / monitoring	.
painful?	Yes
anesthesia/analgesia regimen	.

Laboratory mouse: SPECIAL SUBSTANCES

1. **Special substances**

*

- [x] cells, cell lines, tissues, or tissue products (animal and/or human)
- [x] complete Freund's adjuvant (CFA)
- [x] controlled substances (requiring DEA registration)
- [x] nonpharmaceutical-grade compounds
- [x] paralytic agents
- [ ] none of the above

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Laboratory mouse: CELL ADMINISTRATION

1. **Cell selection**
   Select the substances that are cells, cell lines, or tissue products.

Regimen/Substance	Drugs and Compounds	Species
☑ .	.	Laboratory mouse
☐ .	.	Laboratory mouse
☐ .	.	Laboratory mouse

2. **Cell evaluation**
   Describe the testing and precautions for possible animal pathogens in these cells, cell lines, tissues, or tissue products. Please see Policy 2007-033 for further details.
   *
   .

3. **Cell files**
   Attach file(s) if any outside testing was performed on cells, cell lines, tissues, or tissue products.
   There are no items to display

Laboratory mouse: Complete Freund's Adjuvant

1. **Complete Freund's Selection**
   *

Regimen/Substance	Drugs and Compounds	Species
☑ .	.	Laboratory mouse
☐ .	.	Laboratory mouse
☐ .	.	Laboratory mouse

2. **Complete Freund's Adjuvant justify**
   Use of CFA must be scientifically justified and a comprehensive search for alternatives considered. Please justify use of Complete Freund's Adjuvant (CFA) versus alternative adjuvant systems.
   *
   .

Laboratory mouse: Controlled Substances

Controlled substances are drugs regulated by the Drug Enforcement Administration.

1. **CS selection**
   Check all regimens that contain controlled substances.
   *

Regimen/Substance	Drugs and Compounds	Species
☑ .	.	Laboratory mouse
☐ .	.	Laboratory mouse
☐ .	.	Laboratory mouse

2. **DEA registrant**
   Name the DEA registrants for the controlled substances.
   *
   .

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Laboratory mouse: Nonpharmaceutical-Grade Administration

A pharmaceutical-grade chemical compound is defined by the NIH-OLAW and USDA-APHIS as any active or inactive drug, biologic, reagent, etc., that is approved by the FDA or for which a chemical purity standard has been written or established by any recognized pharmacopeia, such as the US Pharmacopeia [USP], the National Formulary [NF], the British Pharmacopoeia [BP], or the Pharmacopoeia of the Council of Europe [EP]. This includes compounds intended for use as investigational agents, for clinical purposes, and in terminal studies.

1. **Nonpharmaceutical-grade selection**

   Check the substances that are nonpharmaceutical-grade compounds. Those not checked, with rare exceptions, must be pharmaceutical grade.

   *

	Regimen/Substance	Drugs and Compounds	Species
☑	.	.	Laboratory mouse
☐	.	.	Laboratory mouse
☐	.	.	Laboratory mouse

2. **Nonpharmaceutical-grade use justification**

   Justify your use of each nonpharmaceutical-grade substance you'll administer.

   * .

3. **Nonpharmaceutical-grade preparation**

   If appropriate, describe the preparation method for each compound selected.

   .

4. **Nonpharmaceutical-grade files**

   Attach files with standard operating procedures or other supplementary information for the preparation or compounding of non-pharmaceutical-grade substances.

   There are no items to display

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Laboratory mouse: Paralytic Administration

Without exception, you can only use paralytics on a fully anesthetized animal. In addition, you must provide adequate ventilation during the time that an animal cannot breathe on its own.

1. **Paralytic selection**
   Select the substances that are paralytic agents.

   *

	Regimen/Substance	Drugs and Compounds	Species
☑	.	.	Laboratory mouse
☐	.	.	Laboratory mouse
☐	.	.	Laboratory mouse

2. **Paralytic use justification**
   Provide the scientific justification for each paralytic agent you will use.
   * .

3. **Paralytic number and monitoring plan**
   For each paralytic agent you'll use, indicate the number of this species to which it will be administered and describe how you will monitor during administration and recovery.
   * .

4. **Paralytic analgesia/anesthesia/sedation**

	Regimen/Substance	Drugs and Compounds	Species
☐	.	.	Laboratory mouse

Laboratory mouse: AGENTS

1. **Agents**
   *

- ☑ rDNA
- ☑ bacteria
- ☑ virus
- ☑ prion
- ☑ human-derived
- ☑ genetically altered
- ☑ toxin
- ☑ carcinogen
- ☑ mutagen
- ☑ teratogen
- ☑ radioactive
- ☐ none of the above

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Laboratory mouse: rDNA AGENTS ADMINISTRATION

1. **rDNA selection**
   Select the substances that are rDNA agents.

*

	Regimen/Substance	Drugs and Compounds	Species
☑	.	.	Laboratory mouse
☐	.	.	Laboratory mouse
☐	.	.	Laboratory mouse

2. **rDNA files**
   Attach file(s).
   File
   There are no items to display

Laboratory mouse: Bacteria Agents Administration

1. **Bacteria selection**
   Select the substances that are bacteria agents.

*

	Regimen/Substance	Drugs and Compounds	Species
☑	.	.	Laboratory mouse
☐	.	.	Laboratory mouse
☐	.	.	Laboratory mouse

2. **Bacteria files**
   Attach file(s).
   File
   There are no items to display

Laboratory mouse: Virus Agents Administration

1. **Virus selection**
   Select the substances that are virus agents.

*

	Regimen/Substance	Drugs and Compounds	Species
☑	.	.	Laboratory mouse
☐	.	.	Laboratory mouse
☐	.	.	Laboratory mouse

2. **Virus files**
   Attach file(s).
   File
   There are no items to display

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Laboratory mouse: Prion Agents Administration

1. **Prion selection**
   Select the substances that are prion agents.

	Regimen/Substance	Drugs and Compounds	Species
☑	.	.	Laboratory mouse
☐	.	.	Laboratory mouse
☐	.	.	Laboratory mouse

2. **Prion files**
   Attach file(s).
   File
   There are no items to display

Laboratory mouse: Human Derived Agents Administration

1. **Human derived selection**
   Select the substances that are human derived agents.

	Regimen/Substance	Drugs and Compounds	Species
☑	.	.	Laboratory mouse
☐	.	.	Laboratory mouse
☐	.	.	Laboratory mouse

2. **Human derived files**
   Attach file(s).
   File
   There are no items to display

Laboratory mouse: Genetically Altered Agents Administration

1. **Genetically altered selection**
   Select the substances that are genetically altered agents.

	Regimen/Substance	Drugs and Compounds	Species
☑	.	.	Laboratory mouse
☐	.	.	Laboratory mouse
☐	.	.	Laboratory mouse

2. **Genetically altered files**
   Attach file(s).
   File
   There are no items to display

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Laboratory mouse: Toxin Agents Administration

1. **Toxin selection**

Select the substances that are toxin agents.

*

	Regimen/Substance	Drugs and Compounds	Species
☑	.	.	Laboratory mouse
☐	.	.	Laboratory mouse
☐	.	.	Laboratory mouse

2. **Toxin files**

Attach file(s).

File

There are no items to display

Laboratory mouse: Carcinogen Agents Administration

1. **Carcinogen selection**

Select the substances that are carcinogen agents.

*

	Regimen/Substance	Drugs and Compounds	Species
☑	.	.	Laboratory mouse
☐	.	.	Laboratory mouse
☐	.	.	Laboratory mouse

2. **Carcinogen files**

Attach file(s).

File

There are no items to display

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Laboratory mouse: Mutagen Agents Administration

1. **Mutagen selection**

Select the substances that are mutagen agents.

*

	Regimen/Substance	Drugs and Compounds	Species
☑	.	.	Laboratory mouse
☐	.	.	Laboratory mouse
☐	.	.	Laboratory mouse

2. **Mutagen files**

Attach file(s).

File

There are no items to display

Laboratory mouse: Teratogen Agents Administration

1. **Teratogen selection**

Select the substances that are teratogen agents.

*

	Regimen/Substance	Drugs and Compounds	Species
☑	.	.	Laboratory mouse
☐	.	.	Laboratory mouse
☐	.	.	Laboratory mouse

2. **Teratogen files**

Attach file(s).

File

There are no items to display

Laboratory mouse: Radioactive Agents Administration

1. **Radioactive selection**

Select the substances that are radioactive agents.

*

	Regimen/Substance	Drugs and Compounds	Species
☑	.	.	Laboratory mouse
☐	.	.	Laboratory mouse
☐	.	.	Laboratory mouse

2. **Radioactive files**

Attach file(s).

File

There are no items to display

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Laboratory mouse: SELECT NONSURGICAL PROCEDURES (NSP)

1. **Nonsurgical selection**

Check all types of nonsurgical procedures that will be performed.

*

- [x] **Blood collection**
  sampling by nonsurgical procedures
- [x] **Food and/or fluid regulation**
  Applies to scheduled or restricted access to food or fluids for experimental purposes.
  Do NOT check this box for fasting before sedation or use of anesthesia or for standard presurgical fasting or fluid regulation. Presurgical fasting will be described in Surgery Summary.
- [x] **Experimental exercise**
  Treadmill running, rotarod performance testing, swimming, and more.
- [x] **Genotyping/identification**
- [x] **Imaging**
  CT scans, MRIs, ultrasound examinations, X-rays, and other imaging procedures, including those that expose the animal to small amounts of radiation for the purpose of producing a visual image of bodies or processes.
  If a dye is used for imaging, add details about the dye in Substance Administration.
- [x] **Irradiation**
  Exposure to gamma irradiation and other ionizing radiation for the purpose of affecting animal tissue or physiology.
  Administration of radionuclides via injection or in food should be described in Substance Administration.
- [x] **Physical restraint**
  Applies to the use of manual or mechanical means to limit some or all of an animal's movement.
  Does not apply to brief procedures that are part of normal handling or husbandry.
  Does not apply to normal wildlife-capturing techniques.
- [x] **Other nonsurgical procedures**
  Applies to a wide range of other experimental manipulations of animals such as behavioral assays, gastric lavage, maze trials, oocyte collection, preference tests, and more.
- [ ] **I will not perform any nonsurgical procedures.**

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Laboratory mouse: NSP: BLOOD COLLECTION

For each blood collection regimen, provide details of the procedure.

1. **Blood collection table**

   The table below lists regimens of blood collection that have been added.

   *

   Blood Collection List

   View

Regimen	.
Blood collection monitoring	.
Collect site	.
Max. single draw vol. (ml)	.
Max. percent blood volume withdrawn	.
# samples	0
Interval	.
Blood terminal?	No
Painful?	No
Analgesic/Anesthetic regimen	.

2. **Blood collection exceed limits**

   For any survival blood collection regimens that approach or exceed the maximum collection limits as outlined in the RARC guidelines, describe monitoring and supportive care procedures.

   .

3. **Blood collection justify**

   Provide justification for any survival blood collection regimens that approach or exceed the maximum collection limits as outlined.

   .

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Laboratory mouse: NSP: FOOD AND/OR FLUID REGULATION

Food and/or fluid regulation (FFR) includes:

- scheduled access to food or fluid in which the animal has unlimited access to food or fluid for a specific time daily;
- restricted access, in which the total amount of food or fluid is strictly monitored or controlled. Calorie restriction for experimental purposes should be described here.

FFR does NOT apply to calorie restriction as directed by a veterinarian for purposes of weight control.

FFR does NOT apply to fasting before sedation or use of anesthesia, or to standard presurgical fasting or withholding of fluids. Presurgical fasting will be described in Surgical Procedures.

1. **FFR name**
   Give your FFR regimen a brief name. **Note: You will eventually match the name you assign here with a location. Be sure to assign a unique name to this procedure so that you can identify it later in your application.
   *
2. **FFR describe**
   Describe the FFR. Include the duration and schedule of regulation.
   *
3. **FFR justify**
   Provide the scientific justification for the FFR.
   *
4. **FFR monitor**
   How will you monitor animals for adverse events related to FFR, including potential nutritional deficiencies?
   *
5. **FFR record**
   How will you record food and/or fluid administration or intake? Include how you will label affected animals' enclosures for identification by animal care and veterinary staff.
   *
6. **FFR pain/distress**
   Will any animals be subjected to more than momentary or slight pain/discomfort/distress as a result of this procedure?
   * ○ Yes ◉ **No**
7. **Analgesic/anesthetic/sedative regimen**
   If you will use an analgesia/anesthesia regimen with this procedure, select the one(s) that you will use. Your choices are generated from what you entered on the Anesthesia/Analgesia page.

	Regimen/Substance	Drugs and Compounds	Species
☑	.	.	Laboratory mouse

8. **FFR files**
   Add file(s) with standard operating procedures or other supplementary information for food and/or fluid regulation.
   There are no items to display

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Laboratory mouse: NSP: EXPERIMENTAL EXERCISE

1. **Experimental exercise table**

For each experimental exercise regimen, click "Add" to answer questions about it.

*

View	Title	.
	Describe	.
	Forced	No
	Monitor	.
	Justify	.
	Analgesic/Anesthetic regimen	.

Laboratory mouse: NSP: GENOTYPING AND IDENTIFICATION

1. **Genotyping and identification table**

For each genotyping or identification regimen, click "Add" to answer questions about it.

*

View	Title	.
	Site	.
	Description	.
	Age of animals	.
	Is Painful	No
	Analgesic/Anesthetic regimen	.

2. **Genotyping and identification files**

Attach file(s) with standard operating procedures or other supplementary information for genotyping or identification.

File

There are no items to display

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Laboratory mouse: NSP: IMAGING

For each imaging regimen, click "Add" to answer questions about it. Imaging includes X-rays, PET scans, CAT scans, MRIs, etc.

1. **Imaging table**

View

title	.
modality	.
max. no. of animals	*No Value Entered*
contrast	.
duration	.
freq./animal	.
description	.
painful?	No
imaging analgesia/anesthesia	.

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Laboratory mouse: NSP: IRRADIATION EXTERNAL SOURCE

For each irradiation regimen, click "Add" to answer questions about it.

Do not include administration of radioactive substances (i.e., radionuclides) or radiation exposure that is part of an imaging procedure. You will address those in the Substance Administration and Imaging sections respectively.

1. **Irradiation table**

*

View

title	.
type	.
max. no. of animals	*No Value Entered*
max. duration	.
max. single dose/animal	.
max. total dose/animal	.
freq./animal	.
description	.
painful?	No
Analgesic/Anesthetic regimen	.

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Laboratory mouse: NSP: PHYSICAL RESTRAINT

For each physical-restraint regimen, click "Add" to answer questions about it.

Do **not** include brief (< 15 min) physical restraint that is part of normal animal-handling practices or procedures.

Do **not** include normal wildlife-capturing techniques.

1. **Restraint table**

*

View

type of restraint	.
max. duration	.
acclimatization	.
monitoring	.
scientific justification	.
painful?	No
Analgesic/Anesthetic regimen	.

2. **Restraint files**

Attach file(s) with standard operating procedures or other supplementary information for physical restraint.

There are no items to display

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Laboratory mouse: NSP: OTHER NONSURGICAL PROCEDURES

Click "Add" to answer questions about nonsurgical procedures you haven't already described.

1. **Other nonsurgical table**

*

View

title	.
max. no. of animals	*No Value Entered*
pre and post care and/or treatment	*No Value Entered*
description	.
frequency	*No Value Entered*
painful?	No
Files	
Analgesic/Anesthetic regimen	.

Laboratory mouse: NSP: NONSURGICAL MONITORING

1. **Nonsurgical monitoring**

Review your list of nonsurgical procedures that include pain/discomfort/distress.

Non-Surgical Procedure With Pain	Procedure Type	Analgesic/Anesthetic regimen	Monitoring
.	Euthanasia Methods		.
.	Substance Administration	.	.
.	Genetically Modified		.

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Laboratory mouse: SURGERY Y/N

Minor survival surgery: Body cavities are not exposed. Animals typically do not show significant signs of postoperative pain, have minimal complications, and quickly return to normal function.
Examples: wound suturing, peripheral vessel cannulation, percutaneous biopsy, and most procedures routinely done on an outpatient basis in veterinary clinical practice.

Major survival surgery: Body cavities are exposed, and tissues are extensively dissected or transected. Animals may show substantial impairment of physical or physiologic functions.
Examples: laparotomy, thoracotomy, joint replacement, craniotony, and limb amputation.

Nonsurvival surgery: Procedures are terminal, and animals do not regain consciousness prior to death. Do NOT enter nonsurvival surgeries in Euthanasia.
Examples:
All perfusion or Nonsurvival (≤ 5 min): all perfusions or anesthesia duration ≤ 5 min (e.g. thoracotomy for terminal blood collection).
Nonsurvival: anesthesia duration greater than 5 minutes but less than or equal to 12 hours.
Extended nonsurvival: anesthesia duration > 12 hours.

Surgical procedures that are initiated on a live animal prior to confirmation of death, such as thoracotomy for terminal perfusion, are considered nonsurvival surgeries and should be described here.

NOT surgery: Fine-needle biopsies, intravitreal or subcutaneous injections, simple catheter insertions. These should be described in Other Nonsurgical Procedures.

1. **Surgery y/n**
   Will surgery be performed on any of this species?
   * (•) **Yes** ( ) No

Laboratory mouse: SURGERY AND POSTSURGERY SUMMARY

For each surgical procedure for this species or group, click "Add" to provide details.

1. **Surgery table**
   *

View

title	.
survival type	Minor survival
max. no. of animals	*No Value Entered*
Analgesic/Anesthesia regimen	.
Euthanasia regimen	.
Physical Euthanasia	Yes - .
presurgery fasting	*No Value Entered*
duration	.
description	.

2. **Pre and post operative care and/or treatment**
   Please describe any pre and post care and/or treatment (e.g., antibiotics).

3. **Patient preparation**
   Describe how patient(s) will be prepared to create an appropriate surgical field for the proposed surgery (e.g., clipping hair, scrubbing with chlorhexidine solution and sterile water).

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*

4. **Sterile field**

Select which of the following will be used to maintain a sterile field during surgery. If a sterile field does not apply, please check "none."

*

- [x] Sterile instruments (autoclave, gas sterilization)
- [ ] Bead sterilizer
- [ ] Sterile gown/garb
- [ ] Sterile gloves
- [ ] Sterile drapes
- [ ] Surgical mask
- [ ] Surgeon scrub
- [ ] Other
- [ ] None

Other sterile field

If you choose other, provide the description here:

5. **Surgery monitor**

How will you monitor animals during surgery and anesthesia, from induction through recovery from anesthesia (immediate postsurgery period)? Document this in your written animal records, too.

* .

6. **Postsurgery analgesia regimens**

Select all regimens for the treatment of pain and distress after surgery.

	Regimen/Substance	Drugs and Compounds	Species
☑	.	.	Laboratory mouse

7. **Postsurgery pain and monitoring**

How will you monitor and treat the pain and distress associated with postsurgical conditions?

8. **Surgery files**

Add file(s) with illustrations, figures, standard operating procedures, or other supplementary information about this surgical procedure.

There are no items to display

Laboratory mouse: CONCURRENT SURGICAL PROCEDURES

1. **Concurrent surgeries y/n**

Will you perform two or more surgical procedures under a single anesthetic event?

* (•) Yes ( ) No

2. **Concurrent surgeries table**

If yes, click ADD to provide details about your concurrent surgeries.

View	title	.
	surgery selection	.
	max. no. of animals	*No Value Entered*
	description	.
	justification	.

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Laboratory mouse: MULTIPLE SURVIVAL SURGERIES

1. **Multiple survival surgeries**

   Will any single animal or group of animals of this species survive two or more surgical procedures in separate anesthetic events?

   * (•) Yes ( ) No

   MSS table

   Click "Add" to provide details about each unique regimen of separate, sequential, survival surgeries.

View	title	.
	surgery selection	.
	max. no. of animals	*No Value Entered*
	description	.
	justification	.

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Laboratory mouse: ALTERNATIVES SEARCH

Review the following procedures and genetic modifications (if applicable) you described that cause more than momentary pain or distress. Then answer the questions that follow to explain how you determined that there weren't less painful or distressful alternatives to the procedures.

Painful all table

- **Genetically Modified with pain**
  Yes
- **Non Surgical Procedures with pain**

Non-Surgical Procedure With Pain	Procedure Type	Analgesic/Anesthetic regimen
.	Substance Administration	.
.	Euthanasia Methods	

- **Surgical Procedures**

Surgery title	Survival Procedures	Anesthesia/analgesia regimens
.	Minor survival	.

List one or two databases you searched (e.g., AltWeb, Biological Abstracts, NORINA, PubMed, etc.) to look for alternatives.

1. **Alternative databases**
   * .
2. **Alternatives years covered**
   What years did your search cover? (yyyy-yyyy)
   * .
3. **Alternatives recent search**
   What was the date of your most recent search?
   * 4/10/2017
4. **Alternatives other**
   List other methods you used to determine that there weren't less painful or distressful alternatives to the procedures listed above. These should be secondary to the literature search, and may be useful to support or rebuke potential alternatives found in the database search. Examples of other sources are conference attendance, professional expertise, specific journal articles, training, etc.
5. **Alternatives search strategy**
   Describe your search strategy, including the scientifically relevant keywords you used.
   * .
6. **Alternatives narrative**
   How did you evaluate the information you gathered? If you found an alternative or refined method but it couldn't be used in this research, explain why.
   * .

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Laboratory mouse: COMPLICATIONS

1. **Complications**

   In previous sections, you identified the pain and discomfort animals might experience from each procedure. Now consider your procedures from a broader perspective:

   What are the potential complications animals may experience from any of your procedures or combination of procedures (e.g., internal bleeding after liver biopsy, Graft Versus Host Disease (GVHD) with transplant) or from any chronic condition resulting from the procedures (e.g., lameness, disease)?

   *

2. **Unrelieved pain or distress**

   Will treatment for pain or distress be withheld from any animals of this species?

   (•) Yes ( ) No

   Unrelieved justify

   If yes, provide scientific justification for why pain or distress will not be relieved.

Laboratory mouse: USDA DESIGNATION

The United States Department of Agriculture (USDA) established the following B-E categories based on levels of pain, discomfort, and distress associated with procedures.

- **B** - animals bred or held for use in teaching, testing, experiments, research, or surgery but not used for such purposes
- **C** - teaching, research, experiments or tests conducted that involve no pain or distress that require use of analgesics
- **D** - experiments, teaching, research, surgery or tests conducted that involve accompanying pain or distress to the animals and for which appropriate anesthetic, analgesic or tranquilizing drugs or palliative measures are used (including surgery or procedures under anesthesia that without the anesthesia would be painful)
- **E** - teaching, experiments, research, surgery or tests conducted involving accompanying pain or distress to the animals and for which the use of appropriate anesthetic, analgesic or tranquilizing drugs are not used because they would adversely affect the procedures, results or interpretation of the teaching, research, experiments, surgery or tests

1. **USDA designation**

   Based on these definitions, choose the highest category of pain/distress that this species will experience as part of this protocol.

   *

   (•) B
   ( ) C
   ( ) D
   ( ) E

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Laboratory mouse: EUTHANASIA

The RARC veterinary staff has recommendations for euthanizing the most commonly used species on campus. Your euthanasia plans must follow these recommendations unless your alternative method is scientifically justified and approved by your IACUC. Click on the blue question mark icon to view these recommendations and the AVMA Guidelines for the Euthanasia of Animals.

1. **Criteria for anticipated euthanasia**
   What are your study endpoints?
   *

2. **Criteria for unanticipated euthanasia**
   For unanticipated events or nonstudy-related health issues, what criteria or clinical signs will you use to determine an unanticipated endpoint for an animal?
   *

3. **Plan for anticipated euthanasia**
   Select all applicable euthanasia methods for planned study procedures.

	Regimen/Substance	Drugs and Compounds	Species
☑	.	.	Laboratory mouse

4. **Plan for unanticipated euthanasia**
   Select all applicable euthanasia methods for unanticipated events or nonstudy-related health issues.

	Regimen/Substance	Drugs and Compounds	Species
☑	.	.	Laboratory mouse

5. **Plans for physical methods of euthanasia (i.e. exsanguination, captive bolt)**

	Method Name	Method Description
View	.	.

6. **Other euthanasia methods**
   Other planned and unplanned euthanasia methods not included above. Include a statement here if euthanasia will be performed by the RARC Veterinary Staff.

7. **Nonstandard euthanasia justify**
   For methods of euthanasia described above that are not listed in RARC Veterinary Standards for this species, justify the use of this method.

8. **Ensure death**
   Describe the methods you'll use to ensure death following euthanasia procedures.
   *

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Laboratory mouse: DISPOSITION

Indicate the final arrangements for animals assigned to this protocol.

1. **Disposition**

At the end of their assignment in this protocol, animals will be:

*

- [x] Made available to other investigators.
- [ ] Returned to a UW colony, herd or flock for other use.
- [ ] Returned to their client-owners.
- [ ] Maintained at a privately owned herd or flock.
- [ ] Made available for adoption. Adoption must be preapproved by a laboratory animal veterinarian.
- [ ] Sold at market.
- [ ] Euthanized.
- [ ] Other.

Other disposition

Describe other disposition arrangements and justify below.

2. **Consumption**

Is there a possibility that animals or humans will consume your animals or their byproducts at the end of your study?

* (•) Yes ( ) No

Consumption describe

If yes, provide the drugs you administered to the animals and the drug withdrawal times. For clinical treatments and extra-label drug use (ELDU), indicate that all ELDU will be documented per state and federal guidelines and withdrawal times will be monitored by the veterinarians and animal caretakers.

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Laboratory mouse: NONSTANDARD HUSBANDRY

Don't include medically justified, standard pre- or post-anesthetic/surgical exceptions, such as short term withholding of food and water. Describe these in SURGICAL PROCEDURES.

Don't include longer-term food or fluid regulation. Describe these in nonsurgical procedures.

1. **Nonstandard husbandry**

Check all non-standard conditions that apply to this species.

- ☑ **Housing animals outside dedicated animal facility**
  Animals will be kept for greater than 12 hours in any location that is not a dedicated animal facility.
- ☑ **Lab staff provide husbandry in facility**
  Laboratory or research staff, rather than professional facility animal-care staff, will provide animal husbandry for a subset of animals housed in facilities.
- ☑ **Single housing of social species**
  Social species are singly housed for periods longer than 12 hours. This does not include short-term solitary housing for animals recovering from anesthesia or surgery.
- ☑ **Enrichment withholding**
  Animals are not provided with the minimum required enrichment as outlined in the facility SOP.
- ☑ **Exercise withholding for dogs**
  Dogs are not provided with the minimum exercise as required by the facility SOP.
- ☑ **Ambient Noise**
  Animals will be exposed to white noise that is not part of the standard environmental enrichment for the species.
- ☑ **Nonstandard lighting**
  Animals will be exposed to lighting paradigm of non-standard wavelength, intensity, or altered light/dark.
- ☑ **Vibration**
  Animals will be exposed to vibrations of an amplitude and or frequency known to cause clinical effect.
- ☑ **Cleaning/sanitation schedule different than facility standard**
- ☑ **Enclosure smaller or denser than standard for species**
  Animals will be housed in an enclosure that is smaller than the facility standard or at a density higher than the standard for the cage size.
- ☑ **High velocity air**
  Animals will be directly exposed to high velocity air that is not a normal part of their husbandry.
- ☑ **Bare floor (no bedding) with no structure for resting or sleeping**
- ☑ **Wire bottom cage (NOT Avian)**
- ☑ **Temperature outside recommended range**
  Animals will be exposed to temperatures outside of the normal reference ranges for the species.
- ☑ **Other nonstandard housing or husbandry**
  Animals are subject to other non-standard housing or husbandry conditions.
- ☐ **Not applicable**
  There will be no non-standard husbandry for this study.

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Laboratory mouse: LAB HUSBANDRY IN LAB HOUSING

Laboratory or research staff, rather than professional facility animal-care staff, will provide animal husbandry in lab housing areas.

1. **Lab housing justify**
   Justify why you will house animals in a laboratory rather than in a facility.
   *.
2. **Lab husbandry**
   Briefly outline the husbandry lab staff will provide. Describe any departures from the relevant facility SOP.
   *.
3. **Lab husbandry time**
   Outline the duration of housing and provide the schedule of husbandry that lab staff will provide.
   *.
4. **Lab husbandry files**
   Attach file(s) with standard operating procedures or other supplementary information for lab husbandry in lab housing.
   There are no items to display

Laboratory mouse: LAB HUSBANDRY IN FACILITY

Laboratory or research staff, rather than professional facility animal-care staff, will provide animal husbandry for a subset of animals housed in facilities.

1. **Research staff facility husbandry**
   Briefly outline how the staff will provide husbandry within the facility. Describe any departures from the relevant facility SOP.
   *.
2. **Research staff facility husbandry duration.**
   Outline the husbandry duration and schedule the research staff will provide within the facility.
   *.
3. **Facility husbandry justify**
   Describe why the research staff, rather than facility animal-care staff, will provide husbandry for facility-housed animals.
   *.
4. **Facility husbandry files**
   Attach file(s) with standard operating procedures or other supplementary information for lab husbandry in facilities.
   There are no items to display

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Laboratory mouse: SINGLE HOUSING

Answer these questions when individuals of a social species are housed alone for longer than 12 hours.

NOTE: This does **not** include short-term solitary housing for animals recovering from anesthesia or surgery.

1. **Single housing duration**
   How long will individuals of this social species be housed singly?
   *.
2. **Single-housing enrichment**
   What enrichment will you provide for singly housed animals?
   *.
3. **Single housing monitor**
   How will you monitor singly housed animals?
   *.
4. **Single housing justify**
   What is your justification for single-housing a social species?
   *.

Laboratory mouse: ENRICHMENT WITHHOLDING

Animals are not provided with minimum required enrichment as outlined in the facility SOP.

1. **Enrich withhold duration**
   Outline the duration and schedule of withholding of enrichment.
   *.
2. **Enrich withhold monitor**
   How will you monitor animals under enrichment withholding?
   *.
3. **Enrich withhold justify**
   What is your justification for withholding of enrichment? Why can't alternate enrichment be used?
   *.

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Laboratory mouse: EXERCISE WITHHOLDING for dogs

Dogs are not provided with the minimum exercise as required by the facility SOP.

1. **Exercise-withhold duration**
   Outline the duration and schedule of withholding of exercise
   *.
2. **Exercise-withhold enrichment**
   What enrichment will you provide for dogs under exercise withholding?
   *.
3. **Exercise-withhold monitor**
   How will you monitor dogs under exercise withholding?
   *.
4. **Exercise-withhold justify**
   What is your justification for withholding exercise?
   *.

Laboratory mouse: AMBIENT NOISE

1. **Ambient noise describe**
   Describe what devices you will use to create ambient noise in the animals' environment, the number of animals you anticipate using for this portion of the study, and the duration/regimen of the noise.
   *.
2. **Ambient noise additional monitoring**
   What additional monitoring will you provide for animals exposed to animal noise?
   *.
3. **Ambient noise justify**
   What is your justification for exposing animals to ambient noise?
   *.

Laboratory mouse: NONSTANDARD LIGHTING

1. **Nonstandard lighting describe**
   Describe the lighting paradigm animals will be exposed to as part of your protocol. Include duration/regimen of lighting and the number of animals you anticipate using.
   *.
2. **Nonstandard lighting additional monitoring**
   What additional monitoring will you provide for animals exposed to nonstandard lighting?
   *.
3. **Nonstandard lighting justify**
   What's your justification for exposing animals to nonstandard lighting?
   *.

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Laboratory mouse: VIBRATION

1. **Vibration describe**
   Describe how you will produce vibration, the number of animals you anticipate using, and the vibration duration/ regimen for animals.
   *.
2. **Vibration additional monitoring**
   Describe the additional monitoring you will provide for animals exposed to vibration.
   *.
3. **Vibration justify**
   What is your justification for exposing animals to vibration?
   *.

Laboratory mouse: CLEANING/SANITATION SCHEDULE DIFFERENT THAN FACILITY STANDARD

1. **Different cleaning/sanitation schedule describe**
   Describe how your cleaning/sanitation schedule will be different than the facility standard, including the approximate duration of the different standard, and the number of animals you anticipate using.
   *.
2. **Different cleaning/sanitation schedule additional monitoring**
   Describe the additional monitoring you will provide for animals exposed to different cleaning/sanitation schedule.
   *.
3. **Different cleaning/sanitation schedule justify**
   What is your justification for utilizing a different cleaning/sanitation schedule than the facility standard?
   *.

Laboratory mouse: ENCLOSURE SMALLER THAN FACILITY STANDARD

1. **Smaller enclosure describe**
   Describe the measurements of the enclosure, the number of animals you anticipate using, and the small-enclosure duration/regimen.
   *.
2. **Smaller enclosure additional enrichment**
   Describe any other enrichment you will provide to animals housed in an enclosure smaller than the facility standard.
   *.
3. **Smaller enclosure additional monitoring**
   Describe additional monitoring provided for animals contained in an enclosure smaller than the facility standard.
   *.
4. **Smaller enclosure justify**
   What is your justification for exposing animals to enclosure smaller than facility standard?
   *.

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Laboratory mouse: HIGH VELOCITY AIR

1. **High velocity air describe**
   Describe how high velocity air will be produced, the number of animals you anticipate using, and high-velocity air schedule/ regimen for animals in your study.
   *.
2. **High velocity air additional monitoring**
   Describe the additional monitoring you will provide for animals exposed to high-velocity air.
   *.
3. **High velocity air justify**
   What is your justification for exposing animals to high velocity air?
   *.

Laboratory mouse: BARE FLOOR (NO BEDDING) WITH NO STRUCTURE FOR RESTING OR SLEEPING

1. **Bare floor describe**
   Provide the measurements of the enclosure, the number of the animals you anticipate using, and the duration/regimen for the animals.
   *.
2. **Bare floor additional enrichment**
   Describe any additional enrichment you will provide to animals housed on a bare floor (no bedding) with no structure for resting or sleeping.
   *.
3. **Bare floor additional monitoring**
   What additional monitoring will you provide for animals housed on a bare floor (no bedding) with no structure for resting or sleeping.
   *.
4. **Bare floor justify**
   What is your justification for housing animals on a bare floor (no bedding) with no structure for resting or sleeping?
   *.

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Laboratory mouse: WIRE BOTTOM CAGE

1. **Wire bottom cage describe**
   Provide the measurements of the enclosure, the number of the animals you anticipate using, and the duration/regimen.
   *.
2. **Wire bottom cage additional enrichment**
   Describe any additional enrichment you will provide to rodents housed in a wire bottom cage. Indicate if resting will be provided. If no resting platform will be provided, provide justification.
   *.
3. **Wire bottom cage additional monitoring**
   What additional monitoring will you provide for rodents housed in a wire bottom cage with no resting platform?
   *.
4. **Wire bottom cage justify**
   What is your justification for housing rodents in a wire bottom cage with no resting platform?
   *.

Laboratory mouse: TEMPERATURE OUTSIDE RECOMMENDED RANGE

1. **Temperature describe**
   Describe the temperature ranges animals will be exposed to and the exposure duration/ regimen. Also provide the number of animals you anticipate using.
   *.
2. **Temperature additional monitoring**
   Describe the additional monitoring you will provide for animals exposed to temperature outside of the recommended range for the species.
   *.
3. **Temperature justify**
   What is your justification for exposing animals to temperature outside of the recommended range for the species?
   *.

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Laboratory mouse: OTHER NON-STANDARD HUSBANDRY (ONHS)

Indicate other non-standard housing or husbandry conditions, e.g. modified light cycle, nonstandard cage size or type, rodent wire-bottom cages, extended cage-cleaning interval, specialized husbandry needs.

1. **ONSH husbandry describe**
   Describe the type of non-standard husbandry.
   *.
2. **ONSH duration**
   Outline the duration and schedule of the non-standard husbandry condition.
   *.
3. **ONSH monitor**
   How will you monitor animals under non-standard husbandry conditions?
   *.
4. **ONSH justify**
   What is your justification for non-standard husbandry conditions?
   *.

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Laboratory mouse: SELECT LOCATIONS

Select all locations where housing and procedures for this species will occur. On the next page you will associate housing and procedures with specific locations.

Plan to house animals and perform procedures all within an established animal facility? In Question 1 type "vivarium" in the box below and select the location from the drop-down to select the location for both your housing and any procedures performed within the vivarium. Do not select individual rooms within a vivarium - this will limit your flexibility to work within the facility and may lead to inadvertent protocol violations.

Plan to use [redacted] space? Enter [redacted] in Question 1 and then select the usage area or areas within [redacted] you want to use. Do not choose specific room numbers fo[redacted]n Question 1. Do not type in specific rooms for [redacted] in Question 2.

Plan to use a non-vivarium, PI laboratory for holding animals for more than 12 hours, and/or to perform nonsurgical, surgical, and euthanasia procedures on animals? In Question 1 type the room number in the box below (e.g. 1234) and select the location from the drop-down. For the [redacted] include the building module (e.g. [redacted]. Add each room individually - it is not possible to add ranges of rooms.

If the location you want to use does not display in Question 1, it is possible that it's not ACUC-approved for animal use. Enter the location in Question 2 and contact your RARC protocol manager for assistance.

1. **Current ACUC approved locations**

Location Common Name	Room Name	Location Type	Committee	Housing Allowed	Procedure Allowed	Surgery Level
There are no items to display						

2. **Locations not found in Q1 -- Request ACUC approval**

Building Name	Building Address	Room Name
.	.	.

3. **Locations not controlled by UW-Madison or its affiliates**

Location	Location Address
.	.

Laboratory mouse: SELECT PURPOSE OF LOCATIONS

1. **Locations table**

REQUIRED: Click on the name of each selected location. On the pop-up, indicate which of the following procedures and housing will occur at that location. Check all that apply for each location.

Location name	Facility housing	Laboratory housing	Nonsurgical Procedures	Surgical Procedures	Euthanasia
.			*No value entered*	*No value entered*	
, - ,	yes	no	[illegible]	.	yes

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Laboratory mouse: TRANSPORT

How will you move live animals?

See All-Campus Policy 2011-43: Campus Transportation of Laboratory Animals for guidance on transporting laboratory animals outside the animal facility.

1. ☑ **I will not transport animals**

2. **Transport routes**

I will transport animals

- ☐ within, or between adjacent rooms within, a vivarium (animal never leaves the vivarium - e.g. [redacted] to [redacted])
- ☐ within a building or between connected buildings (animal moves from lab to lab - e.g. [redacted] vivarium to [redacted])
- ☐ between buildings (e.g. [redacted] to [redacted])
- ☐ to or from field site (e.g. marsh to [redacted] and back to marsh)
- ☑ no transport of animals will occur

Order of movement

Explain order of movement.

3. **Transport methods**

How will you transport animals?

- ☐ in a dedicated animal transport vehicle or trailer
- ☐ hand-carried in a covered cage, in an animal-transport container, or covered on a cart
- ☐ in a privately owned vehicle
- ☐ other

Transport describe

If other method is used, please describe.

4. **Departmental/Personal Vehicle**

If animals will be transported in a non-designated departmental vehicle, provide the name of the department and a contact person. If animals will be transported in a private vehicle, provide the name of the owner. In both cases, complete and upload the RARC Permission to Transport Animals Using a Privately Owned or Non-designated Vehicle form.

5. **Transport files**

OPTIONAL: Attach file(s) with standard operating procedures; maps; RARC transportation form, if applicable; or other supplementary information for transport.

There are no items to display

Laboratory mouse: END

You are done answering questions about this species.

Click on "Species Complete." You will be redirected to the Species start page where you can answer questions about additional species in your protocol or continue to the next section.

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APPENDIX 7B

Online ARROW Other Miscellaneous Protocol Form

Please Note:
Some boxes are checked on the following form to enable all sections and questions to appear.

Other Miscellanous Protocol Application

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University of Wisconsin-Madison Institutional Animal Care and Use Committee (IACUC) IACUC Protocol Application	Protocol # : IS00002439 Date Approved : N/A Expiration date : N/A

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PROTOCOL BASICS

1. **Protocol title**
   Give your protocol a title.
   *

2. **PI name**
   Click Change to choose a different name. If you can't find the name you want, email arrow_help@rarc.wisc.edu.
   * [redacted]

3. **PI Status**
   Is the named PI (select one):
   *
   - ○ Faculty
   - ○ Emeritus appointment
   - ◉ Other

4. **PI department**
   Enter the PI's department name.
   * RARC

5. **Protocol renewal**
   Is this application a renewal of a previously approved paper protocol?
   * ○ Yes ◉ No

   Previous protocol
   If yes, please provide the current protocol number (e.g., M01234 or V00789).

6. **Protocol writers**
   Other than the PI, who can write and modify this protocol? Add up to two names by typing the last name in the search box and selecting from the drop down or clicking on the "Add" button to locate the person. If you can't find a name you want, please email arrow_help@rarc.wisc.edu
   Person
   There are no items to display

7. **Email contacts**
   Select up to two (2) email contacts by typing the last name in the search box and selecting from the drop down or clicking on the "Add" button to locate the person. If you can't find the name you want, please email arrow_help@rarc.wisc.edu.
   Person
   There are no items to display

8. **Emergency contacts**
   Select up to two emergency contacts (at least one contact is required) who are authorized to act in an animal emergency if the Principal Investigator is not available. These must be individuals who understand the research and can answer questions in a PI's absence. Type the contact's last name in the search box and select from the drop down or click the "Add" button to locate the person
   *
   Person
   HOLLY MCENTEE

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FUNDING

Identify all funding sources that support your protocol.
If you have questions about grant-protocol congruence, email or submit the Congruence Review Request Form to congruence@rarc.wisc.edu.

1. **Research and Sponsored Program (RSP) – managed funding**

   Do you have a grant or contract funding this project (federal or non-federal)?

   PI Name Award Number (MSN #) Project Title Sponsor Reference Number Project ID Sponsor (Source)

   There are no items to display

2. **Other funding**

   Add other funding.

Project Title	PI Name	Award Number (MSN #) / Project ID (PRJXXX)	Start Date	End Date	Grant Status	Sponsor (Source)

   There are no items to display

3. **Public Health Service (PHS) funding**

   Are any of the funding sources above directly from or subawards from NIH, NSF, or other Public Health Service (PHS) agencies? See [https://en.wikipedia.org/wiki/United_States_Public_Health_Service] for a list of PHS agencies.

   * ○ Yes ◉ **No**

PROTOCOL TYPE

1. **Select agents**

   Does this protocol involve the administration of biological select agents/toxins or is your proposed work conducted in a Registered Space? See the CDC's Select Agents and Toxins List for guidance.

   Note! Controlled substances such as Ketamine and Pentobarbital are NOT select agents. If you are working with controlled substances, select "No."

   If you are unsure about the status of your agent or if you'll work in Registered Space, contact [redacted]

   * ○ Yes ◉ **No**

2. **Infectious disease**

   Does this protocol include work with infectious disease?

   * ○ Yes ◉ **No**

3. **Protocol type**

   What type of protocol are you submitting? Select one.

   * Other

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PRINTED ON: 4/10/2017

VA ACORP

1. **VA ACORP**

Is your work also described in an approved Veterans Administration Animal Component of Research Protocol (ACORP)?

* ○ Yes ◉ **No**

VA researchers must complete this entire UW protocol application to provide answers about procedures and/or housing at UW facilities.

ACORP files

If yes, add the current approved ACORP(s).

There are no items to display

SIGNIFICANCE and JUSTIFICATION

1. **Significance of work**

Using nontechnical (lay) language that a high-school student would understand, briefly describe the goals of your study including an explanation of how your work will advance knowledge, improve human or animal health, or benefit society. Do NOT use technical language that would be used in a grant application. At the end of your response, describe briefly and in nonscientific language how you plan to interpret the collected data to meet the goals of the study.

* .

2. **Justify use of animals**

Explain why you must use live vertebrate animals instead of nonanimal alternatives such as computer simulation or in vitro systems.

* .

4 /

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EXPERIMENTAL NARRATIVE

1. **Experimental narrative**

In language that scientific colleagues outside your discipline would understand, please provide a global, chronological summary of your experiments that focuses on the experience of the animals from initial assignment to final disposition. Your answer should allow IACUC members to understand the experience of all animals assigned to this protocol. Briefly outline all proposed surgeries, non-surgical procedures, and other manipulations, but do not include experimental details here. You will provide specific protocol details such as breeding schemes, blood draw amounts, complete surgical descriptions, euthanasia methods, drug dosages, drug routes, etc., later in this protocol.

You do not need to describe animal housing arrangements or other standard husbandry practices here unless those practices will differ from the practices supported by the normal operations of the vivarium staff. If you are unsure if your study-specific husbandry practices are different from the standards provided by the vivarium staff, consult with an RARC research animal veterinarian, WNPRC veterinarian, or the supervisor of the animal facility.

2. **Supporting publications/manuscripts (optional)**

List the title/name of manuscripts, abstracts, or other references supporting your research that the IACUC may find helpful in evaluating this protocol. Do not list standard husbandry references.

3. **Summary files**

Attach file(s) with timelines, illustrations, figures, or other supplemental information that provides an overview of the protocol. Do not attach copies of grant applications.

There are no items to display

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DUPLICATION SEARCH

Describe the search terms and strategy you used to determine that your experiments will not be unnecessarily redundant.

1. **Duplication databases**
   List two or more databases searched (e.g., AltWeb, Biological Abstracts, NORINA, PubMed, etc.):
   * .
2. **Duplication years covered**
   Indicate the timeframe covered by search (yyyy-yyyy):
   * .
3. **Duplication recent search**
   Indicate the date of the most recent search (mm/dd/yyyy):
   * 4/10/2017
4. **Duplication keywords**
   List the keywords used for search:
   * .
5. **Duplication other**
   List any other methods you used to determine that you did not unnecessarily duplicate other research and/or involve animals in teaching. This should be secondary to the database search. Examples of other sources are conference attendance, professional expertise, specific journal articles, training, etc.
6. **Duplication narrative**
   Provide a brief narrative description of how the search results were evaluated to avoid unnecessary duplication. Please state if the research proposed in this protocol was determined to be novel. **If not**, describe why it is necessary to repeat previously published findings as part of this research endeavor.
   * .

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SELECT STUDY TEAM

1. **Study team**

   Add all research personnel, including the PI, who will work with animals under this protocol. Do NOT include animal facility supervisors, professional animal care staff, or research animal veterinary staff. DO add protocol writers and email contacts if they will work with animals. If a study team member or a lab member won't be handling animals for over 30 days, or you can't find a name in the drop down, email arrow_help@rarc.wisc.edu.

   *

	Name	Office phone	Lab phone	Cell phone	Email
View	[redacted]	[redacted]			[redacted]@rarc.wisc.edu

2. **Study team groups**

   List GROUPS that will work with animals on this protocol (e.g., 4th year veterinary students, SPI). Do NOT name individuals. Do NOT include assignments.

3. **PI oversight**

   If the PI (him or herself) will not be handling or working with a live species, explain how the PI will provide the oversight necessary for compliance with animal program regulations and requirements.

4. **Supervisor/trainer for staff with < 1 yr experience**

   For any individuals added to the study team who may not have at least one year of experience, please state who will train and supervise.

   *

5. **Confirm Training**

   Please confirm that all study team members have completed the Animal Contact Risk Questionnaire and are medically cleared to handle animals. For assistance, contact [redacted] at University Health Services, [redacted]

   *

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ASSIGNMENTS AND QUALIFICATIONS

Click ADD to associate members with species and painful procedures.
To see an individual's education and experience, click the icon next to their name on the ADD pop-up (go to Help for how profiles are managed).
To remove a member, return to the Select Study Team page.

NOTE: ALL study team members MUST be assigned to at least one species.
ALL painful/distressful procedures and surgeries must be associated with at least one staff member.

1. **Study team member assignments**

View

Name	[redacted]
Species	*No Value Entered*
Painful nonsurgical procedures	*No value entered*
Surgeries	*No value entered*
RARC classes	Animal User Orientation - 2017-02-27 UW Animal Program Emergency Orientation - 2016-10-24 Guidelines for Working with Wildlife - 2014-12-30 Animal User Orientation -... **read more...**
Education	*No Value Entered*
Experience	I know how to use guinea pigs. And cats. And abominable snowmen. [redacted] provided hands-on training for using Sasquatch. Boop boop.

2. **Protocol-specific experience/training not included above for any study team member may be included here.**

FINISH PROTOCOL

Note: To complete and submit the protocol, please choose from the steps below:

1. Select 'Hide/Show Errors' to check for any errors or omissions.
2. Select 'Exit' and you will be redirected to the protocol workspace.
3. If you are ready to submit, click "Ready to Submit", and then follow the instructions on the pop up window.

PLEASE NOTE: ONLY THE PI MAY SUBMIT THE INITIAL NEW OR RENEWED PROTOCOL.

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APPENDIX 7C

Blank Paper Protocol Form

RARC Use Only: ___ - ___ ___ - ___ ___ ___ ___ - ___ ___ ___ ___ ___ ___ - ___ - ___ ___ - ___ ___
Revision 02/2011

UNIVERSITY OF WISCONSIN - MADISON ANIMAL CARE AND USE PROTOCOL REVIEW FORM

Forms should be typed or in computer-printed format. **PLEASE MINIMIZE** formatting changes when preparing on computer.
PC & Macintosh word processing forms can be downloaded via the RARC homepage: http://rarc.wisc.edu/
Return completed forms to RARC (396 Enzyme Institute, 1710 University Ave., Madison, WI 53726).
Preferred method of delivery: attachment to e-mail (call [redacted] or [redacted] for e-mail address).
Hard copy not required except for the page with PI signature, which must be sent or faxed (265-9040).

INVESTIGATORS: Animal protocols are assigned for review to the Animal Care and Use Committee(s) that provides oversight of the facility or facilities where the animals assigned to this protocol will be housed. *Questions? Call Debbie (262-7109), Diane (265-3989), Nancy (890-4563) or Holly (265-9241) at RARC, or consult the "Guide to Completing the Animal Use Protocol" on the RARC website.*

Submission Deadlines by College or School:

- School of Medicine & Public Health:
  4:00pm the 15th of the month
- School of Veterinary Medicine: rolling deadline
- College of Agricultural and Life Sciences:
  4:00pm on the 1st of the month
- College of Letters and Science:
  4:00pm on the 1st of the month

RARC Office Use Only:

___ Survival Surgery	___ Restraint	Amendment Stamp/Approval
___ Nonsurvival Surgery	___ Paralytic Agents	
___ Rodent Surgery	___ Fluid/Food Restrictions	
___ Nonrodent Surgery		
___ Multiple Major Survival Surgery	___ Nonstandard Housing	
	___ Nonstandard Husbandry	
___ Critical Veterinary Care		
___ Class B Dog/Cat	___ Occupational Health & Safety	
	___ Biohazards	
___ Exercise Exemption	___ Radiation	
___ Enrichment Exemption		

NOTE: ALL PROTOCOLS ARE VALID FOR THREE (3) YEARS FROM DATE OF APPROVAL.

1. Principal Investigator/Project Director:
Telephone Numbers: Office: Lab: Animal Emergency:
Home: Fax: E-mail Address:

Alternate for animal emergency or study-related action/communication with Authority to act in the Investigator's absence:
Name of Alternate for animal emergency/study-related action:
Alternate Office Phone: Alternate Phone: Alternate Email:

Alternate contact for clerical purposes only for this protocol:
Name of Clerical Alternate:
Clerical Alternate Office Phone: Clerical Alternate Phone/Email:

2. University Department (of PI): Office Address:
Unit & Division Number (UDDS):

3. Type of submission (underline appropriate category): NEW RENEWAL AMENDMENT
If Renewal or Amendment, please give current protocol code (e.g. G00180): Code:

4. This protocol is for: TEACHING or RESEARCH (Underline all that apply) BIOMEDICAL; BEHAVIORAL; OBSERVATIONAL; AGRICULTURAL; FIELD; OTHER (SPECIFY)

5. Title of this animal protocol:

6. Classification of animal use (will be completed by RARC administrative staff): 1 2 3 4 5

7. Underline the appropriate response to each question below:

a) Will ANY surgery be performed on any animals?	**YES**	**NO**	If yes, fill out questions 24-30.
b) Will you be working with wild-caught animals?	**YES**	**NO**	If yes, fill out questions 31-34.
c) Will you be using nonhuman primates?	**YES**	**NO**	If yes, fill out question 35.

8. Procedure locations: Will any procedures on live animals (e.g., blood collection, injections, euthanasia, scans, etc.) be conducted in labs or other facilities outside of housing area? Underline one: **YES NO**
If YES, enter information on the table below, using additional lines as necessary. "Precautions" refers to steps taken to prevent potential disease transfer upon return to normal housing.

NOTE: *Any location where animals are kept for more than 12 hours is considered HOUSING and should be included in Question 10.*

(*hit "tab" in bottom right cell to add additional row)*

Procedure	Building/Room #	Length of stay (hrs)	Method of transport & precautions, if any
example: blood collection, euthanasia	396 Enzyme Inst	<6	opaque cage in animal transport van

9. Species, Numbers, and Sources of Animals
NOTE: TOTAL NUMBERS ARE FOR THE ENTIRE THREE-YEAR LIFE OF THIS PROTOCOL.

a. Numbers of animals needed for experiments for 3 years**:** *(hit "tab" in bottom right cell to add additional row)*

Species of animal	Total for 3 years	Source of animals (e.g. commercial vendor, another UW-Madison protocol)

b. Will any dogs or cats be obtained from Class B dealers? (Underline one) **YES NO**

NOTE: *Use of animals from Class B dealers **requires** permission from the Animal Care and Use Committee.*

c. To ensure the health of laboratory animals, the Investigator must consider the previous use of animals on other projects. The investigator must take into consideration how previous nutritional manipulations, blood draws, drugs and materials administered, and other manipulations may have compromised the animals' fitness for the proposed study in this protocol, or how the proposed study may adversely impact animals given their health history and assignment to earlier projects. **Animals that have undergone a major operative procedure, permanent physiologic alteration, or substantial impairment on a previous protocol are not eligible for major operative procedures on subsequent protocols.**
Have any of the animals listed in Question 9(a) been part of any other protocols (include breeding animals obtained from other investigators)? Underline one: **YES NO**
If YES, briefly explain how you have determined that the previous use of these animals will not compromise the animal's health and the research proposed in this protocol.

10. Housing: Building(s)/facilities—including procedure room(s)—where the animals will be housed for more than 12 hours.

11. <u>Explanation of Goals, Animal Use, and Choice of Species</u>

a. In straight-forward, nonmedical, nontechnical language that would be understandable to a layperson (aim for a high school-senior reading level), outline the specific scientific goal(s) and significance of this research. Be convincing as to why this work is important for advancement of knowledge, improving human or animal health, or for the good of society. Spell out all acronyms at first occurrence**. If this is a Renewal submission** please provide a brief (2-3 sentences) description of your progress and productivity in the past three years to help the Committee evaluate animal usage. This description can be a citation(s) to a publication generated from this research or new directions that will be pursued in the next three years. If a published manuscript is not yet available, a brief description of any other progress can be provided, such as abstracts, oral presentations, or presentations at meetings.

b. Specifically justify the use of animals for this research. Explain why it is imperative to use animals and why ***non-animal alternatives*** such as computer simulation or in vitro systems are not possible

c. Specifically justify why you chose the species cited in 9(a) for your work, such as the appropriateness of the species for your proposed work. Cost considerations are not justifications.

12. **Explain how the number of animals required was determined and justify that need**. Include all control animals and breeding colony animals in this discussion. A table may help clarify different experimental groups or studies and the specific numbers needed for each. Include any statistical analysis used (e.g. power calculations) in determining the animal numbers.

13. **Current or pending funding** for this project (add more entries as needed):

Title of Grant (1):
Funding Source (1): Grant Number (1):

Title of Grant (2):
Funding Source (2): Grant Number (2):

14. Identify the person(s) or animal care unit responsible for *daily* animal care:

15. Research/teaching staff expected to work with the animals in this study (*please delete examples*)

INVESTIGATORS: Everyone listed below must take the "Responsible Use and Care of Laboratory Animals" certification course before starting work with research animals. Protocols cannot be approved until PI and all listed personnel are certified. *RARC also offers several species-specific animal handling courses and procedures training (e.g. blood draw techniques, surgery). For information, call RARC 265-2694.*

(hit "tab" in bottom right cell to add additional row)

Name / Degree / Phone number	**Will work with the following species within this protocol**	**List the year each individual began working with the specie(s) and performing the procedures they will work with/perform in this protocol.** **NOTE**: *For personnel who have worked with the named species less than 1 year, indicate who will train and supervise them.*
Joe UW Scientist/PhD, DVM 222-3333	Dog, rat	Dog: blood draws, vein grafts, tissue harvest since 1996; Rat: blood draws, splenectomies since 2003
Jane UW Student/BA/222-4444	rat	no experience, will be trained in blood draws by Dr. Scientist; will only perform blood draws

16a. **Search for Unnecessary Duplication and Alternatives to Potentially Painful / Distressful Procedures**

16a 1. UNNECESSARY DUPLICATION

The Animal Welfare Act and USDA Animal Care Policy #12 require PIs to assure the Committee that you have considered whether or not your proposed work unnecessarily duplicates existing knowledge. **The USDA believes that database searches remain the most effective and efficient method for demonstrating compliance with the requirement to consider unnecessary duplication of research.** To satisfy this requirement provide the following information:

(hit "tab" in bottom right cell to add additional row)

Electronic databases searched	**Years covered by search**	**Date (MM/DD/YY) of most recent search performed**	**Frequency with which searches are performed (e.g. monthly)**	**Keywords used for this search**

Please provide a short narrative below of findings from your search. If your research will duplicate existing knowledge please state why this duplication is imperative to the attainment of scientific goals of the protocol.
Narrative 1:

16a 2. Alternatives to procedures that may cause MORE THAN MOMENTARY OR SLIGHT PAIN OR DISTRESS

There may be alternatives to procedures that cause more than momentary pain or distress and that will not interfere with your research. Procedures that cause only momentary pain or distress are quick and minimally invasive, such as simple injections or blood collections, and typically do **not** include procedures performed under anesthesia. Do any procedures you have proposed cause more than momentary or slight pain or distress?

[ ] No
[ ] Yes

If YES, USDA Animal Care Policy #12 requires PIs to assure the Committee that alternatives to procedures that cause more than momentary or slight pain or distress have been considered. To satisfy this requirement, **the USDA believes that database searches remain the most effective and efficient method for demonstrating compliance with the requirement to consider alternatives to more than momentary painful / distressful procedures.** Note that alternatives that do not allow the attainment of scientific goals of the research are not considered to be viable alternatives.

Use the keywords 'refinement' and 'alternative' in conjunction with each procedure that causes more than momentary or slight pain or distress and species. Note that pain management for each of these procedures should be addressed in Questions 18 and/or 27a and/or 29.

(hit "tab" in bottom right cell to add additional row)

Electronic databases searched	Years covered by search	Date (MM/DD/YY) of most recent search performed	Frequency with which searches are performed (e.g. monthly)	Keywords used for this search (e.g. "procedure + species + refinement+ alternative")

Please provide a short narrative below of findings from your search. If an alternative or refined method was found, but cannot be used in your research, explain why this is the case.
Narrative 2:

For further guidance on conducting searches visit:
http://awic.nal.usda.gov/nal_display/index.php?info_center=3&tax_level=1&tax_subject=184
http://researchguides.library.wisc.edu/animalalternatives

16b. Occupational Health and Safety Considerations

Radiation or biohazard material usage in animals: In the table below, mark YES or NO for each category as it applies to this protocol. If YES, indicate the specific materials in the right-hand column and show the status (approved or pending) of Biological Safety (OBS-2) and/or Radiation Safety (99A) protocols**.**

Category	Used in project? (Yes/No)	If YES, list specific materials used
Recombinant DNA		
Genetically altered materials		
Infectious agents:		
Bacteria		
Virus		
Prion		
Other		
Carcinogen or mutagen		
Toxic agent		
Human-derived materials		
Teratogens		
Other		
Radioactive material		

Status of OBS-2 *needed for this project*: (Underline below OR check here): [ ] Not applicable to this project.

PENDING APPROVED Provide OBS-2 number if approved:

Status of 99-A *needed for this project*: (Underline below OR check here): [ ] Not applicable to this project.
PENDING APPROVED Provide 99-A number if approved:

c. **Special Precautions for Personnel:** If you are using any agent that could be hazardous to humans or animals, please provide any special precautions that should be followed by your lab personnel, animal caretakers, veterinarians, maintenance and/or sanitation personnel, or anyone else entering the areas where experiments are conducted or animals are housed. Include any special practices required for handling of any animal or experimental waste, animal carcasses, and cages and caging materials. Consider such requirements as masks or respirators, eye protection, lab coats, gloves, and disposal methods. Also consider posting signage for special requirements on animal room doors and/or cages.

You must address Question 17 separately for each species.

17. **Description of Proposed Experimental Design/Studies**

a. In this section describe the animals' roles in your experiments—that is, the treatments and procedures the animals will receive outside of normal husbandry, from the first experimental manipulation to the final outcome. This response should provide the Animal Care and Use Committee with a clear understanding of what specifically happens sequentially to each animal or group of animals, and over what time period the procedures occur, including but not limited to:

- definitions of all materials given to animals, including dosage range, routes, and frequency of administration;
- blood draw methods, sites, and % volume
- breeding procedures/methods, if this protocol is to cover an animal colony or herd;
- the expected sequence, frequency, and duration of procedures;
- brief description of any devices/implants animals will receive, surgical and nonsurgical;
- the timing of any surgery within the experiment (do not repeat the surgical description you will provide in Question 28a);
- method, frequency, volumes, and numbers of biological samples taken;
- experimental diets;
- use of toxic agents, biohazardous materials, or radioactive materials (list in Question 16b);
- social or environmental manipulation;
- methods of antibody production.

b. Do any animals undergo any type of restraint beyond normal housing methods? (examples of non-normal housing include metabolic crates and restraint chairs). Underline one: **YES NO**
If YES, describe the method, length of restraint, and justification for such restraint. If the design of the study requires continuous restraint for longer than 12 hours without the opportunity for exercise, be sure the justification addresses need for such an extended period and include the maximum length of time the animals will be restrained. Include any plans for providing additional enrichment and any steps taken to avoid physical discomfort during the restraint. If you are unsure whether or not your proposed methods are considered restraint, contact your Attending Veterinarian.

c. Are any animals subjected to fluid or food restriction or regulation? Underline one: **YES NO**
If YES, discuss type and length of restriction, the expected consequences of restriction on the animals' health and well-being, and justification for such restrictions.

d. Will any animals require nonstandard husbandry or housing exemption (e.g. exercise exemption, modified light cycle, extended cage cleaning periods, nonstandard cage type or size, etc.)? Underline one: **YES NO**
If YES, indicate the type of nonstandard husbandry required and scientific justification for these practices.

18. Will animals be subjected to **more than momentary or slight pain or discomfort** as a **result** of the experimental or other study-related procedures? Underline one: **YES NO**
If YES describe the analgesics you will provide. Include drug names (generic preferred), dosages, route of administration, nursing care, mechanical devices, etc.

NOTE: If all experimental or other study-related procedures are **terminal** and therefore performed only on anesthetized animals, type an X between the brackets: [ ]

19. Describe how frequently animals will be monitored to ensure they are not experiencing pain or discomfort from your procedures **or** any unanticipated illness or injury not necessarily directly related to your research. Describe the criteria or clinical signs (e.g. ruffed fur, hunched posture) that you will use to determine when euthanasia will be performed in these cases.

20. Describe the **specific criteria** for termination of animals **if experiments could induce chronic disease, tumors or radiation sickness.** These criteria should be described in terms of tumor size, specific animal characteristics or behaviors, weight loss changes, observed clinical signs, etc.

NOTE: *If experiments are not expected to induce these conditions, please type an X between the brackets*:
[ ] **Chronic disease, tumors or radiation sickness are not anticipated**.

21. Describe the methods of euthanasia used, including drugs, dosage, and any sedation. Consult the 2007 *Report of the American Veterinary Medical Association (AVMA) Guidelines on Euthanasia (*www.avma.org/resources/euthanasia.pdf*)* or your school's Attending Veterinarian for appropriate euthanasia methods. **Even if euthanasia of animals is not part of this project, complete this Question for cases of unanticipated illness or injury.**

NOTE: *In general, physical methods (cervical dislocation, decapitation) are recommended for use only after other acceptable means have been excluded, in sedated or unconscious animals when practical, when scientifically or clinically justified, and with Animal Care and Use Committee approval. Physical methods* ***without*** *pre-anesthesia* ***require*** *scientific justification and description of the training of personnel who will perform it.*

22. If the animals are not euthanized at the end of the study, what will happen to them? Include descriptions of transfer of animals to other approved animal care and use protocols, or return of animals to managed colonies or herds.

23. Could any animals or animal products involved in these studies possibly be consumed by humans? Underline one: **YES NO**
If YES, list any drugs to be given to the animals and the recommended withdrawal times before safe consumption:

INVESTIGATOR SIGNATURE:

To the best of my knowledge, I certify that the information provided in this Animal Care and Use Protocol is complete and accurate. I understand that approval must be renewed annually, that every third year the ACUC must perform a new review of my protocol, and that I might be required to complete a newer version of the Animal Care and Use Protocol and provide additional information at the time of the triennial review.

I also understand that ACUC approval must be obtained by an amendment to this protocol before I:

- Use additional animal species, increase the number of animals used, or increase the number of procedures performed on individual animals;
- Change procedures in any way that might be considered a significant departure from the written protocol;
- Perform additional procedures not described in this Animal Care and Use Protocol;
- Allow other investigators to use these animals on other protocols, or use these animals on another of my ACUC-approved protocols.

I further certify that:

- No personnel will perform any animal procedures until they have been approved by the ACUC, via RARC. When new or additional personnel become involved in these studies, I will submit their qualifications, training, and experience to the ACUC and seek ACUC approval before they are involved in animal studies;
- I will ensure that all personnel are enrolled in an institutional Occupational Health and Safety Program prior to their contact with animals, or have declined in writing to participate, if allowed by local policy;
- I will provide my after-hours telephone numbers to the animal care staff in case of emergency.

I plan to follow the provisions for the care, use and treatment of animals found in the NIH "Guide for the Care and Use of Laboratory Animals," or the "Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching". I assure that these procedures do not unnecessarily duplicate previous experiments.

Signature of PRINCIPAL INVESTIGATOR/PROJECT DIRECTOR: _____

(A signature is required for submission. Either print, sign, and fax this page to 265-9040 with a cover sheet that identifies you/your protocol clearly, or paste an image of your handwritten signature here.)

Questions for Projects Involving Surgical Procedures

24. Give the names of all research staff who will perform hands-on surgery on the animals in this study. For each person listed, describe their type and length of surgical training and experience, emphasizing **specific** experience with surgeries to be performed as a part of this study. For personnel listed below who have less than 1 year of experience with the surgeries they will be involved with, indicate who will train and supervise them. *Please delete the examples are provided in the table below for you*.

(hit "tab" in bottom right cell to add additional row)

Name/Phone Number	Brief description of SURGICAL training/experience.
Jane UW Scientist / 222-3333	DVM 1995; have performed rat splenectomies since 1996
Joe UW Student / 222-4444	No surgery experience, will be trained in surgical techniques by Dr. Scientist

25. Where will surgery be performed? Room number(s): Building:

26. How many animals listed in Question 9(a) will undergo surgery?

27. **Anesthetics and Paralytic Agents**

a. Describe anesthetic method used, including all drugs, dosages, routes of administration and supplementation regimen. Include how anesthesia level is monitored, e.g., list the physiologic parameters that will be monitored to ensure adequate anesthesia depth for both general and local anesthesia. *Documentation of the anesthesia used and the monitoring of anesthetic depth is **required** for all surgical procedures*.

b. Are any paralytic agents being used? Underline one: **YES** **NO**
If YES, indicate agent, justification for use, and any special monitoring techniques used to assess animal condition while under paralysis.

28. **Surgical Procedures**

a. Describe the surgical procedure(s), including narrative description(s) for the following: reason for the surgery, incision site(s), tissue isolation methods, wound closure, and an estimate of time required to complete the surgery.

NOTE: *Aseptic procedures must be used for all survival surgery*.

b. Describe which of the following procedures will be used to maintain a sterile field during surgery (place an X between the brackets of all that apply):

[ ] sterile instruments: specify method: [ ] bead sterilizer [ ] autoclave [ ] describe other:
[ ] sterile gown/garb [ ] sterile gloves [ ] sterile drapes [ ] face mask/eye protection
[ ] surgeon scrub [ ] other (please describe):

29. Will the animals be allowed to recover from surgery? (Underline one) **YES** **NO**
If YES, describe the post-anesthetic and post-surgical monitoring and care procedures, including:

- all drugs and dosages
- how body temperature will be maintained during recovery
- the plan for suture or staple removal
- who will perform the monitoring, frequency/duration of monitoring
- the parameters that will be evaluated
- method of maintaining written records of these examinations
- measures designed to alleviate post-operative discomfort

NOTE: *Documentation of the post-operative monitoring of post-surgical animals is required!*

30. Will any animal(s) be allowed to recover from more than one major operative procedure?
Underline one: **YES** **NO**

NOTE: *A major operative procedure is defined as any surgical intervention that penetrates and exposes a body cavity or any procedure that produces permanent impairment of physical or physiological functions.*

a. If **YES**, provide scientific justification for performing these procedures and list the species and number of animals:

b. What is minimum length of time between the operative procedures?

Questions for Projects Using Wild-Caught Animals

(It is the responsibility of the PI to obtain all necessary state and federal permits for work with wild animals.)

31. Do you capture wild animals or do experimental manipulations (or procedures) on animals in the wild?
Underline one: **YES** **NO**, Observation only

32. If you capture wild animals, describe how they will be trapped, what types of traps will be used, and how often traps will be checked.

33. **Quarantine and Release Information**

a. Describe quarantine procedures and precautions to prevent exposure of humans and other animals to zoonotic diseases.

NOTE: *If animals will not be housed, please state this.*

b. If animals will be released back to the wild, explain how the released animals will not present a disease exposure to wild populations and explain why this release will not expose the animal to greater risk of predation as a direct result of procedures performed or materials administered.

NOTE: *If animals will not be released back into the wild, please state this.*

34. If wild animals will be anesthetized and released to the wild, describe anesthetic doses, method of administering and procedures for assuring that animals are sufficiently recovered from anesthetic to be released. Consider that prey species may have to be monitored until fully recovered to avoid predation.

NOTE: If animals will not be anesthetized, please state this.

Questions for Projects Using Nonhuman Primates

35. **Nonhuman Primate Enrichment**

a. If nonhuman primates used in your study must be housed individually due to scientific consideration, provide that scientific rational.

b. Provide scientific rationale for any restrictions to environmental enrichment. Include the specific restriction(s) such as: puzzle feeders, cage perch, wooden chew sticks, food treats (bananas, carrots, oranges, other fruit or vegetables), etc.

APPENDIX 8

IACUC Meeting Minutes:

8A: Open and Closed Session Minutes from April 2017
8B: Open and Closed Session Minutes from May 2017

APPENDIX 8A

IACUC Meeting Minutes

Open and Closed Session Minutes from April 2017

WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON

School of Medicine and Public Health Animal Care and Use Committee
Open Session – April 3, 2017

Present (voting): [redacted]

Present (nonvoting): [redacted]

Guests: [redacted]

Absent: [redacted]

Dr. [redacted] called the meeting to order at 8:30 a.m.

Approval of Open Session Minutes of March 6, 2016

[redacted] moved to approve the Open Session Minutes as submitted. The vote was unanimous with [redacted] voting present.

Annual Reapprovals (April)

[redacted] moved to approve the annual updates. The vote was unanimous.

Protocol Reviews

M005763: Treatment and Diagnosis of Ovarian Cancer - Discussion of the protocol ensued, with reviewers noting this protocol was deferred last month. As requested, the PI consulted both with the veterinary staff and safety staff in preparing the rewrite. The PI will be asked to clarify the blood collection regimen and update the chemical and biological hazards sections. [redacted] moved to require modifications to secure approval. The vote was unanimous.

M005806: UW Comprehensive Cancer Center Support Grant - Discussion of this support grant protocol, which is required by the funding agency, ensued. [redacted] moved to approve the protocol as submitted. The vote was unanimous.

M005790: Molecular mechanisms regulating the asymmetric segregation of cargoes during mitosis - Discussion of the protocol ensued. The PI will be asked to clarify the movement of animals between locations, to update the analgesia to be used for craniotomies, and to make other changes. [redacted] moved to require modifications to secure approval. The vote was unanimous.

M005697: Sleep, sensory disconnection and synaptic homeostasis - Discussion of this solicited protocol amendment ensued. The PI will be asked to provide more details in the surgery summary and experimental narrative, and to make other changes. A veterinary

consultation will be required. [redacted] moved to require veterinary consultation by the PI or designee with Drs. [redacted] and [redacted] to respond to the requested modifications to secure approval. The vote was unanimous.

M005784: Animal models of inherited arrhythmia syndromes using adeno-associated virus - Discussion of the protocol ensued. The PI will be asked to make clarifications to reflect the lab's use of a core service, to update the number of animals requested, and to make other changes. [redacted] moved to require modifications to secure approval. The vote was unanimous.

M005779: Thyroid Cancer Stem-Like Cells - Discussion of the protocol ensued. The PI will be asked to simplify the significance description, to strengthen the explanation of species choice and animal numbers justification, and to make other changes. [redacted] moved to require modifications to secure approval. The vote was unanimous.

M005782: Tumor Suppressor and Oncogenes in Cancer Development - Discussion of the protocol ensued. The PI will be asked to provide more information about particular cancers of interest for these studies, to update the chemical hazards information, and to make other changes. [redacted] moved to require modifications to secure approval. The vote was unanimous.

M005785: The Role of Macrophage Inhibition by the Rat Healing Ligament - Discussion of the protocol ensued. The PI will be asked to make several clarifications in the experimental narrative, to update details about blood collection and intraoperative monitoring, and to make other changes. [redacted] moved to require modifications to secure approval. The vote was unanimous.

M005786: Virulence Factors in Fungi - Discussion of the protocol ensued. The PI will be asked to strengthen the justification for having lab staff provide daily husbandry, to clarify the use of a nonpharmaceutical grade compound, and to make other changes. [redacted] moved to require modifications to secure approval and to require a veterinary consultation in preparing the rewrite. The vote was unanimous. Dr. [redacted] requested to review the rewrite.

[redacted] and [redacted] joined the meeting]

Dr. [redacted] stated his intent to take agenda items out of order to accommodate invited guests. He welcomed Institutional Official Dr. [redacted] to the meeting.

Update from the Institutional Official

Dr. [redacted] thanked the committee members for inviting her, and for their time serving on the ACUC. She said she knows from personal experience that the commitment is significant. She thanked Dr. [redacted] for agreeing to chair the SMPH ACUC when she accepted the position of Institutional Official. Dr. [redacted] said she has two items for her update.

First, she noted that the animal program has been focusing heavily on reducing the number of expired medical materials and substances found in animal use areas, both in facilities and in laboratories. The presence of such items poses an institutional risk for citations and could

impact animal welfare. Dr. [redacted] requested that the SMPH ACUC consider potential specific consequences that the committee could deliver to those responsible when expired materials are identified on semiannual inspections, with the goal of Dr. [redacted] reporting those ideas to the All Campus Animal Planning and Advisory Committee (ACAPAC). Dr. [redacted] asked Ms. [redacted] to include this on the May agenda.

Second, Dr. [redacted] said that the issues of reducing regulatory burden on Principal Investigators, and reducing unnecessary self-imposed regulatory burden, are important topics being discussed and explored both nationally and at UW-Madison. She said that she will want the ACUC to consider ways in which regulatory burden could be reduced within the animal program, noting that she is meeting with Ms. [redacted] and Dr. [redacted] to discuss some ideas such as discontinuing the annual update for protocols that do not have Department of Defense funding, or do not include USDA-covered activities with animals. Dr. [redacted] asked that when proposed changes to ACUC business practices are presented to the committee for discussion that committee members be open-minded about the ideas. She noted that reducing burden in other areas of research compliance, such as requiring annual HIPPA training, are also being reviewed.

Dr. [redacted] called for questions for Dr. [redacted] Hearing none, Dr. [redacted] said that all members are welcome to contact her anytime with questions or comments. Dr. [redacted] and others thanked Dr. [redacted]

[redacted] left the meeting]

Dr. [redacted] then stated his intent to take agenda items out of order and adjourn into closed session to accommodate invited guests. [redacted] moved to adjourn into Closed Session for discussion of research protocols or other documents containing confidential proprietary information and personnel matters relating to such research protocols, pursuant to Wisconsin Statutes Section 19.85(1)(c), (d), (e), and (g). The vote was unanimous by roll call. Dr. [redacted] invited Drs [redacted] and [redacted] to stay for Closed Session for purposes related to closed session discussion items.

After closed session the meeting adjourned back into Open Session.

Protocol Reviews (cont.)

M005787: Mechanisms of 2DGs Antiepileptic Effects - Discussion of the protocol ensued. The PI will be asked to clarify the delivery of isoflurane, to simplify the significance description, and to make other changes. [redacted] moved to require modifications to secure approval. The vote was unanimous.

M005799: Characterization of virulence factors in uropathogenic E coli - Discussion of the protocol ensued. The PI will be asked to move the description of isoflurane use to the chemical hazards page, provide dosing details for experimental substance administration, and to make other changes. [redacted] moved to require modifications to secure approval. The vote was unanimous. Dr. [redacted] requested to review the rewrite.

Postponed Agenda Items

- Post-approval Monitoring: Report from Senior Program Veterinarian
- Post-approval Monitoring: Report from LAR
- Post-approval Monitoring: Report from Animal Program Assessment Specialists
- Committee Training

Logs: Designated Review/other (April)

The committee reviewed the designated review and veterinary verification and consultation logs.

Dr. [redacted] called for other business for Open Session. Hearing none, [redacted] moved to adjourn the meeting. The vote was unanimous, and the meeting was adjourned at 12:30 p.m.

[redacted]

Appd by SMPH Acuc
1 May 2017

LOGS for SMPH ACUC – April 2017

Designated Review New/Renewal

PI	Prot #	Date Rec'd	Title	Species	N/R
[redacted]	M5797	3/13	Methods to treat intimal hyperplasia	Pig	New pending

Designated Review Amendment

PI	Prot #	Date Rec'd	Title	Species	Sum of change
[redacted]	M5020-A06	2/22	Zebrafish - [redacted] Lab	Zebrafish	+addl blood collections appd
[redacted]	M1247	2/23	Immunotherapy of Metastatic Cancer in Mice	Mouse	+new diet appd
[redacted]	M1221	2/27	Biochemical Function of Synaptotagmin in Excitation-Secretion Coupling	Rat, mouse	+behavioral core pending
[redacted]	M5719-A01	3/1	Genetic Mouse Models for Primary Congenital Glaucoma –Basic	Mouse	+isoflurane, updates appd
[redacted]	M5327-A04	3/1	Diffusion Tensor Imaging Analysis of Neuropsychiatric Disorders	Rat	(V/C) +procedure room appd
[redacted]	M5204-A06	3/2	Atacicept is a potential intervention for antibody mediated rejection	Mouse, rat	+addl drugs pending
[redacted]	M5252-A04	3/2	Metabolic effects of postnatal hyperoxic exposure	Rat	+addl proc rooms appd
[redacted]	M5599-A01	3/6	Gut microbial metabolism and health	Mouse	+addl blood collection, +Biotron hsing, +trans animals to CORE protocol appd
[redacted]	M2630	3/6	Intranasal administration of MMP-9 to improve drug targeting to the brain: mechanisms of action and systemic toxicity	Rat	+addl drug deliveries, +isoflurane withdrawn
[redacted]	M2298	3/9	Neurosensory Biology of the Mouse	Mouse	(V/C) +/-housing, proc rooms pending
[redacted]	M2501	3/9	Listeria monocytogenes virulence and induction of protective immunity	Mouse	+addl drugs appd
[redacted]	M5501-A03	3/9	Real time PET/MRI imaging of pulmonary embolism…and subacute pulmonary embolism	Pig	+increase numbers pending

Vet Verified Change (VVC) Remember to notify safety

PI	Prot #	Date Rec'd	Title	Species	Sum of change

[redacted]	M5572-V01	2/16			+pregabalin pend ug

Dual School Review

PI	Prot #	Date Rec'd	Title	Species	Addl ACUC
[redacted]	G005362-A04	2/20/17	Tomotherapy and hematopoietic stem cells for tolerance to kidney transplants	rhesus macaque	SVM
[redacted]	G005698-A04	2/27/17	Nonhuman Primate Bone Marrow Transplantation Model	cynomolgus macaque	SVM
[redacted]	G005424-A02	2/24/17	Hematopoietic stem cell treatment of SHIV infected Mauritian cynomolgus macaques	cynomolgus macaque	SVM
[redacted]	V5794	3/8	Mouse model for respiratory tuberculosis	Mouse	

heck-off List

April 2017 SMPH Re-Approvals

PI	Protocol	Returned
[redacted]	M01162-0-03-15	
	M02329-0-02-15	
	M02346-0-02-15	
	M02520-0-03-15	
	M02646-0-03-15	
	M02647-0-03-15	

Dates appr'd & updated @ SmPH AAALAC 4.3.17

Annual Reapproval Summary [approved 4/9/2015]

Protocol#: M01162-0-03-15 **Name** [redacted] **Department:** Oncology

Project Title: The Role of the Ah Receptor and Related PAS Proteins in Mammalian Health and Disease

Species: mus

Housing: [redacted]

Synopsis Of Experimental Manipulations And Invasive Procedures:
(N/A) genotyping, agent dosing, blood collection, treatments, tumor formation, vaginal smear, embryo implant, artificial insemination, ([redacted] vascular perfusions

Euthanasia:
CO2 exposure per PHS guidelines 2003, cervical dislocation

Multiple Surgeries Approved: N

Synopsis Of Amendments:
(041315)+144 mice-4/24/15; +P-5/21/15; +P-8/13/15; +P-2/3/16; +/-P-6/1/16; +P-9/12/16;

Other Comments:

Annual Reapproval Summary [approved 4/24/2015]

Protocol#: M02329-0-02-15 **Name:** [redacted] **Department:** Dermatology

Project Title: Treatment of Psoriasis by Naturally Occurring Agents

Species: mus

Housing: [redacted]

Synopsis Of Experimental Manipulations And Invasive Procedures:
treatments, euthanasia, tissue collection

Euthanasia:
CO2 exposure per PHS guidelines 2003

Multiple Surgeries Approved: N

Synopsis Of Amendments:

Other Comments:

Annual Reapproval Summary [approved 4/21/2015]

Protocol#: M02346-0-02-15 **Name:** [redacted] **Department:** Bacteriology

Project Title: Regional Denervation of Mice with Botulinum Neurotoxin

Species: mus

Housing: [redacted]

Synopsis Of Experimental Manipulations And Invasive Procedures:
Botulinum toxin injections, blood draws

Euthanasia:
CO2 exposure per PHS guidelines 2003

Multiple Surgeries Approved: N

Synopsis Of Amendments:
(092915) +1800 mice), +addl paralysis assays, updates, +addl BoNT injection routes-10/8/15; +P-11/19/15; -P-5/13/16; +P -9/13/16;

Other Comments:

Annual Reapproval Summary [approved 4/10/2015]

Protocol#: M02520-0-03-15 **Name:** [redacted] **Department:** Orthopedics

Project Title: Molecular Elucidation of Physeal Growth Acceleration After Periosteal Resection

Species: rabbit, mus

Housing: [redacted]

Synopsis Of Experimental Manipulations And Invasive Procedures:
([redacted] periosteal resection, ([redacted] imaging, ([redacted] imaging

Euthanasia:
rabbit-anesthesia followed by overdose of commercially available euthanasia agent (e.g. Euthasol-pentobarbital sodium and phenytoin sodium) 1 ml/4.5kg body weight via marginal ear vein, mice-anesthesia followed by pentobarbital sodium (150 mg/kg)

Multiple Surgeries Approved: Y

Synopsis Of Amendments:
(041515)clarifications, updates, +analgesics, monitoring chgs, +euthanasia methods, +tissue adhesive-4/28/15; +P-5/26/15; +P -5/28/15; (092215)updates, clarifications, age changes-10/15/15; (033116) VVC, euthanasia chgs-4/1/16; ~~

Other Comments:
~E or other commercial euthanasia agent (Euthasol) IP or intra-cardiac pucture, CO2 exposure per PHS guidelines 2003$ ~A -P-6/2/16; (072916)+50 rabbits, +addl growth factors, updates-8/9/16; $

Annual Reapproval Summary [approved 4/24/2015]

Protocol#: M02646-0-03-15 **Name:** [redacted] **Department:** Surgery

Project Title: Characterization of Ultrasonic Vocalizations in a PINK1 Knockout Mouse Model of Parkinson Disease

Species: mus

Housing: [redacted]

Synopsis Of Experimental Manipulations And Invasive Procedures:
[redacted]behabioral analysis, [redacted]transcardial perfusion, [redacted]euthanasia

Euthanasia:
anesthesia followed by perfusion, anesthesia followed by decapitation, CO2 exposure per PHS guidelines 2003

Multiple Surgeries Approved: N

Synopsis Of Amendments:
+/-P-7/22/15; (081415)+addl behavioral test-8/30/15; (101515) +adhesive removal procedure, updates-10/30/15; (031616) proc rm chgs-3/23/16;

Other Comments:

Annual Reapproval Summary [approved 4/13/2015]

Protocol#: M02647-0-03-15 **Name:** [redacted] **Department:** Pathology & Lab Medicine

Project Title: Novel Treatment Strategy Using PPAR-gamma and TRAIL for Colorectal Cancer

Species: mus

Housing: [redacted]

Synopsis Of Experimental Manipulations And Invasive Procedures:
treatments, imaging, colonscopy, injections

Euthanasia:
CO2 exposure per PHS guidelines 2003

Multiple Surgeries Approved: N

Synopsis Of Amendments:
+P-10/23/15; (091916)+breeding-9/28/16;

Other Comments:

SMPH ACUC
April 2017 - open

University of Wisconsin-Madison, Research Animal Resources Center

ACAPAC Policy Number: 2012-050
Policy Title: Adverse Event Reporting

Purpose: This policy provides a campus-wide definition of "Adverse Events" and identifies reporting and review requirements for both protocol-related and non-protocol-related adverse events. The purpose of adverse-event reporting is to improve monitoring, focus resources on problem areas, ensure appropriate follow-up when problem areas are identified, and clarify expectations between the ACUCs, the PIs, and the veterinary and animal care staff. The ultimate goal of this policy is to improve animal welfare.

Definition: An adverse event is defined as any event that caused harm to a vertebrate animal and that meets either of the following conditions:

1. (a) The event is research-related but is not identified in the approved protocol or occurring at a rate or severity higher than is indicated in the approved protocol; or
2. (a) The event is not research-related, but is unanticipated or due to a facility, physical plant, or equipment failure or malfunction, or personnel mistake.

POLICY: Adverse events must be promptly reported to the appropriate Animal Care and Use Committee (ACUC). Any member of the research community (PI, lab staff, veterinary staff, animal care staff) with knowledge of an adverse event may submit a report. Please consult with an RARC veterinarian for assistance with adverse event reporting.

The ACUC will review adverse event reports and may approve proposed corrective plans or require additional actions to ensure animal welfare. The responsible parties will be notified by the ACUC of any actions taken or requirements made regarding an adverse event.

Author: [redacted]
ePublication Date: 9/19/2012 (orig.)
History: amended 2/3/2017

WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON

School of Medicine and Public Health Animal Care and Use Committee
Closed Session – 3 April, 2017

Present (voting): [redacted]

Present (nonvoting): [redacted]

Guests: [redacted]

Absent: [redacted]

Personnel Issues

Dr [redacted] reminded the committee that in February it was reported that numerous expired items including anticoagulant drugs and analgesia were identified in [redacted] room [redacted] on a semiannual inspection. The PI was required to attend an ACUC meeting to discuss a corrective-action plan to ensure that expired items are not found or used in animals in his laboratory. Dr. [redacted] noted a reinspection of room [redacted] took place late last week, and no expired items were found. The ACUC welcomed Dr. [redacted] to the meeting.

Dr [redacted] said he understands the seriousness of expired drugs and materials, and appreciated hearing Dr. [redacted] s statement on the issue. He stated he is proud of his lab's long history of excellent semiannual inspection reports and is unsure how this recent incident occurred. He said that his lab has used the colored dot system for several years to identify expiration dates, and will continue to do so, but will now also institute a running inventory of supplies to better manage items with expiration dates. Dr. [redacted] then made some suggestions for assisting PIs in managing expired materials, such as providing specific information regarding those items for which expiration dates are most important, and approaching semiannual inspections from a less punitive perspective. Several ACUC members explained and emphasized the Committee's regulatory obligation to identify deficiencies on semiannual inspections. Dr. [redacted] asked Dr. [redacted] if he had any other questions or comments. He did not, so Dr. [redacted] thanked him for attending the meeting.

[redacted] left the meeting]

Discussion ensued, including how regulatory fines are managed by UW-Madison. Dr. [redacted] said next month when the committee discusses potential consequences that this will be a good example to review as a model.

Research Animal Resources Center
396 Enzyme Institute 1710 University Avenue Madison, WI 53726-4087
608-262-1238 Fax: 608-265-2698 Email: help@rarc.wisc.edu

Dr [redacted] asked Ms. [redacted] and Dr. [redacted] for their report. Ms. [redacted] said concerns regarding potential biosafety protocol violations and risks to worker safety by a specific individual in Dr. [redacted]'s lab were brought forward to Mr. [redacted] by employees who work at the [redacted] vivarium. The concerns did not concern animal welfare, but necropsies of potentially infectious animals were observed being performed outside of a biosafety cabinet in a shared procedure space. When the employees voiced their unease the lab member dismissed their concerns. Dr. [redacted] stated that the laboratory should have addressed the concerns raised by the employees so that they were comfortable with the work environment. Dr. [redacted] said that she met directly with the PI and the lab member and was unsatisfied with their attitude towards compliance. Ms. [redacted] said that the Institutional Biosafety Committee (IBC) will meet this week and will discuss this situation in detail, but she wanted to provide this as an informational report to the ACUC. Discussion ensued. Dr. [redacted] asked that a follow-up report be provided to the ACUC at the May meeting.

[redacted] left]

Post-approval Monitoring: Report from Senior Program Veterinarian

Dr. [redacted] reported that he received a report that one mouse pup was found dead in the [redacted] vivarium. There was no food present in the cage. Dr. [redacted] said that upon discovery food was immediately provided and no more deaths occurred. He said these animals are assigned to protocol M00495, which has NIH funding, and that Drs. [redacted] and [redacted] were notified of the event. Discussion ensued, and the ACUC asked Dr. [redacted] to provide an update next month.

Dr. [redacted] led discussion of an adverse event reported via ARROW for protocol M005332. A computer error in the controller for a hypoxia chamber in room [redacted] caused the program to crash. As a result the oxygen content in the chamber went too low and eight rats inside the chamber became anoxic. Resuscitation efforts were performed on the rats, but were not successful. Dr. [redacted] said to avoid future incidents the lab now checks the testing equipment twice a day, and has replaced all of the oxygen sensors on all of the controllers. Dr. [redacted] noted this lab has always been timely in their responses to animal-related issues. The ACUC accepted the report and corrective actions.

[redacted] left the meeting]

Postponed Agenda Items

- Inspection Reports
- Post-approval Monitoring: Report from Animal Program Assessment Specialists

Approval of Closed Session Minutes of March 6, 2017

[redacted] moved to approve the minutes with minor editorial modifications. The vote was unanimous. Dr. [redacted] provided an update from those minutes. He heard back from the PI of protocol M01459, under which lab-weaned pups were found to be without food, with more details about the corrective steps that the laboratory has taken to avoid similar incidents. These include the development of a double-checks of animals by lab members three afternoons a

week after the regular morning health check by LAR staff, adopting the use of a "new cage creation" poster with pictures of a correctly set up new cage with food and water provided, and making plans to work with LAR facility supervisors to implement a notification system that lab members can use to clearly mark newly weaned cages more prominently for the LAR staff. Dr. [redacted] added that LAR is hiring an additional weekend staff person, and has implemented a rotational schedule for Animal Research Technicians (ARTs) for room health checks. He believes these changes will strengthen the daily checks performed by the ARTs. After brief discussion the ACUC accepted the reports and corrective actions.

Other Business

Dr. [redacted] called for other business for closed session. Hearing none, [redacted] moved to adjourn into open session. The vote was unanimous.

[redacted]

Appd by SMPH ACUC
1 May 2017

Included in packet for reference. Please sign up on the purple sheet passed DURING CLOSED SESSION

Current as of 3/16/17

School	Name	Date	Start Time	End Time	Special	Inspector 1	Inspector 2
SMPH	[redacted]Facility	Tuesday, April 4, 2017	12:30 PM	3:30 PM		[redacted]	[redacted]
SMPH	[redacted]Core Units	Thursday, April 13, 2017	8:30 AM	11:30 AM			
SMPH	[redacted](Facility & Labs)	Tuesday, April 18, 2017	8:30 AM	11:30 AM	Level 1 No prior rodent contact that day	[redacted]	[redacted]
SMPH	[redacted]Clinical Imaging Labs	Thursday, April 20, 2017	8:30 AM	10:30 AM			[redacted]
SMPH	[redacted]Facility & Labs	Thursday, April 27, 2017	8:30 AM	11:30 AM	1 member N95 fit tested	[redacted]	[redacted]

CONF[redacted]ITIAL

* tra[redacted]times are approximate for One Way trips from west campu[redacted]ARC)

Animal Facilities Inspection Checklist						
Name of Facility: [redacted] facility 2017A					School/College: SMPH	
Supervisor: [redacted]					Date: 02/14/17	
Inspection Team Members: [redacted]) [redacted] R) [redacted] V) [redacted] V) [redacted]) [redacted]					File created: 03/16/17	
Inspection Notes					**Tracking**	
Room	**Description**	**AMS**	**Comments/Notes**	**Correct by Date**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments		A				
[redacted]	Testing chamber	A				
[redacted]	Fish animal housing	A	Reviewed water quality logs.			

Animal Facilities Inspection Checklist						
Name of Facility: [redacted] facility 2017A						School/College: SMPH
Supervisor: [redacted]						Date: 02/16/17
Inspection Team Members: [redacted]) [redacted] R) [redacted] ( ) [redacted] ( ) [redacted])						File created: 03/16/17
Inspection Notes						**Tracking**
Room	**Description**	**AMS**	**Comments/Notes**	**Correct by Date**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments	question to inspectors	A	Hood tracking: these are due in June: [redacted]			
[redacted]	locker room	A				
	locker room	A				
	locker room	A				
	office	A				
	surgery [rodent]	A				
[redacted]	surgery	A				
	surgery	A				
	procedure	N	empty			
	animal housing	N				
	animal housing	N				
	animal housing	N				
	animal housing	N				
	other	N				
	procedure	A				
	animal housing	A				
	animal housing	A				
	animal housing	A				
	support room	A				
	animal housing	N	empty			
	animal housing	N				
	animal housing	N				
	animal housing	N				
	animal housing	A	storage			
	animal housing	A				
	animal housing	N				
	animal housing	N				
	other (janitor)	N				
	procedure	A				
	animal housing	A	empty			

Inspection Notes					Tracking	
Room	**Description**	**AMS**	**Comments/Notes**	**Correct by Date**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments	question to inspectors	A	Hood tracking: these are due in June: [redacted]			
[redacted]	animal housing	A				
	animal housing	A	equipment			
	animal housing	A				
	animal housing	A				
	other	A				
	animal housing	A	empty			
	procedure	A	empty			
	animal housing	A	empty			
	animal housing	A	storage			
	other	N				
	animal housing	A				
	procedure	A				
	animal housing	A				
	animal housing	N	empty			
	animal housing	A				
	other	N				
	storage	A				
	Surgery [level3]	M	MINOR: box of syringes expired 2011/01 (Johnson lab shelf). dispose of OR label for terminal use only if appropriate. [FACILITY REPEAT - expired medical materials]	02/27/17	**R**	Initial email sent to [redacted] on Mon 20 Feb, 17. Per email from [redacted] 28Feb17 : "labeled syringes"
[redacted]	break room	A				
	support room	A				
	cage wash	A				
	storage (feed)	A				
	cage wash	A				
	Breakroom sink.	A				
	locker room	A				

ANIMAL LAB INSPECTION CHECKLIST					School/College: SMPH	
Inspection Unit: [redacted]abs 2017A					Date: 02/16/17	
Inspection Team Members: [redacted]) [redacted]R) [redacted]V) [redacted]) [redacted]V)					File created: 03/16/17	
INSPECTION NOTES					**TRACKING**	
Room	**Protocol [PI] (Species) Procedures**	**AMS**	**Comments/Notes**	**CORRECT BY DATE**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments		A	all labs need new vet contact sheets. send WB			
[redacted]	M02297-0-08-14 [redacted] (mus) perfusion	A				
[redacted]	M02297-0-08-14 [redacted] (mus) euthanasia M005484 [redacted] euthanasia,euthanasia M005521 [redacted] euthanasia,euthanasia	A				
[redacted]	M005020 [redacted] blood collection,euthanasia,euthanasia,imaging,genotyping,anesthesia/analgesia,Sub Admin: Tricaine (MS-222),Sub Admin: N-Phenylthiourea (PTU),Sub Admin: Triphilic polymers	M	MINOR: cardboard on floor.	03/06/17	**R**	Initial email sent to [redacted] on Mon 20 Feb, 17. Per email from Dr. [redacted] 20Feb17 "The cardboard glass container has been placed in a metal box with casters to raise it from the floor."
[redacted]	M02445-0-01-14 [redacted] (mus,rattus) euthanasia,injections,infusions,craniotomy,aorta cannulation,intranasal admin M02630-0-08-14 [redacted] (rattus) transcardial perfusion,intranasal admin	A				
[redacted]	M02445-0-01-14 [redacted] (mus,rattus) euthanasia,injections,infusions,craniotomy,aorta cannulation,intranasal admin M02630-0-08-14 [redacted] (rattus) transcardial perfusion,intranasal admin	A				

INSPECTION NOTES					TRACKING	
Room	**Protocol [PI] (Species) Procedures**	**AMS**	**Comments/Notes**	**CORRECT BY DATE**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
[redacted]	M02622-0-05-14 [redacted] (mus) euthanasiaHuntington disease models M005668 [redacted] euthanasia,euthanasia,isolation of hepatocytes,Euthanasia Methods,Primary cultures	A	needs new vet contact, tell [redacted]			
[redacted]	M02622-0-05-14 [redacted] (mus) euthanasiaHuntington disease models M005668 [redacted] euthanasia,euthanasia,isolation of hepatocytes,Euthanasia Methods,Primary cultures	A	per lab room mo longer in use. hood watch: hood on far side of room was due jan 2016, hood closer to door says FAIL.			

Animal Facilities Inspection Checklist						
Name of Facility: [redacted] facility 2017A						School/College: SMPH
Supervisor: [redacted]						Date: 03/07/17
Inspection Team Members: [redacted]						File created: 03/16/17
Inspection Notes						**Tracking**
Room	**Description**	**AMS**	**Comments/Notes**	**Correct by Date**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments		M	MINOR - Room [redacted] laundry and storage, cardboard on the floor NOTE: cracks running lengthwise through corridors and up some walls are being monitored and addressed via [redacted] and [redacted] plan is the cracks will be fixed before October 2017.	03/10/17	R	Initial email sent to [redacted] on Mar 9, 2017. Per email from [redacted] on 10 Mar 2017, cardboard was thrown out Mar 7, 2017
[redacted]	admin & break w/records	A				
[redacted]	Entry	A				
	Entry/PPE storage	A				
[redacted]	Locker Room & Restrooms	A				
[redacted]	Pass-through Side 1	A				
[redacted]	Main Hallway	A	NOTE: cracks running lengthwise through corridors and up some walls are being monitored and addressed via [redacted] and [redacted] plan is the cracks will be fixed before October 2017.			
[redacted]	Aquatics Suite	A				
	Animal Holding	M	MINOR- water chiller on floor behind door is resting on towel to dampen noise. Towel is nonsanitizable.	03/23/17	R	Initial email sent to [redacted] on Mar 9, 2017. Per email from [redacted] on 10 Mar 2017, towel was removed on Mar 7, 2017.
[redacted]	Procedure	M	MINOR - animal food expired (from 2014) in fridge, 2 carcasses also in same fridge with food. Must separate carcasses from food, perhaps in a second fridge.	03/16/17	R	Initial email sent to [redacted] on Mar 9, 2017. Per email from [redacted] on Mar 10, 2017, animal food discarded on Mar 7, 2017.

Inspection Notes					Tracking	
Room	**Description**	**AMS**	**Comments/Notes**	**Correct by Date**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments		M	MINOR - Room [redacted] laundry and storage, cardboard on the floor NOTE: cracks running lengthwise through corridors and up some walls are being monitored and addressed via [redacted] and [redacted] plan is the cracks will be fixed before October 2017.	03/10/17	R	Initial email sent to [redacted] on Mar 9, 2017. Per email from [redacted] on 10 Mar 2017, cardboard was thrown out Mar 7, 2017
[redacted]	Animal Holding	M	MINOR - expired Gas Relief Drops 1-2017 (used to relieve bloat issues of axotols as needed). Discarded. Water quality testing records checked, all is well.	03/07/17	R	
[redacted]	Janitor's Closet	A				
	Transitional Pass-through Side 2	A				
[redacted]	Transitional Animal Holding	A				
[redacted]	Rodent Suite 1-Mice	A				
[redacted]	Animal Holding	A				
	Animal Holding	A				
	Procedure	M	MINOR - replace cover on outlet near door.	03/23/17		Initial email sent to [redacted] on Mar 9, 2017. Per email from [redacted] work order placed on Mar 10, 2017.
[redacted]	Procedure	M	MINOR - cardboard on floor. Fixed at once MINOR - CellRad by Faxitron is located here. Door exterior therefore needs X-ray safety signage. Contact [redacted] at Environmental Health & Safety for correct signage.	03/23/17		Initial email sent to [redacted] on Mar 9, 2017.
[redacted]	Animal Holding	A				
	Animal Holding	M	MINOR - Each cage card must identify the exact biohazard that is present in the cage. It is not enough to have biohazards posted on interior of the room door.	03/16/17		Initial email sent to [redacted] on Mar 9, 2017.

Inspection Notes					Tracking	
Room	**Description**	**AMS**	**Comments/Notes**	**Correct by Date**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments		M	MINOR - Room [redacted] laundry and storage, cardboard on the floor NOTE: cracks running lengthwise through corridors and up some walls are being monitored and addressed via [redacted] and [redacted] plan is the cracks will be fixed before October 2017.	03/10/17	**R**	Initial email sent to [redacted] on Mar 9, 2017. Per email from [redacted] on 10 Mar 2017, cardboard was thrown out Mar 7, 2017
[redacted]	Janitor's Closet	M	MINOR - comet cleanser stored above head height / eye level. Must be stored lower for worker safety concerns.	03/07/17	**R**	
[redacted]	Rodent Suite 2 - Mice and Rats	A				
[redacted]	Animal Holding	A				
	Animal Holding	A				
	Procedure	A				
	X-Rad Irradiator	A				
	Animal Holding	A				
	Animal Holding	Q	FOR COMMITTEE DISCUSSION: This room houses invertebrates and lab staff have clearly instructed the LAR staff to stay out of the room. Inspection team found mini-fridges in the room without "no human food" magnets. No written log of room cleaning. [redacted] is willing to work with the PI or Lab manager to write an SOP to clarify roles and responsibilities. What should the ACUC do? Note for ACUC: ACAPAC Policy Number: 2005-029 Oversight of Animal Care Performed by Research Staff			Per email from [redacted] on Mar 10, 2017: "LAR staff stays out of room and there was a discussion clarifying responsibilities and SOP. The lab was given Aquatic SOP and we haven't gotten a response yet."
[redacted]	Janitor's Closet	A				
	Cage Processing -Clean	A				
[redacted]	Feed & Bedding Storage	A				

Inspection Notes					Tracking	
Room	**Description**	**AMS**	**Comments/Notes**	**Correct by Date**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments		M	MINOR - Room [redacted] laundry and storage, cardboard on the floor NOTE: cracks running lengthwise through corridors and up some walls are being monitored and addressed via [redacted] and [redacted] plan is the cracks will be fixed before October 2017.	03/10/17	**R**	Initial email sent to [redacted] on Mar 9, 2017. Per email from [redacted] on 10 Mar 2017, cardboard was thrown out Mar 7, 2017
[redacted]	Cage Processing -Dirty	A				

ANIMAL LAB INSPECTION CHECKLIST					School/College: SMPH	
Inspection Unit: [redacted] labs 2017A					Date: 03/07/17	
Inspection Team Members: [redacted] V) [redacted] R) [redacted]					File created: 03/16/17	
INSPECTION NOTES					**TRACKING**	
Room	**Protocol [PI] (Species) Procedures**	**AMS**	**Comments/Notes**	**CORRECT BY DATE**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments		A	Also inspected new room B1122 for Dr. [redacted] Imaging of live animals will take place here. REQUIRE lab to contact RARC IACUC office to schedule a re-inspection BEFORE in vivo imaging occurs to ensure isoflurane machine is set up correctly and to ensure safety signage about allergen awareness is posted.			
[redacted]	M005485 [redacted] imaging,non-survival surgery,anesthesia/analgesia,Sub Admin: Injection of cells,Sub Admin: Chemotherapeutic treatments,Sub Admin: Fluorescently labeled antibodies,Sub Admin: Gold nanoparticles	A	First animal use is anticipated in about six months.			
[redacted]	M005180 [redacted] euthanasia,euthanasia	A	Lab member [redacted] who met the team was very helpful.			
[redacted]	M02059-0-11-14 [redacted] (mus) ICM isolation,embryonic epiblast isolation,fibroblast production,hematopoietic tissue isolation M005090 [redacted] euthanasia,euthanasia,anesthesia/analgesia,Sub Admin: Isoflurane	A				
[redacted]	M02272-0-03-14 [redacted] (other amphibian) imaging	A				

INSPECTION NOTES					TRACKING	
Room	**Protocol [PI] (Species) Procedures**	**AMS**	**Comments/Notes**	**CORRECT BY DATE**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
[redacted]	M02059-0-11-14 [redacted] (mus) ICM isolation,embryonic epiblast isolation,fibroblast production,hematopoietic tissue isolation	A				

SMPH ACUC
April 2017 – closed

At the February 5, 2017 meeting, the ACUC discussed the results of a semi-annual inspection of a PI's laboratory [redacted]. During the inspection on January 12, 2017, the inspection team members discovered multiple expired substances, including drugs intended for pain relief. It was likely that these expired substances were being used in animals, and some of the substances were many years out-of-date. The use of expired substances in animals is never acceptable and is a serious violation of federal regulations.

The PI will attend the meeting to discuss corrective action and answer Committee member questions.

APPENDIX 8B

IACUC Meeting Minutes

Open and Closed Session Minutes from May 2017

WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON

School of Medicine and Public Health Animal Care and Use Committee
Open Session – May 1, 2017

Present (voting): [redacted]

Present (nonvoting): [redacted]

Guests:

Absent: [redacted]

Dr. [redacted] called the meeting to order at 8:30 a.m.

Approval of Open Session Minutes of April 3, 2016 2017

[redacted] moved to approve the Open Session Minutes as submitted. The vote was unanimous with [redacted] and [redacted] voting present.

Annual Reapprovals (May)

[redacted] moved to approve the annual updates. The vote was unanimous. The committee noted one protocol on the list is to be terminated at the PI's request, and another protocol lists one facility that is no longer used for housing pigs. An amendment will be requested from the PI.

[redacted] joined the meeting]

Protocol Reviews

M005815: Production and Cryopreservation of Genome Edited Animals - Discussion of the protocol ensued. The PI will be asked to refine the analgesia regimen and to make other changes. [redacted] moved to require modifications to secure approval. The vote was unanimous.

[redacted] joined the meeting and assumed voting status for [redacted]

M005735: Efficacy of treatments for triple negative breast cancer - Discussion of the protocol ensued. The PI will be asked to provide more details about planned euthanasia, to simplify the layperson's description, and to make other changes. [redacted] moved to require modifications to secure approval. The vote was unanimous.

M005805: Overcoming Acquired Resistance to Cetuximab - Discussion of the protocol ensued. The PI will be asked to consult with a veterinarian on preparation of nonpharmaceutical

Research Animal Resources Center
396 Enzyme Institute 1710 University Avenue Madison, WI 53726-4087
608-262-1238 Fax: 608-265-2698 Email: help@rarc.wisc.edu

compounds, to update the anesthesia monitoring plan, and to make other changes. [redacted] moved to require modifications to secure approval. The vote was unanimous.

[redacted] joined the meeting]

M005792: Molecular mechanism of abdominal aortic aneurysm - Discussion of the protocol ensued. The PI will be asked to provide more details in the experimental narrative and the surgery summary, clarify the need for laboratory housing, and to make other changes. [redacted] moved to require modifications to secure approval. The vote was unanimous.

M005793: Oxidative Stress in Models of Huntington's Disease - Discussion of the protocol ensued. The PI will be asked to expand the description of potential complications, to ensure all study team members update their education and experience, and to make other changes. [redacted] moved to require modifications to secure approval. The vote was unanimous.

M005820: MERS (Microendoscopy of Reinke's Space) a Novel Surgical Approach to Reinke's Space of Vocal Fold, Comparing with Contemporary Approaches for Treatment of Vocal Fold Scar in a Porcine Model - Discussion of the protocol ensued. The PI will be asked to make minor changes. [redacted] moved to require modifications to secure approval. The vote was unanimous. Dr. [redacted] said that although the current protocol that will be replaced by this submission expires today, no animals are currently assigned and no work is planned.

M005830: EasyVis: Integrated, Untethered, Panoramic, 3D Laparoscopic Visualization System - Discussion of the protocol ensued. The PI will be asked to update the study team list, to revise the surgery summary, and to make other changes. [redacted] moved to require modifications to secure approval. The vote was unanimous.

M005803: Immune responses against mycobacterial infections - Discussion of the protocol ensued. The PI will be asked to update the hazards sections, to clarify the nonsurgical procedures that are described, and to make other changes. [redacted] moved to require modifications to secure approval. The vote was unanimous.

M005826: Animal models of hindlimb ischemia - Discussion of the protocol ensued. The PI will be asked to add descriptions of ultrasound and optical imaging, consider additional potential complications from ischemia, and to make other changes. [redacted] moved to require modifications to secure approval. The vote was unanimous.

M005837: Feeding, Motivation, Plasticity, and Learning in a Cortico-Striato-Hypothalamic network - Discussion of the protocol ensued. The PI will be asked to revise the animal numbers justification, update the chemical hazards information, and to make other changes. [redacted] moved to require modifications to secure approval. The vote was unanimous.

Logs: Designated Review/other (May)

The committee reviewed the designated review and veterinary verification and consultation logs.

Post-approval Monitoring: Report from Senior Program Veterinarian

Dr. [redacted] had no report for open session.

Post-approval Monitoring: Report from Animal Program Assessment Specialists

Mr. [redacted] reported that all is well.

[redacted] joined the meeting and [redacted] assumed nonvoting status]

Committee Training

Ms. [redacted] and Dr [redacted] led discussion of a recent Comparative Medicine article on "The Interplay of Ethics, Animal Welfare, and IACUC Oversight on the Reproducibility of Animal Studies," (see attached). Ms. [redacted] explained that the lack of reproducibility of some animal studies has led to concern within the scientific community. The article includes a discussion of the interplay of ethics, animal welfare, and animal oversight on the reproducibility of animal studies.

[redacted] left the meeting and [redacted] assumed voting status]

A lively committee discussion followed. Dr. [redacted] pointed out that while NIH grant review panels do not ask detailed questions about the reproducibility of proposed experienced, grant reviews by the Department of Defense do ask about this. Members discussed the importance of balancing the regulatory emphasis on reducing animal numbers with the importance of using enough animals to ensure sufficient statistical power. Ms. [redacted] concluded by saying that while the ACUC should keep reproducibility in mind when reviewing protocols, there are no new protocol review requirements at this time.

[redacted] joined the meeting and [redacted] assumed nonvoting status]

Other Business

Dr [redacted] reminded the members that the Institutional Official requested that the committee discuss potential consequences that could be imposed upon PIs, facility managers, or other responsible parties when expired drugs or medical materials are discovered during semiannual inspections. He invited discussion on this topic, noting ideas raised by the committee will be shared with the All Campus Animal Planning and Advisory Committee.

In general the committee members agreed that the current model of notifying the department chair of a PI who has expired materials, and requiring the PI to attend an ACUC meeting to describe his or her plan for managing drugs and materials so they do not expire, is appropriate. Several members itemized standardized suggestions to be made to PIs, such as using the "drug dot" labeling system, instituting an inventory system and monthly logsheet to

document checks for expired materials were done, and assigning responsibility for tracking and checking for expired materials to a specific lab member. These systems and logsheets would then be checked by the inspection teams on semiannual inspections. One suggestion for a "three-strike" approach with suspension of the lab as the final step was raised. Dr. [redacted] stated different consequences will be needed when the expired drugs or materials are identified in a shared procedure space within a vivarium, specifically in assigning corrective action responsibilities to the vivarium supervisor and to the PI who owns the expired materials. Ms. [redacted] suggested a different approach should be applied to materials found in shared laboratory spaces outside of vivaria as well. Dr. [redacted] mentioned that PIs would benefit from learning strategies on how to deal with residual drugs and materials. Several members expressed interest in how any resulting fines from the USDA would be paid, and Dr. [redacted] gave some examples of fines being passed down to schools, colleges, and individual departments for infractions that occurred in other compliance areas outside of the animal program. Dr. [redacted] suggested that a cross-ACUC working group be tasked with drafting a proposal for consequences, and Dr. [redacted] said that may come after all the ACUCs present their ideas to ACAPAC. There was a call for final comments, and hearing none Dr. [redacted] thanked the members for the good discussion. He invited members to send him additional comments.

Dr. [redacted] called for other business for open session. Hearing none, [redacted] moved to adjourn into Closed Session for discussion of research protocols or other documents containing confidential proprietary information and personnel matters relating to such research protocols, pursuant to Wisconsin Statutes Section 19.85(1)(c), (d), (e), (f), and (g). The vote was unanimous by roll call.

The meeting was adjourned from Closed Session without reconvening into Open Session.

[redacted]

Appd by SMPH ACUC
5 June 2017

May 2017 SMPH Re-Approvals **Check-off List**

PI	Protocol	Returned
[redacted]	M00267-0-03-15	
	M01055-0-03-15	
	M02066-0-01-15	
	M02516-0-03-15	
	M02648-0-04-15	

Dates updated & appr'd SMPH ACUC 5.1.17 [redacted]

Annual Reapproval Summary [approved 5/21/2015]

Protocol#: M00267-0-03-15 **Name:** [redacted] **Department:** Ophthalmology and Visual Sciences

Project Title: Herpes Simplex-Mechanisms of Virulence and Treatments: Antiviral and Antibacterial Treatments of Ocular Infection

Species: mus

Housing: [redacted]

Synopsis Of Experimental Manipulations And Invasive Procedures:
inocluations, skin viral titers, compound testing, corneal infection/treatments, skin infection, genital infection, oral gavage, DC efficacy testing

Euthanasia:
anesthesia followed by cervical dislocation

Multiple Surgeries Approved: N

Synopsis Of Amendments:
(062515)+8 mice, +addl test compounds, +addl characterization studies-7/9/15; (091815)injection procedure change-9/25/15; (101515)+150 mice-10/27/15;(120315) chg in buprenorphine-12/11/15; (121815)clarification,+addl blood collection, ~~

Other Comments:
~A +addl compounds-1/6/16;+P-4/19/16; (020117)+2000 mice, +addl antibacterials, +cornea test articles-3/9/17;(032417) +668 mice, +antiviral compounds testing, +acute retinal necrosis delivery, updates-REV; $

Annual Reapproval Summary [approved 5/1/2015]

Protocol#: M01055-0-03-15 **Name:** [redacted] **Department:** Human Oncology

Project Title: In Vivo ANalysis of Immune Stimulatory Agents Metastatic Cancers

Species: mus

Housing: [redacted] N/A containment_suite

Synopsis Of Experimental Manipulations And Invasive Procedures:
(N/A)injection of tumor cells, osmotic pump implant, [redacted] imaging

Euthanasia:
CO2 exposure per PHS guidelines 2003, anesthesia followed by cervical dislocation

Multiple Surgeries Approved: N

Synopsis Of Amendments:
+P-1/20/16; -P-1/17/17;

Other Comments:

Annual Reapproval Summary [approved 5/5/2015]

Protocol#: M02066-0-01-15 **Name:** [redacted] **Department:** Pharmacology

Project Title: Targeting of Phosphoinositide Signaling in Cell Migration and Tumor Progression

Species: mus

Housing: [redacted]

Synopsis Of Experimental Manipulations And Invasive Procedures:
[redacted]xenograft surgery, injections

Euthanasia:
CO2 exposure per PHS guidelines 2003

Multiple Surgeries Approved: N

Synopsis Of Amendments:
-P-10/6/15;

Other Comments:

Annual Reapproval Summary [approved 5/7/2015]

Protocol#: M02516-0-03-15 **Name:** [redacted] **Department:** Neurosurgery

Project Title: Platform for MR-Guided Neurotherapeutic Drug Delivery

Species: pig

Housing: [redacted]

Synopsis Of Experimental Manipulations And Invasive Procedures:
[redacted] imaging, [redacted] placement of Navigus system

Euthanasia:
anesthesia followed by Beuthanasia -D (390 mg/ml pentobarbital) IV, anesthesia followed by 2 mEq/kg Potassium Chloride IV, anesthesia followed by exsanguination or perfusion

Multiple Surgeries Approved: N

Synopsis Of Amendments:
(011017)VVC,-SMIBardeen housing, infusion volume chg-1/10/17;

Other Comments:

Annual Reapproval Summary [approved 5/14/2015]

Protocol#: M02648-0-04-15 **Name:** [redacted] **Department:** Pediatrics

Project Title: Stem and Progenitor Cells in Neonatala Lung Injury

Species: mus

Housing: [redacted]

Synopsis Of Experimental Manipulations And Invasive Procedures:
assays, hyperoxic exposure, measurements, injections

Euthanasia:
CO2 exposure per PHS guidelines 2003, fetus-decapitation

Multiple Surgeries Approved: N

Synopsis Of Amendments:
(052215)+176 mice, +matrigel angiogenesis assay-6/8/15;

Other Comments:

LOGS for SMPH ACUC – May 2017

Designated Review New/Renewal

PI	Prot #	Date Rec'd	Title	Species	N/R
[redacted]	M5814	3/29	A Mouse Model for Prostate Development, Inflammation, BPH and Cancer	Mouse	Renew appvd
[redacted]	M5648	4/4	[redacted]protocol	Zebrafish	New appvd

Designated Review Amendment

PI	Prot #	Date Rec'd	Title	Species	Sum of change
[redacted]	M5572-A04	3/15	Normal and Accelerated Assessment of Neural Interfaces	Mouse, rat	+addl substance, updates, +addl imaging contrasts, chg duration of nonsurvival surgery, +addl CSF labeling, +addl genetic mice, +electrode arrays appvd
[redacted]	M2478	3/15	Molecular Genetics of Murine Papillomavirus	Mice	+addl proc rm, +720 mice, +tamoxifen appvd
[redacted]	M843	3/15	Molecular Genetics of Papillomaviruses	Mice	(V/C) +addl housing appvd
[redacted]	M2489	3/16	Immunotherapy of Cancer After Bone Marrow Transplant	Mouse	(V/C) Clarification of prior use, strain changes pending
[redacted]	M5120-A04	3/17	Role of Aging and Lipid Signaling in Alzheimer's Disease	mouse	+[redacted]housing appvd
[redacted]	M5280-A03	3/20	Systems Analysis of the Brain-Microbiome Interaction	Rat	+new genetic animal, +diets, +behavior tests, appvd
[redacted]	3/20	M5697-A01	Sleep,sensory disconnection and synaptic homeostasis	Mouse	Several updates and clarifications per committee request (see 3/17/17 email) pending
[redacted]	M2624	3/20	Feasibility study of in vivo chemotherapeutic assessment device for multiplexed drug delivery in xenograft tumors	Mice	+60 mice, +drug delivery/sampling studies, +mt-Ab appvd
[redacted]	M5520-A03	3/21	Control of Gene Expression in the Developing Mouse	Mouse	PI chg appvd
[redacted]	M2642	3/22	Uptake of C11-meta-hydroxyephedrine in the myocardium following myocardial infarction in an animal model	Pig, rat	(V/C) +proc room appvd
[redacted]	M267	3/34	Herpes simplex-mechanisms of virulence and treatments. Antiviral and antibacterial treatments of ocular infection	Mouse	+668 mice, +antiviral compound testing, +acute retinal necrosis delivery, udpates appvd
[redacted]	M5388-A01	3/28	The Genetic Basis of Species Differences in House Mice	Mouse	Chg in breeding scheme, +nestlets, diet chg, lighting chg pending

[redacted]	M5544-A06	3/30	Noninvasive Liver Ablation Using Focused Ultrasound Histotripsy	Pig	+non-survival animals will also receive thermocouple device appd
[redacted]	M5383-A01	3/30	Role of Osteoclast Like Cells in the Development of Aneurysm	Mouse	(V/C) +/- locations appd
[redacted]	M1459	4/3	GABAA Receptors and Inhibitory Synapses	Rat, mouse	+addl animal checks pending
[redacted]	M1771	4/4	Molecular genetics of age-dependent synaptic defects and neurodegeneration	Mouse	+ketone ester supplement appd
[redacted]	M5476-A01	4/6	In vivo models to study genesis and immunotherapy of multiple myeloma and lymphoma	Mouse	+528 mice, +sting agonists, +tumor cells, +versikine, +anti PDL pending
[redacted]	M5243-A024/7	4/7	Right Heart-Pulmonary Vascular Interaction in Bronchopulmonary Dysplasia	Rat	(V/C) +/-proc rms appd
[redacted]	M5389-A03	4/7	Role of Growth factors in Post Ischemic Neurogenesis	Mouse, rat	Diet chgs, +addl mice, +DPP4 inhibitor in water, LCN2 siRNA chgs, +speckle imaging, updates pending
[redacted]	M5204-A07	4/7	Atacicept is a potential intervention for antibody mediated rejection	Mouse, rat	(V/C) +proc rms pending
[redacted]	M5129-A04	4/10	Mechanisms and potential interventions for antibody mediated rejection after kidney rejection using a rat model	Rat	+MSC injection pilot study pending
[redacted]	M5599-A02	4/11	Gut microbial metabolism and health	Mouse	(V/C) +/-Proc rms appd
[redacted]	M2303	4/11	Mechanisms of renal injury in pregnancy-assocaited hypertension and pre-eclampsia	Mouse	(V/C) +/-Proc rms appd
[redacted]	M969	4/13	Immunology and pathogenesis of systemic fungal infections	Mouse	+adjuplex, updates appd
[redacted]	M5544-A07	4/14	Noninvasive Liver ablation using focused ultrasound histotripsy	Pig	+15 animals appd
[redacted]	M5416-A03	4/15	Cardiovascular Core Phenotypic Analysis of Rats and Mice	Rat mouse	Chg in days post MI for injections pending

Vet Verified Change (VVC) Remember to notify safety

PI	Prot #	Date Rec'd	Title	Species	Sum of change
[redacted]	M5331	3/22	Development of Physiologic Imaging Using X-ray Technology	Dog	Clarifications to experimental narrative and substance admin
[redacted]	M5413-V01	3/21	Molecular mechanisms of cerebral ischemia	Mouse, rat	+retro-orbital injection

[redacted]	M664	4/3	Membrane Excitability and Secretion From Nerve Endings	Rat, mouse	+retro-orbital bleed, +Dipicrylamine
[redacted]	M5486-V03	4/4	Lingual and Laryngeal Muscle Plasticity	rat	Buprenorphine not listed as controlled
[redacted]	M5587-V01	4/10	Mouse models of ocular disease	Mouse	Admin chg of sodium valproate, increase of treatment from postnatal 5 to 12

Dual School Review

PI	Prot #	Date Rec'd	Title	Species	Addl ACUC
[redacted]	L00459	3/20/17	Neural Circuitry of Emotion (teaching & research)	Cynomolgus macaque, rhesus macaque, snake	(withdrawn)
[redacted]	L00459	3/20/17	Neural Circuitry of Emotion (teaching & research)	Cynomolgus macaque, rhesus macaque, snake	
[redacted]	A005348	4/5/17	Diabetes and Lipid Synthesis Enzymes	mus	
[redacted]	A005821	4/13/17	Diabetes research in mice	mus	

SMPH ACUC
May 2017 - open

Comparative Medicine
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Overview

The Interplay of Ethics, Animal Welfare, and IACUC Oversight on the Reproducibility of Animal Studies

Stacy L Pritt[1,*] and Robert E Hammer[2]

Reproducibility in animal studies has been defined as the ability of a result to be replicated through independent experiments within the same or among different laboratories. Over the past few years, much has been written and said about the lack of reproducibility of animal studies. Reasons that are commonly cited for this lack of reproducibility include inappropriate study design, errors in conducting the research, and potential fraud. In the quest to understand the basis for this lack of reproducibility, scientists have not fully considered the potential ramifications on ethical constructs for animal research, animal welfare considerations in animal research programs, the regulatory environment, and oversight by IACUCs. Here, we review how ethical theories behind animal research, policies, and practices meant to enhance animal welfare and the IACUC oversight process influence the reproducibility of animal studies, a previously undiscussed topic in the peer-reviewed literature.

Abbreviations: ILAR, Institute for Laboratory Animal Research; PI, principal investigator

Defining the Scientific Concerns about the Reproducibility of Animal Studies

Most basic research scientists agree that one of the cornerstones of the scientific endeavor is the ability to share research data and learn from the positive—and negative—results of other scientists. Not surprisingly, this process involves the replication of studies, whether needed to validate a specific animal model that can then be used in subsequent studies or to modify specific components of an experimental paradigm to test varying hypotheses. Many times, studies are repeated to confirm results when those results were obtained in a different environment. The ability to repeat studies in different environments makes studies predictable and applicable to other animal research as well as human research.

Several commentaries, letters to the editors, review papers, and metadata analyses have indicated that poor reproducibility is indeed a very real problem for both human and animal studies.[8,17,32] Some have asserted that "…a discovery is valid only if any scientist in any lab can conduct the same experiment under the same conditions and obtain the same results."[31] When studies cannot be repeated in different environments (in other words, when the findings are not reproducible) despite scientists' attempts to adhere to all components of the previously published experiments, questions are raised. The inability to replicate a study and achieve independent confirmation of data hints at poor study design and other flaws.[16]

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In 2014, the Institute for Laboratory Animal Research (ILAR) convened the roundtable discussion "Reproducibility Issues in Research with Animals and Animal Models" to address the specific concerns with animal studies.[19] The resulting report summarized the issue by describing how recent publications and statements demonstrate the concern regarding the "…prevalence in the number of peer-reviewed studies that cannot be reproduced, particularly those containing data from experiments using animals and animal models…".[19] According to this report and other sources, although the reproducibility problem impedes the advancement of some animal research, long-term repercussions include the erosion of the integrity and public trust in science and endangerment of the entire scientific endeavor as we currently know it leading to decreased funding and support for science and most certainly less translational research.[8,19]

Causes of a Lack of Reproducibility

The current scientific literature is replete with reasons why studies cannot be reproduced. A ubiquitous reason is statistical insufficiency, primarily underpowered studies.[5,8,18,32] Additional causes include incorrect data interpretation, unforeseen technical issues, incorrectly constituted (or absent) control groups, selective data reporting, inadequate or varying software systems, and blatant fraud.[5,8,17,18,31] Some authors have remarked that the system of 'self-correction,' which has heretofore been taken for granted in the sciences, appears to be broken in that "papers with fundamental flaws often live on," because corrections, retractions, commentaries, or other mechanisms are not used to correct the scientific record.[8,18] Others have commented that the bias towards

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publishing only positive results or inflation of a study's importance leads to downstream reproducibility problems.[31]

Less has been written about the variables in animal care, health, and welfare that can affect reproducibility. Laboratory animal professionals around the world are quick to recognize differences in institutional animal care programs but often fail to appreciate differences in the approach of scientists using animals in their research programs. Therefore, scientists may point to nonanimal causes for irreproducibility, as have been described in the previous paragraph, more quickly than those linked to animal care involving research animals.

Specific causes of irreproducibility, from a biologic, physiologic, and animal care perspective, as described by the aforementioned ILAR Roundtable report and other sources, include variables in the following areas (although this list is not exhaustive):[3,10,26,30] 1) animal source (vendor, institution); 2) animal genetic background (inbred, outbred, or hybrid study populations as well as unique strains); 3) animal housing (food, water, bedding, sanitation frequency, air quality, caging materials, lighting, temperature, noise, and so forth); 4) animal health (disease status either active or subclinical, gut microbiota); 5) animal behavior (use of enrichment, presence of stereotypies, and so forth); and 6) animal affective or emotional states, regardless of behavior. Many of these causes could be considered normal variation within the species.

Although it is not feasible to determine every single reason for or source of variability behind a lack of reproducibility for animal studies, based on the literature the causes can be grouped into 3 main categories: 1) flaws in study design; 2) variability in study conduct; and 3) poststudy evaluation and publication bias. Ethics, animal welfare, and IACUC oversight significantly affect areas 1 and 2. Important questions that currently lack answers in the scientific and regulatory literature are raised when considering reproducibility from the viewpoints of animal welfare, ethics, regulatory mandates, and IACUC oversight. Such questions must be further examined to have a more well-rounded approach to reproducibility.

Ethical Considerations Regarding Reproducibility

The ethical construct most commonly used to justify the use of animals in research is that of the 'greater good;' this construct stems from the ethical theory of utilitarianism, which is a consequentialist theory.[27] A very basic description of this theory is that actions that produce the greatest good or happiness for the greatest number are the most moral actions.[26] The 'good' produced by animal research are the new drugs, treatments, as well as decreased suffering in humans and other animals; this 'good' justifies the use of animals in research.[27]

Animal study reproducibility directly relates to the justification of animal research based on utilitarianism. Reproducible studies contribute to the ongoing research effort and can be justified. But what happens when a study is not reproducible? Concerns about losing the justification for animal use in research due to a lack of reproducibility are seen as statements contending that animals are being "sacrificed needlessly" when reproducibility is not achieved.[17,19] Reproducibility, or replication, has been discussed within ethical texts because it may serve as a potential mechanism to determine fraud with the recognition that other variables that may prohibit replication can be in play. But now scientists themselves are asserting an ethical responsibility for reproducibility because,[17,26] with poor reproducibility, both animal lives and financial resources, time, and human energy might be wasted.[17,31] Saying that animal lives and other resources are wasted implies that they are not a part of the 'greater good' and that the ethical argument for animal research can be questioned when there is irreproducibility. Therefore, reproducibility is now an ethical topic, with the main question being "if a study was not reproducible, was it ethical?"

One can debate the usefulness of data obtained from nonreproducible studies where misconduct is not the cause of the irreproducibility.[26] Commentators and authors who state that the lack of reproducibility indicates that animal lives were wasted imply that nonreproducible results do not contribute to the greater scientific enterprise and that such studies do not meet the criteria of the greater-good argument. In reality, data from studies that are not reproducible may still be of value to other researchers or be of such a unique nature as to preclude reproducibility. Perhaps authors could provide disclosures evaluating the potential reproducibility of studies as well as a description of the intent of the study, beyond hypothesis testing, with regard to limitations on reproducibility when publishing results. Other authors have called for investigators to label their published research as 'exploratory' or 'confirmatory,' so that the emphasis on reproducibility could be placed on confirmatory studies.[15] Because of these nuances, the animal research community should be careful about making sweeping assumptions regarding the implications of reproducibility in terms of animal lives.

Concerns about the potential effects of irreproducibility on the safety of humans participating in clinical trials built upon animal study data have also arisen but are of a different nature. Appropriate deliberation of the potential applicability of animal studies to the safety of human patients in clinical trials should be explicit within publications. If manuscript reviewers do not understand that a particular study was not undertaken in an effort to safeguard human patient safety, then false assumptions may be made, and reproducibility becomes the scapegoat when it was never the focus of the research in the first place.

Animal Welfare Considerations Regarding Reproducibility

To discuss animal welfare, one must first define it. Although multiple authoritative definitions exist, animal welfare is a multifaceted topic and even popular definitions are not uniformly accepted. In addition, the field of animal welfare science combines both scientific assessments and moral judgements.[4] Fraser[9] provides one of the best authoritative definitions of animal welfare, which is based on 3 components: biologic health, affective (emotional) states, and natural living. This definition will be used as the definition of animal welfare for the purposes of this manuscript.

As previously discussed, laboratory animal veterinarians and research scientists have already identified those variables inherent in conducting animal research in different facilities and physical environments.[19] Institutions, through their animal and veterinary care programs as well as IACUCs and comparable animal research oversight bodies, have specified those physical elements of their animal facilities that they believe provide the best animal health and welfare outcomes for laboratory animals. These ele-

ments, which directly affect both the 3 previously defined components of animal welfare as well as animal study reproducibility, include factors such as animal housing systems, animal facility macroenvironments, and source and quality of food and water. Therefore, questions regarding both animal health and animal welfare are inherent in discussions of reproducibility. These questions include "How is reproducibility ensured in different animal research environments with varying levels of animal welfare?", "Can compromises in animal welfare make an animal study or model more or less reproducible?", and "Should compromises in animal welfare be made in order to enhance study reproducibility?"

Potential answers have been offered to address reproducibility among different research environments that presumably have differing levels of animal welfare and care.[3] The previously discussed 2014 ILAR report included the concepts of publishing additional details regarding the variables and establishing detailed standards that all institutions can follow.[19] The formulation and continuing adoption of the *Animal Research: Reporting of In Vivo Experiments* (ARRIVE) guidelines along with *Guidance for the Description of Animal Research in Scientific Publications* are some of the best examples of this effort.[12,14] Although the ARRIVE guidelines are being adopted, this work has been criticized as a potential source of regulatory burden.[14,19,20]

The next 2 questions—"Can compromises in animal welfare make an animal study or model more or less reproducible?" and "Should compromises in animal welfare be made in order to enhance study reproducibility?"—are closely linked.[25] Assuming that all environmental elements and study variables are known, if one principal investigator wishes to reproduce the work of another in a different facility, will they need to ask for changes in animal management practices to facilitate potential reproducibility? Should an institution change its standards—which that institution believes fosters the desired level of animal welfare—to achieve reproducibility? Is there any guarantee that once changes are made that reproducibility will then be assured? Answers to these questions lie with an institution's veterinary staff and oversight body but pit the need to maintain institutional standards used to cultivate a preferred animal welfare status against the ability for scientists to reproduce their work in multiple environments.

Allowable tumor size limits imposed by the IACUC present a clear example of this conundrum. Many IACUCs have policies dictating that subcutaneous tumors must not exceed a certain size, usually 1.5 to 2 cm in diameter. These policies are created with significant veterinary input and represent what individual IACUCs believe to be the best way to ensure appropriate animal welfare. However, what happens if a scientist wants to replicate a research project that allowed mice to develop very large tumors so that cells from the tumor could escape and metastasize but that same tumor size is larger than that permitted by his or her home IACUC? Does this situation conflict with animal welfare or support the greater good? Should policies that represent animal welfare standards be changed or exceptions permitted in order to achieve reproducibility? Similar arguments apply to analgesia, anesthesia, postoperative care, and many other policies and institutional standards. An increasing call for animal study reproducibility will result in more of these deliberations.

From the authors' viewpoint, an obvious connection between animal welfare and reproducibility is the legitimate concern that studies performed by using animals with compromised animal welfare may not be reproducible. However, the commitment of laboratory animal professionals to the provision of high-quality animal care and to the development of animal welfare standards that promote such care can help to improve reproducibility.

IACUC and Oversight

The charge to IACUCs, and related animal research oversight bodies, does not yet include a requirement to evaluate proposed studies for reproducibility. However, even without a specific charge, the IACUC responsibilities of ensuring the humane handling, treatment, and care of animals as well as evaluating hypothesis testing, sample size, and accuracy or relevancy of controls can "contribute to enhanced reproducibility."[19] Barriers to animal study reproducibility, however, still exist in the oversight process due to the goals of various regulations and agencies, institutional policies set by internal oversight bodies, and multiple interpretations of the 3Rs (reduction, replacement, and refinement).[1,19,28]

In the United States, the USDA Animal Welfare Act and its associated regulations, in addition to the *United States Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training* and guidelines set forth by the Office of Laboratory Animal Welfare within NIH, form a core set of regulations and guidelines for animal research conduct and oversight.[2,24] The documents and accompanying interpretations, policies, and FAQs, however, do not focus on study reproducibility and in some instances can be construed as to encourage the smallest number of animals possible without regard to reproducibility.[22,23,29]

According to USDA regulations, an IACUC can only approve animal research activities after the principal investigator (PI) has provided a written assurance stating that the activities do not unnecessarily duplicate previous experiments.[29] These regulations and the USDA Animal Care Policy Manual do not address what constitutes unnecessary duplication of previous experiments, leaving that decision to the individual PI, IACUC, or institution. In addition, the term 'duplication' is not defined within the regulations and other USDA standards, which may generate confusion among the PI, IACUC, and others involved with oversight processes. Without such definitions, the PI, IACUC, and institution must decide whether the need to reproduce a study to verify reproducibility represents unnecessary duplication of previous experiments. Indeed, many institutions rely on the assurance statement that the PI signs in their description of animal research activities, whereas others use a literature search to determine unnecessary duplication—although there is no requirement or guidance for that type of literature search.

The third principle in the *United States Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training* states that animal selection should ensure that animals are of "an appropriate species and quality" and that the study uses a "minimum number required to obtain valid results."[24] Currently, many animal studies are underpowered, meaning that they do not include enough animals to provide statistically meaningful results. The word 'valid' makes a strong point but is entirely contextual. Study results may be statistically valid for a particular scientific question in a specific laboratory using certain animals with specific genetic backgrounds and re-

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agents, but that validity does not guarantee that the study will be reproducible either in the same laboratory or in a different one.

In our experience, correspondence from the Office of Laboratory Animal Welfare has stated that investigators must be trained in methods that "minimize the number of animals used." No such request is made to ensure that investigators are aware of statistical justification methods to arrive at desired animal numbers, although this justification is described on the Office's website. A recommendation document released in October 2015 by the US Food and Drug Administration regarding animal medical device studies contains the statement that "A thoughtful attempt at utilizing the least number of animals that will provide meaningful interpretation is paramount and includes such measures as attention to the appropriate experimental control, consideration of potential experimental confounders, and an idea of best observation intervals…," but does not mention future reproducibility or explain whether "meaningful interpretation" equates to study reproducibility.[20] Although some of the planning committee members for the much-cited *Reproducibility Issues in Research with Animals and Animal Models: Workshop in Brief* represented government offices, none of the speakers on the agenda represented a US government office's viewpoint on the topic.[19] The *Guide for the Care and Use of Laboratory Animals* is also silent on this topic.[11] NIH's recent initiative to enhance both rigor and reproducibility does not address IACUC review of animal research.[20] Without an explicit call from regulatory agencies and guidance documents for reproducibility to be of paramount concern in animal studies, especially in the decision making process for determining animal numbers, directives regarding minimization of animal numbers will be at odds with calls for increased reproducibility as a mechanism of promoting better and safer translational research.

IACUCs are charged with oversight according to these aforementioned regulations and guidelines, and the regulations and guidelines do not request that reproducibility factor into the IACUC's decision-making. In fact, many feel that IACUCs can hinder reproducibility by focusing on the minimization of the number of animals used, whereas others may feel that IACUCs should assume some of the responsibility to help ensure reproducibility.[1] IACUCs should carefully consider which stance is appropriate given that many factors influencing reproducibility are beyond the scope of the IACUC, it may not be the intention of the PI that the study be reproduced, or the IACUC may be aware of only one small component of an entire experiment. An IACUC deciding that their reviews must safeguard reproducibility might also be construed as an example of regulatory drift.

IACUC reviews, decisions, policies, and other actions can, however, influence the ability of studies to be reproduced. Emphasizing the minimization of the number of animals to be used has been considered an over-interpretation of one of Russell and Burch's '3Rs' in that the original publication identifies the 'R' of 'reduction' not as the minimization of the number of animal used, but rather determining the correct number of animals (based on statistical analysis) prior to conducting the study rather than afterward.[28] Ultimately, determining the appropriate number of animals prior to study initiation could reduce the number of animals "…progressively as statistical and experimental techniques are improved."[28] Striving for an "absolute minimization of animals used would be inconsistent with this aim" and can deter scientists from asking for the appropriate number of animals, resulting in underpowered studies and nonreproducible studies.[1,28]

Because many IACUCs are constituted with knowledgeable scientists and statisticians, an IACUC protocol review can reveal that an inadequate number of animals has been requested for the proposed hypothesis testing and sample sizes. Scenarios include requesting too few animals to derive statistically relevant conclusions, having inadequate or nonexistent positive and negative control groups, and not accounting for sex- and strain-associated differences or animal attrition.[17,18] What would not be obvious in IACUC review is requesting inadequate numbers due to budgetary constraints. The directive to minimize animal use does not include a companion obligation for the IACUC to request that animal numbers be increased to improve the chances for better statistical outcomes or reproducibility. In our experience, some IACUCs believe it is inappropriate to ask a PI to increase animal numbers during protocol review. However, such a request would be very much in line with the previously depicted ethical construct demanding the need for reproducibility in animal studies so that animal lives are not wasted.[17,19] On further extrapolation, one might argue that if more studies are designed with reproducibility in mind, then fewer animal lives are 'wasted' in unsuccessful attempts at study replication after results have been made public, increasing the contribution to the greater good. Concentrating on the selection of the appropriate animal numbers rather than adhering to a preconceived notion of minimizing the number of animals to be used without factoring in a need for reproducibility should be an area of training and debate for IACUC members.

Conclusions

The reproducibility of animal studies has become a highly discussed topic in the scientific community during the past few years. Peer-reviewed manuscripts, retrospective reviews, metadata analyses, webinars, workshops, journal clubs, symposia, NIH policies, and projects have all been instigated to determine the causes of this lack of reproducibility, to propose solutions to the problem, and to reproduce pivotal studies.[5,7,13,16-18,19,25] Animal research is particularly vulnerable to concerns about reproducibility because preclinical results are used to support efficacy and safety determinations for clinical studies and direct but independent oversight in human trials addresses many of the scientific concerns raised with animal studies that lack such oversight.[13] What has been largely absent from this discussion has been ethical and animal welfare considerations (questions), applicable regulatory mandates, and IACUC oversight. We have discussed the ethical construct for supporting the reproducibility in animal studies, but the call for reproducibility may potentially be undermined by animal welfare standards at individual research facilities, lack of regulatory or other guidance for IACUCs and other oversight bodies to stress reproducibility, and an emphasis on minimizing the number of animals used in proposed animal studies. With the NIH, research scientists, professional associations, pharmaceutical companies, and veterinarians asking that reproducibility receive serious deliberation, now is the time to evaluate fully all ethical, animal welfare, regulatory, and institutional influences that could, in the end, make reproducibility a reality.

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School of Medicine and Public Health Animal Care and Use Committee
Closed Session – May 1, 2017

Present (voting): [redacted]

Present (nonvoting): [redacted]

Guests:

Absent: [redacted]

Approval of Closed Session Minutes of April 3, 2017

[redacted] moved to approve the minutes with minor editorial modifications. The vote was unanimous with [redacted] and [redacted] voting present. Discussion of the laboratory inspection at the [redacted] facility at which expired materials were found. Discussion ensued. [redacted] moved that the RARC Animal Program Assessment Specialists be requested to conduct Post-Approval Monitoring reviews of the protocols that are approved by the SMPH ACUC that list [redacted] for animal housing or procedures, to assist and support [redacted] research staffs. The vote was unanimous.

Ms. [redacted] provided an update from the minutes regarding potential biosafety (OBS) protocol violations committed by one laboratory that also uses animals. She said that after the Institutional Biosafety Committee (IBC) met in April she and Dr. [redacted] the [redacted] met in person with the PI and the lab manager and directed them to perform all necropsies within a biosafety cabinet (BSC) as per their OBS protocol. She said the lab has submitted an amendment to the OBS protocol to allow some work to be done outside a BSC, and the IBC will review that amendment at their meeting this week. She said that the employees who work at the [redacted] vivarium were told of the directives to the PI and lab manager, and since that time have observed at least one violation of the directive. Dr. [redacted] said both the PI's department chair and Dean [redacted] are aware of the situation. Ms. [redacted] will provide a follow-up report at the June meeting. The committee thanked her for the report.

Inspection Reports

Ms. [redacted] and Ms. [redacted] led discussion of recent facility inspections (see attached). Ms. [redacted] raised a question regarding an invertebrate user that occupies room [redacted] within the [redacted] vivarium. The inspection team was told that the laboratory personnel do all of the work in this room and that Laboratory Animal Resources staff do not enter the room for any reason, including cleaning and sanitizing. No SOP clarifying roles and responsibilities, and

expectations for maintaining biosecurity by these users, appears to be in place but the facility staff stated they are willing to work with the lab staff to develop an SOP. Discussion ensued, and the committee directed Ms. [redacted] to follow up on progress and report back to the committee. Ms. [redacted] reported that room [redacted] a new laboratory in the [redacted] building, was reinspected and is now approved for animal use per protocol M005648.

[redacted] left the meeting]

Post-approval Monitoring: Report from Senior Program Veterinarian

Dr. [redacted] provided additional information on the event reported last month where one mouse pup was found dead in a cage with no food. It is not clear when the food ran out, and other animals in the cage remained healthy. He said upon further investigation the pups in the cage were approximately 14 days old, and therefore had not been recently weaned into a new cage near the day when the pup was found. As a follow-up to this event, both the laboratory staff members and animal care personnel were retrained and instructed to ensure food is present in all cages in any instance when animals are moved from one location to another, or when cages are checked. He noted that PHS funding supports the protocol to which these mice were assigned. The committee accepted the report.

Report from LAR

Dr. [redacted] had no report for closed session.

Report from Animal Program Assessment Specialists

Mr [redacted] reported that all is well.

Other Business

Dr. [redacted] called for other business for closed session or for open session. Hearing none, [redacted] adjourned the meeting from closed session at 11:30 a.m.

[redacted]

Appd by SMPH ACUC
5 June 2017

Include in packet for reference. Please sign up on the purple sheet passed DURING CLOSED SESSION

Current as of 7/17

School	Name	Date	Start Time	End Time	Special	Inspector 1	Inspector 2	additional
SMPH	[redacted]Facility	Tuesday, April 4, 2017	12:30 PM	3:30 PM		[redacted]	[redacted]	
SMPH	[redacted](Facility & Labs)	Tuesday, April 18, 2017	8:30 AM	11:30 AM	Level 1 No prior rodent contact that day	[redacted]	[redacted]	
SMPH	[redacted]Clinical Imaging Labs + Core Units	Thursday, April 20, 2017	8:30 AM	10:30 AM	**NOTE CHANGE**	[redacted]	[redacted]	
SMPH	[redacted]Facility & Labs	Thursday, April 27, 2017	8:30 AM	11:30 AM	1 member N95 fit tested	[redacted]	[redacted]	

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* travel times are approximate for One Way trips from west campus (RARC)

Animal Facilities Inspection Checklist						
Name of Facility: [redacted] facility 2017A						School/College: SMPH
Supervisor: [redacted]						Date: 02/14/17
Inspection Team Members: [redacted]) [redacted] R) [redacted] V) [redacted] V) [redacted]) [redacted]						File created: 03/16/17
Inspection Notes						**Tracking**
Room	**Description**	**AMS**	**Comments/Notes**	**Correct by Date**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments		A				
[redacted]	Testing chamber	A				
[redacted]	Fish animal housing	A	Reviewed water quality logs.			

Animal Facilities Inspection Checklist						
Name of Facility: [redacted] facility 2017A					School/College: SMPH	
Supervisor: [redacted]					Date: 02/16/17	
Inspection Team Members: [redacted]) [redacted] R) [redacted]) [redacted]) [redacted])					File created: 03/16/17	
Inspection Notes					**Tracking**	
Room	**Description**	**AMS**	**Comments/Notes**	**Correct by Date**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments	question to inspectors	A	Hood tracking: these are due in June: 1324, 1340, 1346,1350, 1371,			
[redacted]	locker room	A				
	locker room	A				
	locker room	A				
	office	A				
	surgery [rodent]	A				
[redacted]	surgery	A				
	surgery	A				
	procedure	N	empty			
	animal housing	N				
	animal housing	N				
	animal housing	N				
	animal housing	N				
	other	N				
	procedure	A				
	animal housing	A				
	animal housing	A				
	animal housing	A				
	support room	A				
	animal housing	N	empty			
	animal housing	N				
	animal housing	N				
	animal housing	N				
	animal housing	A	storage			
	animal housing	A				
	animal housing	N				
	animal housing	N				
	other (janitor)	N				
	procedure	A				
	animal housing	A	empty			

Inspection Notes					Tracking	
Room	**Description**	**AMS**	**Comments/Notes**	**Correct by Date**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments	question to inspectors	A	Hood tracking: these are due in June: [redacted]			
[redacted]	animal housing	A				
	animal housing	A	equipment			
	animal housing	A				
	animal housing	A				
	other	A				
	animal housing	A	empty			
	procedure	A	empty			
	animal housing	A	empty			
	animal housing	A	storage			
	other	N				
	animal housing	A				
	procedure	A				
	animal housing	A				
	animal housing	N	empty			
	animal housing	A				
	other	N				
	storage	A				
	Surgery [level3]	M	MINOR: box of syringes expired 2011/01 (Johnson lab shelf). dispose of OR label for terminal use only if appropriate. [FACILITY REPEAT - expired medical materials]	02/27/17	**R**	Initial email sent to [redacted] on Mon 20 Feb, 17. Per email from [redacted] 28Feb17 : "labeled syringes"
[redacted]	break room	A				
	support room	A				
	cage wash	A				
	storage (feed)	A				
	cage wash	A				
	Breakroom sink.	A				
	locker room	A				

ANIMAL LAB INSPECTION CHECKLIST					School/College: SMPH	
Inspection Unit: [redacted] labs 2017A					Date: 02/16/17	
Inspection Team Members: [redacted]), [redacted] R), [redacted] V) [redacted]), [redacted] V)					File created: 03/16/17	
INSPECTION NOTES					**TRACKING**	
Room	**Protocol [PI] (Species) Procedures**	**AMS**	**Comments/Notes**	**CORRECT BY DATE**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments		A	all labs need new vet contact sheets. send WB			
[redacted]	M02297-0-08-14 [redacted] (mus) perfusion	A				
[redacted]	M02297-0-08-14 [redacted] (mus) euthanasia M005484 [redacted] euthanasia,euthanasia M005521 [redacted] euthanasia,euthanasia	A				
[redacted]	M005020 [redacted] blood collection,euthanasia,euthanasia,imaging,genotyping,anesthesia/analgesia,Sub Admin: Tricaine (MS-222),Sub Admin: N-Phenylthiourea (PTU),Sub Admin: Triphilic polymers	M	MINOR: cardboard on floor.	03/06/17	**R**	Initial email sent to [redacted] on Mon 20 Feb, 17. Per email from Dr. [redacted] 20Feb17 "The cardboard glass container has been placed in a metal box with casters to raise it from the floor."
[redacted]	M02445-0-01-14 [redacted] (mus,rattus) euthanasia,injections,infusions,craniotomy,aorta cannulation,intranasal admin M02630-0-08-14 [redacted] (rattus) transcardial perfusion,intranasal admin	A				
[redacted]	M02445-0-01-14 [redacted] (mus,rattus) euthanasia,injections,infusions,craniotomy,aorta cannulation,intranasal admin M02630-0-08-14 [redacted] (rattus) transcardial perfusion,intranasal admin	A				

INSPECTION NOTES					TRACKING	
Room	**Protocol [PI] (Species) Procedures**	**AMS**	**Comments/Notes**	**CORRECT BY DATE**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
[redacted]	M02622-0-05-14 [redacted] (mus) euthanasiaHuntington disease models M005668 [redacted] euthanasia,euthanasia,isolation of hepatocytes,Euthanasia Methods,Primary cultures	A	needs new vet contact, tell [redacted]			
[redacted]	M02622-0-05-14 [redacted] (mus) euthanasiaHuntington disease models M005668 [redacted] euthanasia,euthanasia,isolation of hepatocytes,Euthanasia Methods,Primary cultures	A	per lab room mo longer in use. hood watch: hood on far side of room was due jan 2016, hood closer to door says FAIL.			

ANIMAL LAB INSPECTION CHECKLIST					School/College: SMPH	
Inspection Unit: [redacted] labs 2017A					Date: 03/07/17	
Inspection Team Members: [redacted]) [redacted]V) [redacted]R) [redacted])					File created: 03/16/17	
INSPECTION NOTES					**TRACKING**	
Room	**Protocol [PI] (Species) Procedures**	**AMS**	**Comments/Notes**	**CORRECT BY DATE**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments		A	Also inspected new room [redacted] for Dr. [redacted] Imaging of live animals will take place here. REQUIRE lab to contact RARC IACUC office to schedule a re-inspection BEFORE in vivo imaging occurs to ensure isoflurane machine is set up correctly and to ensure safety signage about allergen awareness is posted.			
[redacted]	M005485 [redacted] imaging,non-survival surgery,anesthesia/analgesia,Sub Admin: Injection of cells,Sub Admin: Chemotherapeutic treatments,Sub Admin: Fluorescently labeled antibodies,Sub Admin: Gold nanoparticles	A	First animal use is anticipated in about six months.			
[redacted]	M005180 [redacted] euthanasia,euthanasia	A	Lab member [redacted] who met the team was very helpful.			
[redacted]	M02059-0-11-14 [redacted] (mus) ICM isolation,embryonic epiblast isolation,fibroblast production,hematopoietic tissue isolation M005090 [redacted] euthanasia,euthanasia,anesthesia/analgesia,Sub Admin: Isoflurane	A				
[redacted]	M02272-0-03-14 [redacted] (other amphibian) imaging	A				

INSPECTION NOTES					TRACKING	
Room	**Protocol [PI] (Species) Procedures**	**AMS**	**Comments/Notes**	**CORRECT BY DATE**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
[redacted]	M02059-0-11-14 [redacted] (mus) ICM isolation,embryonic epiblast isolation,fibroblast production,hematopoietic tissue isolation	A				

Animal Facilities Inspection Checklist						
Name of Facility: [redacted] facility 2017A					School/College: SMPH	
Supervisor: [redacted]					Date: 03/07/17	
Inspection Team Members: [redacted]) [redacted] V) [redacted] R) [redacted])					File created: 03/16/17	
Inspection Notes					**Tracking**	
Room	**Description**	**AMS**	**Comments/Notes**	**Correct by Date**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments		M	MINOR - Room [redacted] laundry and storage, cardboard on the floor NOTE: cracks running lengthwise through corridors and up some walls are being monitored and addressed via [redacted] and [redacted] plan is the cracks will be fixed before October 2017.	03/10/17	R	Initial email sent to [redacted] on Mar 9, 2017. Per email from [redacted] on 10 Mar 2017, cardboard was thrown out Mar 7, 2017
[redacted]	admin & break w/records	A				
[redacted]	Entry	A				
	Entry/PPE storage	A				
[redacted]	Locker Room & Restrooms	A				
[redacted]	Pass-through Side 1	A				
[redacted]	Main Hallway	A	NOTE: cracks running lengthwise through corridors and up some walls are being monitored and addressed via [redacted] and [redacted] plan is the cracks will be fixed before October 2017.			
[redacted]	Aquatics Suite	A				
	Animal Holding	M	MINOR- water chiller on floor behind door is resting on towel to dampen noise. Towel is nonsanitizable.	03/23/17	R	Initial email sent to [redacted] on Mar 9, 2017. Per email from [redacted] on 10 Mar 2017, towel was removed on Mar 7, 2017.
[redacted]	Procedure	M	MINOR - animal food expired (from 2014) in fridge, 2 carcasses also in same fridge with food. Must separate carcasses from food, perhaps in a second fridge.	03/16/17	R	Initial email sent to [redacted] on Mar 9, 2017. Per email from [redacted] on Mar 10, 2017, animal food discarded on Mar 7, 2017.

Inspection Notes					Tracking	
Room	**Description**	**AMS**	**Comments/Notes**	**Correct by Date**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments		M	MINOR - Room [redacted] laundry and storage, cardboard on the floor NOTE: cracks running lengthwise through corridors and up some walls are being monitored and addressed via [redacted] and [redacted] plan is the cracks will be fixed before October 2017.	03/10/17	R	Initial email sent to [redacted] on Mar 9, 2017. Per email from [redacted] on 10 Mar 2017, cardboard was thrown out Mar 7, 2017
[redacted]	Animal Holding	M	MINOR - expired Gas Relief Drops 1-2017 (used to relieve bloat issues of axotols as needed). Discarded. Water quality testing records checked, all is well.	03/07/17	R	
[redacted]	Janitor's Closet	A				
	Transitional Pass-through Side 2	A				
[redacted]	Transitional Animal Holding	A				
[redacted]	Rodent Suite 1-Mice	A				
[redacted]	Animal Holding	A				
	Animal Holding	A				
	Procedure	M	MINOR - replace cover on outlet near door.	03/23/17		Initial email sent to [redacted] on Mar 9, 2017. Per email from [redacted] work order placed on Mar 10, 2017.
[redacted]	Procedure	M	MINOR - cardboard on floor. Fixed at once MINOR - CellRad by Faxitron is located here. Door exterior therefore needs X-ray safety signage. Contact Daniel Beechler at Environmental Health & Safety for correct signage.	03/23/17		Initial email sent to [redacted] on Mar 9, 2017.
[redacted]	Animal Holding	A				
	Animal Holding	M	MINOR - Each cage card must identify the exact biohazard that is present in the cage. It is not enough to have biohazards posted on interior of the room door.	03/16/17		Initial email sent to [redacted] on Mar 9, 2017.

Inspection Notes					Tracking	
Room	**Description**	**AMS**	**Comments/Notes**	**Correct by Date**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments		M	MINOR - Room [redacted] laundry and storage, cardboard on the floor NOTE: cracks running lengthwise through corridors and up some walls are being monitored and addressed via [redacted] and [redacted] plan is the cracks will be fixed before October 2017.	03/10/17	**R**	Initial email sent to [redacted] on Mar 9, 2017. Per email from [redacted] on 10 Mar 2017, cardboard was thrown out Mar 7, 2017
[redacted]	Janitor's Closet	M	MINOR - comet cleanser stored above head height / eye level. Must be stored lower for worker safety concerns.	03/07/17	**R**	
[redacted]	Rodent Suite 2 - Mice and Rats	A				
[redacted]	Animal Holding	A				
	Animal Holding	A				
	Procedure	A				
	X-Rad Irradiator	A				
	Animal Holding	A				
	Animal Holding	Q	FOR COMMITTEE DISCUSSION: This room houses invertebrates and lab staff have clearly instructed the LAR staff to stay out of the room. Inspection team found mini-fridges in the room without "no human food" magnets. No written log of room cleaning. [redacted] is willing to work with the PI or Lab manager to write an SOP to clarify roles and responsibilities. What should the ACUC do? Note for ACUC: ACAPAC Policy Number: 2005-029 Oversight of Animal Care Performed by Research Staff			Per email from [redacted] on Mar 10, 2017: "LAR staff stays out of room and there was a discussion clarifying responsibilities and SOP. The lab was given Aquatic SOP and we haven't gotten a response yet."
[redacted]	Janitor's Closet	A				
	Cage Processing -Clean	A				
[redacted]	Feed & Bedding Storage	A				

Inspection Notes					Tracking	
Room	**Description**	**AMS**	**Comments/Notes**	**Correct by Date**	**R**	Include name, date and method of all contacts & name, date and method of all responses. Indicate when Resolved or Referred to Committee
General comments		M	MINOR - Room [redacted] laundry and storage, cardboard on the floor NOTE: cracks running lengthwise through corridors and up some walls are being monitored and addressed via [redacted] and [redacted] plan is the cracks will be fixed before October 2017.	03/10/17	**R**	Initial email sent to [redacted] on Mar 9, 2017. Per email from [redacted] on 10 Mar 2017, cardboard was thrown out Mar 7, 2017
[redacted]	Cage Processing -Dirty	A				

APPENDIX 9

IACUC Periodic Report

Fall 2016

WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON

SCHOOL OF MEDICINE AND PUBLIC HEALTH ANIMAL CARE AND USE COMMITTEE

We the undersigned voting member of the SMPH ACUC verify the attached reports reflect our Fall 2016 Semiannual Review of the program of animal care in the School.

[redacted]

Date of Review: November 28, 2016

Research Animal Resources Center
396 Enzyme Institute 1710 University Avenue Madison, WI 53726-4087
608-262-1238 Fax: 608-265-2698 Email: help@rarc.wisc.edu

Memorandum

To: Dr. [redacted] Institutional Official (IO)

From: School of Medicine and Public Health Animal Care and Use Committee (SMPH ACUC)

Subject: Semi-annual Program Review, Fall 2016

Review performed: November 28, 2016
Date of this report: February 6, 2017

Introduction
This report summarizes the deliberations and findings of the SMPH ACUC in the performance of their Fall 2016 semi-annual program review. This review was performed in accordance with the legal requirement that the ACUC inspect all animal use areas and evaluate the animal program twice per year.

Process: The SMPH ACUC met on November 28, 2016 to conduct its semiannual review of the SMPH animal care and use program and facilities using the *Guide for the Care and Use of Laboratory Animals* (*Guide*), and as applicable, 9 CFR Chapter I,2.31. To facilitate the review, the Committee adopted a Program Definition (see Sandgren EP, Lab. Animal 2005 Nov; 34[10]: 41-44) to provide evaluation standards. We addressed additional questions raised in an optional "Sample Semiannual program and Facility Review Checklist" available on the OLAW website at http://grants.nih.gov/grants/olaw/sampledoc/cheklist.htm. A worksheet based on the Program definition (https://www.rarc.wisc.edu/iacuc/program_review_worksheet.html) was used as the program evaluation tool (Lab. Animal 2007 Oct; 36 (9) 35-40).

We received input from the following non-voting members and guests [redacted] Chief Campus Veterinarian), [redacted] (Program Specialist), [redacted] (RARC trainer), [redacted] Safety), [redacted] and [redacted] (Laboratory Animal Resources).

In performing the semiannual program reviews, our practice is: (1) to invite participation from all members of the SMPH ACUC to review and discuss aspects of our program found in our Program Definition and Review Checklist at a specially convened meeting; (2) to classify any deficiencies noted in facilities or programs as either minor or significant; (3) to document any suggested plans for correcting deficiencies; (4) to set a correct-by date for any significant deficiencies; (5) to obtain, review and sign-off on a report summarizing the results of the semiannual program evaluation from a majority of the ACUC members; and (6) to submit the signed report to the Institutional Official (IO). In addition, significant deficiencies not corrected within 15 days following the correct-by date will be reported to federal agencies.

To facilitate completion and approval of this report, notes from the semiannual program review meeting were assembled in a worksheet (attached). The SMPH ACUC Chair used these notes to draft the report and then circulated the draft and worksheet notes among SMPH ACUC members for their comments. This updated final version was then distributed to the SMPH ACUC members for their signatures.

Summary, SMPH Animal Care and Use Program:
The UW School of Medicine and Public Health has a strong animal program. There is outstanding interaction among all aspects of the program (e.g. ACUC, veterinary staff, RARC, and Laboratory Animal Resources [LAR]) to provide conscientious, excellent care for animals and support of the research and teaching missions of the SMPH. The SMPH program is currently accredited by AAALAC, and we are preparing for the re-accreditation site visit anticipated in Fall 2017.

No deficiencies in the animal program were noted during the review. The following summarizes discussions of the various categories of the SMPH animal program. The organization follows that of the worksheets, where more information can be found. Some issues that merit comment are discussed where appropriate.

I. Physical Plant: *No deficiencies were identified.*
The physical plant is serving the SMPH animal program well. All centralized animal housing facilities meet the standards put forth in the *Guide*, except that humidity levels are difficult to control in some older facilities, primarily in the winter months. The ACUC recognizes this departure and agrees that veterinary staff and animal research technicians will closely monitor all animals for signs of humidity-related disease. In the past six months, they observed no clinical issues related to humidity levels outside the *Guide* standards. PIs are made aware of deviations in humidity level and the potential impact they may have on research results. Also, options for a C-bovis-free facility for immunocompromised mice are under review.

II. Animal Environment, Housing and Management: *No deficiencies were identified.*
The campus' Animal Social Housing and Enrichment Requirements (ASHER) document specifies regulatory-appropriate social housing and enrichment practices for all species housed at the SMPH. In particular, the committee noted that all dogs are housed with sufficient exercise space as specified by the Animal Welfare Act Regulations. In the previous biannual period, LAR introduced new rodent bedding with embedded nesting material, and PI feedback has been positive. The rodent cage top sanitization schedule that departs from *Guide* standards (adopted in January 2013) was reevaluated. The SMPH ACUC accepted the LAR practice of sanitizing mouse cage tops once every 3 months, and rat cage tops once every 2 months, based on internal performance data. The veterinary staff continues to monitor for potential adverse effects, and to date this schedule has been followed with no negative effects on animal well-being.

III. Personnel Qualifications and Training: *No deficiencies were identified.*

A. SMPH faculty and staff training: RARC trainers reported that SMPH research personnel accessed RARC training courses 844 times in the last 6 months. The following table provides the training data for SMPH faculty and staff, with numbers from the prior evaluation period for comparison:

Type of RARC training	Fall 2016 (#)	Spring 2016 (#)
Animal user orientation	271	235
Species-specific courses	223	208
Lab Animal Surgery	59	69
Other RARC Classes	291	376

Revocations due to training deficiencies: 19 SMPH animal users named on protocols have had either species-specific or surgery privileges revoked in the past 6 months due to the individuals' failure to complete training courses for which they were made mandatory. In Spring 2016, 18 SMPH animal users experienced revocations. RARC staff members have improved their follow-ups with PIs when a training revocation occurs and will continue to do so. If RARC follow-up does not resolve the issues, referral will be made to the ACUCs for action. **The majority of the revocations concern persons no longer involved in the animal program.**

B. SMPH ACUC and RARC Staff Training: Monthly training for SMPH ACUC and RARC staff routinely includes web seminars provided by NABR, PRIM&R, and OLAW. In addition, committee training is provided at most monthly ACUC meetings, covering topics of interest to the committee and relevant to their role in evaluation of the animal program. Training during this period focused on the following topics:

1. *Specific ACUC Training:* ARROW Power User Tips; Viewing differences in protocols submitted in ARROW; How to inspect for Expired Materials; ASHER Document; How to Decide Full Committee versus Designated Review

2. *Web Seminars and Distance Learning (may also be viewed at a later time in recorded format):* Meet the New Head of APHIS Animal Care (NABR); Balancing Public Interests, Benefits, and Risks in Animal Research by [redacted] OLAW); Q&A with the USDA: The Next Generation (NABR); Implementing Guidance on Significant Changes: One Institution's Experience

IV. Occupational Health and Safety: *No deficiencies were identified.*
As of mid-October, compliance with the medical assessment process to receive clearance to work with animals, including completion of the Animal Contact Risk Questionnaire, was 95%. We appreciate the continuing efforts made by University Health Services and RARC to improve this process. The newly-hired [redacted] introduced herself to the ACUC. Three required biosafety training courses are being consolidated into a single modular training. "Risk Communication in Animal Facilities" training is available online and training notices are sent out regularly. Within LAR facilities, the risk communication training and the use of consistent hazard signage appear to have improved staff safety awareness. UHS continues to monitor isoflurane levels in specific types of animal use areas. Allergen monitoring continues to be performed in LAR facilities for worker safety. The biosafety cabinet certification group is still catching up on certifications and repairs. As was reported at the spring review, areas such as BSL-3 laboratories remain the highest priority for completion.

V. Veterinary Medical Care: *No deficiencies were identified.*
Veterinary care continues to be outstanding, including quality of the clinical care provided, level of veterinary oversight, and the collaborative attitudes that support animal welfare and research. Veterinary pre-review of new protocols continues to have great value for both PIs and the ACUC. Leadership meetings between RARC veterinary staff and LAR management continue to strengthen and enhance communication about the animal program.

VI. Institutional Animal Care and Use Committee: *No deficiencies were identified.*
The SMPH ACUC has 15 voting members, 3 alternate voting members, and 6 nonvoting and *ex officio* members. The voting membership of this eximious committee continues to represent public, nonscientific, scientific, and veterinary views, and most departments engaged in animal research in the SMPH. Committee members are active participants in program oversight and conscientious about

animal welfare. Preliminary post approval monitoring of ACUC functions has not revealed lapses in oversight. Regarding issues of ACUC responsibility, Dr. [redacted] will consult the IO and ACAPAC to determine expectations of ACUCs for compliance with controlled substance regulations.

VII. Institutional Official: *No deficiencies were identified.*
The ACUC acknowledged the recent appointment of Dr. [redacted] as interim IO effective October 1, 2016. Dr. [redacted] is an experienced ACUC Chair and understands program structure. The ACUC has found it very beneficial to have the IO attend at least one regular ACUC meeting each year, and requests that Dr. [redacted] continue this practice.

VIII. Program Integration: *No deficiencies were identified.*
There is good collaboration among the units in the UW animal program. In particular, SMPH ACUC appreciates RARC contributions to program oversight and CALS assistance in designing swine holding facilities and animal care staff training. The LAR-developed mobile app for accessing animal emergency contacts is now in use by UWPD, and the animal health reporting app is now in use by a second animal program on campus.

IX. Support of the Institutional Mission: *No deficiencies were identified.*
The SMPH animal program supports and enhances research, teaching, and outreach with animals. The SMPH ACUC thanks the RARC, IO [redacted] and [redacted] for continued support of the SMPH animal program.

Scope of Work:
Protocol Review: The SMPH ACUC currently oversees projects described in 369 active protocols. Roughly half are now entered in ARROW. In the last six months, the ACUC has reviewed and approved 173 protocol submissions (111 amendments; 62 new/renewal). For new/renewals the average turnaround to approval in the last biennium was 43.9 days (range 3-85), including time in committee and time in revision by investigators. For amendments, the average turnaround was 15.4 days (range 0-65 days).

Disciplinary Actions: No protocols were suspended by the SMPH ACUC in the last six months.
In October 2016 (when Dr. [redacted] was still chair of the committee), the SMPH ACUC suspended the animal use privileges of one person.

Inspection of Animal Facilities: *No significant deficiencies were identified*. Semiannual inspections performed over the last 6 months encompassed 511 vivarium rooms, 145 laboratories, and 32 core spaces. Minor deficiencies were as follows (numbers from the prior evaluation period are provided for comparison):

Minor deficiencies related to:	Fall 2016 (#)	Spring 2016 (#)
Housekeeping (e.g., cardboard & other items stored on floor)	21	15
Expired Items (e.g., drugs, food, human first aid kit)	27	14
Animal care (e.g., cages without igloos/tubes)	7	6
Signs/labels/recordkeeping	20	4
Safety (e.g., fume hood cert; bleach stored above eye level)	2	5
Infrastructure (e.g., ceiling tiles; cloth chairs)	3	1

Departures from the *Guide*:
Some protocols were approved with departures from the *Guide,* which allows certain departures with appropriate justification. The SMPH ACUC tracks departures using the broadest OLAW interpretation and has approved protocols with the following departures:

Departures	Total approved (#)	Approved last 6 mos (#)
Singly housed animals (any purpose)	58	30
Restraint (> 1 hr)	10	4
Food or fluid restriction	40	16
Non-pharmaceutical grade compounds	144	49

Reasons for approving singly-housed animals are: to prevent conspecifics from damaging catheters or other implanted devices; to reduce potential exposure to pathogens of immunosuppressed/immunocompromised animals; to manage animals of certain transgenic strains known to be aggressive; and to manage sexually mature male rodents that are known to be aggressive.

Reasons for approving restraint lasting more than an hour include: to prevent damage to catheters and electronic cables used for biometric monitoring; to avoid confounding effects of chemical restraint in the experiment; and to produce a robust neuroendocrine stress response in rodents.

Reasons for approving food or fluid regulation include: temporary food restriction for procedures such as blood collection for glucose tolerance testing; to assess fuel switching control in genetically manipulated mice and to assess susceptibility to torpor response; fasting prior to dosing in order to determine the liberation, absorption, metabolism and distribution of the test compound; to isolate test compound effects from inhibited weight gain in studies of corticosteriods on skeletal muscle (pair-fed control groups for each experimental group); and motivation to perform tasks for study purposes.

Reasons for approving the use of non- pharmaceutical grade compounds in animals include: no pharmaceutical-grade formulation is available; an equivalent veterinary or human drug is available for experimental use, but the chemical-grade reagent is required to replicate methods from previous studies because results are directly compared to those of replicated studies; the equivalent veterinary or human drug is not available in the concentration or formulation appropriate to meet experimental requirements; the available human or veterinary drug does not meet the nontoxic vehicle requirements for the specified route of injection or for the proposed research species.

The ACUC has no evidence that any of these departures contributed to recurring or ongoing adverse outcomes.

Non-protocol departures include the rodent cage top sanitization schedule approved in January 2013 (discussed above in Section II), and some buildings do not meet humidity standards in the *Guide* during certain parts of the year (discussed above in Section I).

Minority Views: No minority views were expressed.

UW-Madison Animal Care and Use Program Review Worksheet: Fall 2016 SMPH ACUC
(based on Defining the Animal Care and Use Program, Lab Animal 34(10) 41-44, *Guide for the Care and Use of Laboratory Animals 8th ed., and Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching 3rd ed.*)

(I). Physical Plant: "A well-planned, well-designed, well-constructed, and properly maintained and managed facility is an important element of humane animal care and use as it facilitates efficient, economical, and safe operation." (*Guide*, p.133). This includes animal facilities not located on the UW-Madison campus (e.g., Agricultural Research Stations).

A. Methods exist to assure Veterinary, ACUC, PI, and Program staff input into animal facility planning, design, and construction to ensure that new or remodeled facilities meet Program needs.
Fall 2016 ACUC response: Yes. Options for a C-bovis-free facility for SCID mice are under review.
B. The animal facilities adhere to performance standards in the areas of facility planning, design, and construction. All animal facilities meet relevant physical plant performance standards.
Fall 2016 ACUC response: Yes. Lab Animal Resources (LAR) and RARC will facilitate the collection of HVAC data from lab housing rooms for inclusion in the AAALAC Program Descriptions.
C. Appropriate areas are available for: • animal housing • animal care • sanitation of cages and other materials • materials receiving and storage • separation of species or isolation of individual projects when necessary • performance of aseptic surgery • other specialized spaces, facilities, and/or equipment required for the conduct of certain studies
Fall 2016 ACUC response: Yes.
D. Appropriate areas and procedures exist for receipt and quarantine of arriving animals, and separation and quarantine of animals if there are disease outbreaks.
Fall 2016 ACUC response: Yes.
E. Methods exist to monitor and maintain the physical condition of animal facilities to ensure that it remains adequate and appropriate.
Fall 2016 ACUC response: Yes.
F. Departures from The Guide are identified, discussed, and approved by the ACUC.
Fall 2016 ACUC response: Yes. The ACUC recognizes that there are times when humidity levels depart from *Guide* standards, primarily in the winter months, and accepts the monitoring by veterinary staff to ensure animal well-being, with the expectation that the veterinary staff will report clinical issues related to humidity to the ACUC. No such clinical cases were reported in the last six months. Dr. [redacted] agreed to notify PIs of the potential impact of low and fluctuating animal facility humidity levels on their individual research results as recommended by the 2014 AAALAC site visit team.
G. Procedures exist to identify, communicate, and correct animal facility physical deficiencies.
Fall 2016 ACUC response: Yes.
H. Other criteria that should be used to evaluate physical plant & the animal program?
Fall 2016 ACUC response: None.

(II). Animal Environment, Housing, and Management: "An appropriate program provides environments, housing, and management that are well-suited for the species or strains of animals maintained and takes into account their physical, physiologic, and behavioral needs, allowing them to grow, mature, and reproduce normally while providing for their health and well-being." (*Guide*, p.41). Adequate management requires appropriate and sufficient physical, procedural, and human resources. This includes the special needs of aquatic species, and animal facilities not located on the UW-Madison campus (e.g., Agricultural Research Stations).

A. When providing animal housing the institution considers the appropriateness of: • the shape, size, and construction of the animals' primary enclosures (cage, pen, etc.) • temperature, humidity, ventilation, and illumination
Fall 2016 ACUC response: Yes.
B. When providing animal housing the institution considers the appropriateness of behavioral management. That is, environmental enrichment and social housing programs are beneficial to animal well-being and are consistent with the goals of animal use (includes meeting needs for social housing and/or environmental enrichment, exercise for dogs, and promotion of the psychological well-being of nonhuman primates).
Fall 2016 ACUC response: Yes. Dr. [redacted] affirmed that the campus' Animal Social Housing and Enrichment Requirements (ASHER) document specifies regulatory-appropriate social housing and enrichment practices for all species housed at the SMPH. He emphasized that all dogs are housed with sufficient exercise space as specified by the Animal Welfare Act Regulations, and that in the event that dogs must be housed in a space with less than the required exercise space, individual supplemental exercise plans will be presented to the ACUC for review and approval. To date, no such supplemental plans have been required.
C. In assuring appropriate management of animals and animal facilities the institution considers: • animal husbandry, including selection, storage, preparation, and provision of food, bedding, and water • population management, including animal identification (cage cards, ear tags, tattoos, etc.) and records • weekend and holiday animal care • sanitation of enclosures and physical plant • integrated pest control programs
Fall 2016 ACUC response: Yes.
D. Furthermore, the institution considers: • facility security and biosecurity • preparation of a disaster plan that takes into account both personnel and animals • personnel security (pre-employment screening, etc.)
Fall 2016 ACUC response: Yes.
E. Methods exist to monitor and maintain the physical, procedural, and human contributions to adequate animal environment, housing, and management to ensure that they meet performance standards for all animals. That is, facilities are checked to ensure animals are fed, watered, cared for, and protected in species-appropriate ways.
Fall 2016 ACUC response: Yes. Dr. [redacted] said the veterinary staff continues to annually assess one feed and bedding vendor that is not considered a barrier facility. The most recent assessment found conditions at the vendor's site acceptable.
F. Facilities in which animals are housed and used are secure and provide animal and human safety. That is, access to animals in facilities is controlled, monitored, and/or documented.
Fall 2016 ACUC response: Yes.
G. Departures from The Guide are identified, discussed, and approved by the ACUC.
Fall 2016 ACUC response: Yes. A rodent cage top sanitization schedule that departs from *Guide* standards was adopted in January 2013, based on internal performance data. The schedule is to sanitize mouse cage tops once every three months, and rat cage tops once every two months. The veterinary staff continue to monitor for potential adverse effects and to date this schedule has been followed with no negative effects on animal well-being.
H. Procedures exist to identify, communicate, and correct deficiencies in animal environment, housing, and management.
Fall 2016 ACUC response: Yes.
I. Other criteria that should be used to evaluate animal environment, housing, management & the animal program?

B. The UW-Madison Occupational Health and Safety Program provides initial and continuing medical evaluation and preventive medicine for personnel with animal contact.
Fall 2016 ACUC response: Yes. As of mid-October 2016 overall compliance by animal users with the Animal Contact Risk Questionnaire (ACRQ) was 95%, with ongoing follow-ups by UHS staff with noncompliant users. See also supporting report from UHS (attached).
C. The UW-Madison Occupational Health and Safety Program identifies and provides occupational safety training to animal users including appropriate hygiene practices and instruction in appropriate PPE.
Fall 2016 ACUC response: Yes. Three required biosafety training courses are being consolidated into a single modular training. "Risk Communication in Animal Facilities" training is available online and training notices are sent out regularly. Within LAR facilities, the risk communication training and the use of consistent hazard signage appear to have improved staff safety awareness. Further improvements in communications are planned.
D. The UW-Madison Occupational Health and Safety Program monitors animal users, facilities, and procedures.
Fall 2016 ACUC response: Yes. UHS continues to monitor isoflurane levels in specific types of animal use areas. Allergen monitoring continues to be performed in LAR facilities for worker safety.
E. The ACUC and the institution monitor the effectiveness of the Occupational Health and Safety program.
Fall 2016 ACUC response: Yes.
F. Procedures exist to identify, communicate, and correct deficiencies in the Occupational Health and Safety program.
Fall 2016 ACUC response: Yes.
G. Other criteria that should be used to evaluate the Occupational Health and Safety Program for the animal program?
Fall 2016 ACUC response: Ms. [redacted] reported that the biosafety cabinet certification group is still catching up on certifications and repairs. As was reported at the spring review outside vendors are still helping, areas such as BSL-3 laboratories remain the highest priority for completion, and cabinets in animal areas will be serviced by UW employees. ACUC members should continue noting out-of-date cabinets on semiannual inspections so these can be prioritized.

(V). Veterinary Medical Care: "Veterinary care is an essential part of an animal care and use program. The primary focus of the veterinarian is to oversee the well-being and clinical care of animals used in research, testing, teaching, and production. This responsibility extends to monitoring and promoting animal well-being at all times during animals use and during all phases of the animal's life. …The veterinary care program is the responsibility of the attending veterinarian." (*Guide*, pp.105-106). At UW-Madison attending veterinarian obligations are shared among several veterinarians. Adequate veterinary care is a Program component that closely affects all other components.

A. The Program has access to and meets appropriate performance standards for animal procurement and transportation.
Fall 2016 ACUC response: Yes.
B. The Program has access to and meets appropriate performance standards for preventive medicine, including animal quarantine, stabilization, and separation, as well as surveillance, diagnosis, treatment, and control of disease.
Fall 2016 ACUC response: Yes.
C. The Program has access to and meets appropriate performance standards for management of experiment-associated disease, disability, or other sequelae.
Fall 2016 ACUC response: Yes.
D. The Program has access to and meets appropriate performance standards for assessment of animal well-being. Veterinary access to all animals is provided.
Fall 2016 ACUC response: Yes.
E. The Program has access to and meets appropriate performance standards for establishment of adequate surgical and post-surgical care, including proper use of anesthesia and analgesia. Anesthesia and analgesia (1) must be used before their expiration dates and (2) should be acquired, stored, their use recorded, and disposed of legally and safely.
Fall 2016 ACUC response: Yes.
F. The Program has access to and meets appropriate performance standards for proper selection and conduct of

Fall 2016 ACUC response: None

(III). Personnel Qualifications and Training: "All personnel involved with the care and use of animals must be adequately educated, trained, and/or qualified in basic principles of laboratory animal science to help ensure high-quality science and animal well-being. …Institutions are responsible for providing appropriate resources to support personnel training and the IACUC is responsible for providing oversight and for evaluating the effectiveness of the training program." (*Guide*, p.15). Personnel represent both a tremendous resource and a source of complexity in maintaining an effective Program. In view of the importance of training and the diversity of training needs, the training program must be comprehensive and flexible.

***Fall 2016: See also supporting report (attached).**

A. All categories of personnel that constitute the animal research and care community receive adequate and appropriate training, including: • animal care staff • management and supervisory personnel • research personnel (investigators, instructors, technicians, trainees, students) • IACUC members • Institutional Official • veterinarians and veterinary staff • physical plant and security staff
Fall 2016 ACUC response: Yes.
B. As appropriate, each member of the animal research and care community (as listed above) understands: • the components of the animal care and use Program • his or her role within that Program • how that role interacts with the roles of other members of the community
Fall 2016 ACUC response: Yes.
C. Initial formal and/or on-the-job training in Program goals and the humane care and use of animals is provided.
Fall 2016 ACUC response: Yes.
D. Personnel using or caring for animals participate regularly in continuing education activities relevant to their responsibilities.
Fall 2016 ACUC response: Yes.
E. Documentation of training exists and is accessible.
Fall 2016 ACUC response: Yes.
F. The effectiveness of the initial and continuing training of individuals working with animals is regularly evaluated.
Fall 2016 ACUC response: Yes.
G. Procedures exist to identify, communicate, and correct deficiencies in training.
Fall 2016 ACUC response: Yes.
H. Other criteria that should be used to evaluate training & the animal program?
Fall 2016 ACUC response: None

(IV). Occupational Health and Safety: "Each institution must establish and maintain an occupational health and safety program (OHSP) as an essential part of the overall animal care and use program of animal care and use…. An effective OHSP requires coordination between the research program (as represented by the investigator), the animal care and use program (as represented by the A.V., I.O. and IACUC), the environmental health and safety program, occupational health services, and administration (e.g., human resources, finance, and facility-maintenance personnel)." (*Guide*, p.17).

A. The UW-Madison Occupational Health and Safety Program performs hazard identification and risk assessment associated with: • animal care • animal experimentation • teaching using animals • outreach using animals • field studies using wild animals
Fall 2016 ACUC response: Yes.

euthanasia.
Fall 2016 ACUC response: Yes.
G. The Program has access to and meets appropriate performance standards for veterinary participation in protocol development and review.
Fall 2016 ACUC response: Yes. Veterinary pre-review of new protocols continues to have value for both PIs and the ACUC., and the workload is sustainable.
H. There are a sufficient number of veterinarians and veterinary technicians trained to meet Program needs.
Fall 2016 ACUC response: Yes.
I. There is effective evaluation and mentoring of research animal veterinarians to meet Program needs.
Fall 2016 ACUC response: Yes.
J. A mechanism exists for direct and frequent communication to ensure that timely and accurate information about problems associated with animal health, behavior, and well-being information is conveyed to the veterinary staff.
Fall 2016 ACUC response: Yes. Dr. [redacted] noted the mobile app for accessing animal emergency contacts is now in use by UWPD, and the animal health reporting app developed by LAR is now in use by a second animal program on campus.
K. Mechanisms exist to ensure appropriate veterinary participation in decisions regarding animal husbandry, preventive medicine, and experiment planning and conduct, including surgical and post-surgical care.
Fall 2016 ACUC response: Yes. Dr. [redacted] meets weekly with LAR leadership. Structured meetings of the veterinary staff, and the veterinary staff with LAR staff, promote cooperative decision-making in animal husbandry and care. RARC leadership meets monthly with Mr. [redacted] and Dr. [redacted] to coordinate animal care support.
L. Veterinarians are provided with sufficient authority to carry out their duties. Direct or delegated authority is given to the veterinarians to oversee all aspects of animal care and use.
Fall 2016 ACUC response: Yes.
M. Records document provision of adequate veterinary care to all animals. Veterinarians have access to these records.
Fall 2016 ACUC response: Yes.
N. The institution monitors the effectiveness of the Veterinary Care program.
Fall 2016 ACUC response: Yes.
O. Procedures exist to identify, communicate, and correct deficiencies in the Veterinary Care program.
Fall 2016 ACUC response: Yes.
P. The veterinary program offers a high quality of care and ethical standards appropriate to the species and the program.
Fall 2016 ACUC response: Yes.
Q. *Other criteria that should be used to evaluate the program of veterinary care within the animal program?*
Fall 2016 ACUC response: None.

(VI). Institutional Animal Care and Use Committee (IACUC): "The responsibility of the IACUC is to oversee and routinely evaluate the program." (*Guide*, p.24). More than any other group, the IACUC is directly responsible for ensuring the adequacy of all aspects of the Program and can protect the institution's privilege to use animals in research, testing, or education.

A. The ACUC is duly constituted according to the AWA and PHS Policy, and meets as necessary to fulfill its responsibilities.
Fall 2016 ACUC response: Yes.
B. The ACUC members understand the role and responsibilities of the ACUC.
Fall 2016 ACUC response: Yes.

C. The ACUC members receive suitable orientation, background materials, and specific training in understanding and evaluating issues brought before the committee. Training consists of a formal orientation to the institution's program; an overview of legislation, regulations, guidelines, and policies; and instruction on how to conduct protocol review, inspect facilities and labs, and evaluate the program. Committee member training includes both initial and ongoing training/education.
Fall 2016 2015 ACUC response: Yes. Dr [redacted] provided a report on committee training topics covered during the last six months. See also supporting report (attached).
D. The ACUCs review and evaluate the Animal Program semiannually.
Fall 2016 ACUC response: Yes.
E. The ACUCs inspect and evaluate animal activity areas semiannually, including identified animal barrier vivaria and labs where animals go for procedures, surgery areas, transport vehicles, "temporary" housing, etc.
Fall 2016 ACUC response: Yes. Ms [redacted] thanked members for their active participation in the inspections and provided information on the most recent inspections period. See also supporting report (attached).
F. The ACUCs inspect and evaluate drug storage and control programs.
Fall 2016 ACUC response: Yes. In response to questions about the ACUC's responsibility for controlled substances compliance, Dr. [redacted] explained that a task force appointed by the Chancellor determined that because most DEA license holders are animal researchers, the ACUC is responsible for compliance. The committee asked for clearer guidance on what is expected of the ACUCs in overseeing this compliance, and Dr [redacted] said he will follow up.
G. The ACUCs review proposed uses of animals in research, teaching and outreach (i.e., protocols), including special review requirements regarding physical restraint, multiple major surgical procedures, food or fluid restriction, and the use of pharmaceutical grade chemicals. ACUC members named in protocols or with other conflicts recuse themselves from protocol decisions. ACUC oversight of approved use continues post-approval.
Fall 2016 ACUC response: Yes. Dr. [redacted] provided detailed information about turnaround review times, and the Veterinary Verified Change (VVC) approvals, including PI feedback about the process. See also supporting report (attached).
H. Departures from The Guide are identified, discussed, and approved by the ACUC.
Fall 2016 ACUC response: Yes. Ms. [redacted] summarized the departures from The Guide currently approved in protocols by the SMPH ACUC. See also supporting report (attached).
I. A mechanism is established for receipt and review of concerns involving the care and use of animals at the institution, including the establishment of a "Whistleblower Policy."
Fall 2016 ACUC response: Yes.
J. All minority reports submitted by appointed ACUC members with voting privileges were handled in according with applicable OLAW and USDA regulations.
Fall 2016 ACUC response: Yes. No minority reports have been submitted in the last six months.
K. The ACUCs have the authority to suspend animal activities that do not comply with regulations and policies.
Fall 2016 ACUC response: Yes.
L. The ACUCs submit reports to institutional officials.
Fall 2016 ACUC response: Yes.
M. The ACUCs advise and make recommendations to the Institutional Official on any aspect of the Program.
Fall 2016 ACUC response: Yes.
N. The institution backs the authority of the ACUCs.
Fall 2016 ACUC response: Yes.
O. An effective mechanism exists for direct and frequent communication to ensure that timely and accurate information is conveyed to the ACUC regarding problems in any Program component.
Fall 2016 ACUC response: Yes.
P. The ACUCs have adequate administrative support.

Fall 2016 ACUC response: Yes. The committee appreciates all of the support from RARC.
Q. Methods exist to monitor and maintain committee activities and effectiveness in support of the Program.
Fall 2016 ACUC response: Yes. Ms. [redacted] reported that the RARC Program Assessment Specialist office has launched a program of routine post-approval monitoring of protocols according to ACAPAC Policy 2016-059 entitled "Post Approval Monitoring." Since the routine reviews began at the end of August, four reviews have been completed, and one is in progress. One of the completed reviews was of an SMPH protocol and no noncompliance was identified. The review currently in progress is also of an SMPH protocol. One directed monitoring for an SMPH facility is ongoing, with regular reports being presented to the committee.
R. Procedures exist to identify, communicate, and correct deficiencies.
Fall 2016 ACUC response: Yes,
S. Other criteria that should be used to evaluate the ACUCs' role in the animal program?
Fall 2016 ACUC response: None.

(VII). Institutional Official (IO): Each institution must appoint an institutional official, who legally commits the institution to meet all requirements embodied in the AWA, AWRs, and PHS Policy by ensuring that the Program satisfies all performance criteria described in the Guide. The IO has the authority to allocate the resources needed to ensure the program's overall effectiveness (*Guide,* p.13). The Institutional Official must have a working understanding of his/her role in the animal program.

A. The ACUC has not identified any deficiencies in the I.O.'s understanding of Program structure.
Fall 2016 ACUC response: True. The ACUC acknowledged the recent appointment of Dr. [redacted] as interim I.O. effective October 1, 2016. Dr. [redacted] is an experienced ACUC Chair, and understands program structure.
B. The ACUC believes the IO monitors Program functions, including IACUC activities and membership.
Fall 2016 ACUC response: Yes.
C. The ACUC has not identified any deficiencies in the administrative, financial, and legal support for the Program of Animal Care.
Fall 2016 ACUC response: True.
D. The ACUC believes the IO receives appropriate and timely communications from the ACUC and other members of the Program, and carries out appropriate follow-ups and responses.
Fall 2016 ACUC response: Yes.
E. The IO has demonstrated authority to enforce Program policies to the ACUC's satisfaction.
Fall 2016 ACUC response: Yes.
F. Annual and other reports are submitted to federal agencies in a timely manner by the IO.
Fall 2016 ACUC response: Yes.
G. Methods exist to monitor and evaluate the effectiveness of the IO.
Fall 2016 ACUC response: Yes.
H. Other criteria that should be used to evaluate the IOs' role in the animal program?
Fall 2016 ACUC response: The ACUC has found it very beneficial to have the I.O. attend at least one regular ACUC meeting each year, and will request that Dr. [redacted] continue this practice.

Sections VIII and IX of this Worksheet are designed for internal self-evaluation purposes only. The institution is not obligated to communicate the findings of these sections to USDA, OLAW, or AAALAC unless those findings identify a program deficiency considered reportable by those agencies.

(VIII). Program Integration. For the Program to be effective, all Program components must function well together.

A. There is a cadre of individuals with expertise and understanding regarding Program components who can evaluate

Program adequacy.
Fall 2016 ACUC response: Yes.
B. There is strong and well-informed administrative coordination of efforts to support the Program.
Fall 2016 ACUC response: Yes. Communication between the ACUC, LAR leadership, and Dr. [redacted] office remain strong.
C. The ACUC believes that within its school/college Program there is effective and timely communication among veterinarians, principal investigators, the Committee, and the school/college administration so that each of these groups can carry out its designated responsibilities.
Fall 2016 ACUC response: Yes.
D. The ACUC believes that campus-wide there is effective and timely communication among Program administration, veterinarians, principal investigators, the Committee, and the Institutional Official (IO) so that each of these groups can carry out its designated responsibilities.
Fall 2016 ACUC response: Yes. Examples of integration between the SMPH and other campus animal programs were reiterated, such as sharing the animal health reporting system with other programs (SVM), and using CALS staff's expertise with swine for designing swine holding facilities and in training of LAR ART staff, were reiterated.
E. There are sufficient financial, physical, procedural, and human resources to meet Program requirements.
Fall 2016 ACUC response: Yes.
F. There is school/college-wide recognition of the need for and practice of compliance; that is, all Program personnel and participants accept that they must follow the rules.
Fall 2016 ACUC response: Yes.
G. Methods exist to monitor program integration to ensure that all Program elements function well together.
Fall 2016 ACUC response: Yes.
H. Procedures exist to identify, communicate, and correct deficiencies in program integration.
Fall 2016 ACUC response: Yes.
I. Other criteria that should be used to evaluate integration of the animal program?
Fall 2016 ACUC response: None.

(IX). Support of the Institutional Mission: The Program must support and enhance the institution's mission in the areas of research, teaching, and outreach that involve living vertebrate animals. Evaluation of the Program must consider whether and how well it fulfills its reason for existence.

A. The animal care program supports research, teaching, and outreach activities that involve animals.
Fall 2016 ACUC response: Yes.
B. The animal care program enhances research, teaching, and outreach activities that involve animals.
Fall 2016 ACUC response: Yes.
C. Methods exist to monitor and maintain the effectiveness of the program.
Fall 2016 ACUC response: Yes.
D. Other criteria that should be used to evaluate the efficiency and efficacy of animal program in fulfilling its mission?
Fall 2016 ACUC response: None.

WISCONSIN
UNIVERSITY OF WISCONSIN-MADISON

School of Medicine and Public Health Animal Care and Use Committee
Program Review Open Session – November 28, 2016

Present (voting): [redacted]

Present (nonvoting): [redacted]

Guests: [redacted]

Absent: [redacted]

The meeting convened at 1:00 p.m. Dr. [redacted] thanked all for attending and explained that the purpose of today's meeting is to perform the semiannual review of the animal program in the School of Medicine and Public Health. The committee will discuss each section of the UW-Madison Animal Care and Use Program Review Worksheet (see attached) and identify areas of strengths and deficiencies. She noted the committee's comments from the Spring 2016 program review have been provided in today's Worksheet for reference.

Fall 2016 Semiannual Program Review

The committee discussed section I ("Physical Plant"), finding in general this aspect of the program is strong. Dr. [redacted] provided an update on plans to establish a C-bovis-free facility for immunodeficient mice, stating three specific options are being evaluated. Dr [redacted] noted that all rooms considered "laboratory housing" have been identified, and confirmed that Lab Animal Resources (LAR) and RARC will facilitate the collection of HVAC data from these rooms for inclusion in the AAALAC Program Descriptions currently under development. Dr. [redacted] reiterated that there are times when humidity levels in facilities depart from *Guide* standards, primarily during the winter months, and assured the committee that the veterinary staff and animal research technicians (ARTs) continue to closely monitor all animals for signs of humidity-related disease. He said that no such clinical cases were seen in the past six months. Monitoring of humidity-related clinical issues by the veterinary staff will continue, and will be reported to the ACUC as needed. Dr. [redacted] agreed to notify PIs of the potential impact of low and fluctuating animal facility humidity levels on their individual research results as recommended by the 2014 AAALAC site visit team.

The committee discussed section II ("Animal Environment, Housing, and Management). Dr [redacted] affirmed that the campus' Animal Social Housing and Enrichment Requirements (ASHER) document specifies regulatory-appropriate social housing and enrichment practices for all species housed at the SMPH. He emphasized that all dogs are housed with sufficient exercise

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space as specified by the Animal Welfare Act Regulations, and that in the event that dogs must be housed in a space with less than the required exercise space, individual supplemental exercise plans will be presented to the ACUC for review and approval. To date, no such supplemental plans have been required. Dr [redacted] and Ms. [redacted] noted that feedback from PIs regarding the use of rodent bedding with embedded nesting materials by LAR has continued to be positive. Dr. [redacted] said that the RARC veterinary staff continue to assess the primary feed and bedding vendor that is not considered a barrier facility, noting that conditions were found to be acceptable on the most recent visit. He noted that the rodent cage top sanitization schedule that departs from *Guide* standards, adopted in January 2013 based on internal performance data, has been followed with no negative effects on animal well-being. The veterinary staff continues to monitor for potential adverse effects.

The committee discussed section III ("Personnel Qualifications and Training"). Ms. [redacted] at RARC, led discussion of her report (see attached). She said the Animal User Orientation online module was updated in August 2016, and then highlighted the number of SMPH animal users who have accessed RARC classes and who have requested waivers from required species-specific and lab animal surgery training. She described ways in which the RARC trainers provided unique services to the SMPH program such as hosting students enrolled in Pharmacy 718-558 ("Laboratory Techniques in Pharmacology and Toxicology") and facilitating species-specific training for ARTs, particularly in handling swine. She noted that that training was conducted in conjunction with experienced swine users in the College of Agricultural and Life Sciences. Ms. [redacted] described the RARC trainers' process for following up with individuals who fail to attend required training, noting that non-responsive individuals are be reported to the ACUC for action if necessary. To date only two individuals have been reported to the SMPH ACUC. Dr. [redacted] asked if there are waitlists for any RARC classes and Ms. [redacted] said no, explaining the trainers schedule extra classes as necessary to accommodate all students who wish to take a class. Ms. [redacted] thanked the ACUC for their consistent support of the animal user training program.

The committee discussed section IV ("Occupational Health and Safety," OHS). An informational report from University Health Services detailed the status of the Animal Contact Risk Questionnaire was distributed (see attached). The committee noted the 95% compliance rate, and asked if the remainder are accounted for in the tracking system. Ms. [redacted] and Ms. [redacted] explained that all individuals are identified and being tracked. The committee feels that the progress, and changes implemented by UHS, indicate responsiveness to previous deficiencies identified by the ACUC. Ms. [redacted] reported that the newly-hired [redacted] will start in December. She noted that two students on the Biosafety office team are helping ensure training notifications for required safety courses, such as "Risk Communication in Animal Facilities," are being sent in a timely and consistent manner to animal users. Within LAR facilities, the risk communication training and the use of consistent hazard signage appear to have improved staff safety awareness. Further improvements in communications are planned, perhaps tied into the animal ordering system. Ms. [redacted] reported that the biosafety cabinet certification group is still catching up on certifications and repairs. As was reported at the spring review outside vendors are still helping, areas such as BSL-3 laboratories remain the highest priority for completion, and cabinets in animal areas will be serviced by UW employees. ACUC members should continue noting out-of-date cabinets on semiannual inspections so these can be prioritized.

The committee discussed section V ("Veterinary Medical Care"), finding the program of veterinary care strong. Adequate clinical care is provided, appropriate surgery facilities for research animals are available throughout campus, and veterinary oversight is collaborative and supports animal welfare and research. Dr. [redacted] noted the mobile app for accessing animal emergency contacts is now in use by UWPD, and the animal health reporting app developed by LAR is now in use by a second animal program on campus. Leadership meetings between RARC veterinary staff and LAR management continue to strengthen and enhance communication about the animal program.

The committee discussed section VI (Institutional Animal Care and Use Committee) (see attached reports). Ms. [redacted] thanked members for their active participation in the inspections and provided information on the most recent inspections period. Dr. [redacted] and others complimented Ms. [redacted] on her support in managing the inspections. There was a brief discussion of the challenges in ensuring all expired compounds, including those in PI labs, are found and discarded in a timely manner. Dr [redacted] provided a report on committee training topics covered during the last six months and on protocol review turnaround, noting review times were equivalent to those in the previous six months for all protocol types. Dr. [redacted] provided detailed information about the Veterinary Verified Change (VVC) approvals, including PI feedback about the process. A summary of departures from the *Guide* in protocols approved by the SMPH ACUC was reviewed. Dr. [redacted] asked the veterinarians if any adverse health effects were caused by the departures, and the veterinarians said no.

Ms [redacted] reported that the RARC Program Assessment Specialist office has launched a program of routine post-approval monitoring of protocols according to ACAPAC Policy 2016-059 entitled "Post Approval Monitoring." She explained that for this process, a number of protocols are randomly selected using an algorithm for monitoring. Since the routine reviews began at the end of August, four reviews have been completed, and one is in progress. One of the completed reviews was of an SMPH protocol and no noncompliance was identified. The review currently in progress is also of an SMPH protocol. In addition, one directed monitoring for an SMPH facility is ongoing, with regular reports being presented to the committee. In response to questions about the ACUC's responsibility for controlled substances compliance, Dr. [redacted] explained that a task force appointed by the Chancellor determined that because most DEA license holders are animal researchers, the ACUC is responsible for compliance. The committee asked for clearer guidance on what is expected of the ACUCs in overseeing this compliance, and Dr. [redacted] said he will follow up.

The committee discussed section VII ("Institutional Official," I.O.), noting the recent appointment of interim I.O. Dr. [redacted] at the beginning of the month. As the former chair of the School of Medicine and Public Health ACUC she is very knowledgeable about the animal program. The SMPH ACUC has found it very beneficial to have the I.O. attend at least one ACUC meeting each year, and will request that Dr. [redacted] continue this practice.

The committee discussed section VIII (Program Integration) and section IX (Support of the Institutional Mission) finding in general institutional support is strong and well-coordinated. The ACUC reiterated examples of integration between the SMPH and other campus animal

programs, such as sharing the animal health reporting system with other programs (SVM), and using CALS staff's expertise with swine for designing swine holding facilities and in training of LAR ART staff.

Dr. [redacted] called for other business for Open Session. Hearing none, Dr. [redacted] said that he will draft a report to the I.O. based on today's discussion and circulate it for edits, after which the members' signatures will be collected. [redacted] moved to adjourn the meeting. The vote was unanimous. The meeting was adjourned at 2:45 p.m.

[redacted]

Appd by SMPH ACUC
9 Jan 2017

UW-Madison Animal Care and Use Semi-Annual Program Review
Fall 2016 SMPH
ACUC III. Personnel Qualifications and Training Worksheet Sec. III

RARC Training courses (May 1, 2016 – Present)

- UW research personnel accessed courses 2119 times
- SMPH research personnel accessed courses 844 times
  - 271 Animal User Orientation
    - Revision
  - 59 Lab Animal Surgery Course
  - 223 Species Specific Courses
    - Online module/hands on training
      - 174: Mouse and Rat
      - 49: Swine Primate, Zebrafish, Cat, Rabbit
  - 291: Anesthesia, Medical Records, Aseptic Technique, Microisolator Technique, Nonsurvival Surgery, Anesthesia Machine User Guide, Controlled Substances

Waivers

- Approval granted from Dr [redacted] /ACUC
- 2 SMPH waivers granted out of 19 total waivers campus wide
  - 2 Lab Animal Surgery

Revocations

- Trainers follow up with each individual
  - If no resolution, then follow up with PI
  - If still no resolution, report to Dr. [redacted]
  - Last resort, report to ACUC
- To date 19 SMPH individuals revoked out of 36 total campus wide

SMPH Specific

- Meet and Greets:
  - [redacted]
  - [redacted] does not want a Meet & Greet
- Pharmacy 718-558 Laboratory Techniques in Pharmacology and Toxicology – Mouse handling lab specific for class requirements
- ART training: cat, dog, mouse, rat, rabbit, swine

Outreach

- Campus Visitor's Program
  - middle schools and high schools
- Wisconsin Science Festival
- Madison College Veterinary Technician Program

Other Training Updates

- Animal behavior and training: horses, swine, rats, kittens
- ART Training and tracking

UHS | UNIVERSITY HEALTH SERVICES
ENVIRONMENTAL & OCCUPATIONAL HEALTH

University Health Services Environmental and Occupational Health
Summary Animal Contact Risk Questionnaire (ACRQ) Status
October 25, 2016

Compliance with ACRQ
As of October 19 2016 the compliance rate was 95% with 3998 enrolled. The average compliance rate from April to October was 94%.

Impacts to compliance rate
- As noted in the last report, UHS provides a monthly list to RARC of those non-compliant. The monthly rate of those due to submit the annual ACRQ requiring message from RARC has been 9-23%.
- UHS continues to message supervisor and/or department administrator/chair and enrollee (as identified either by RARC or previous ACRQ submission) as a final step prior to providing the non-compliant list to RARC.
- UHS continues to identify and enroll those that are not listed on a protocol, eg. Courses and recently SVM hospital care staff.
- Second and third reminders to submit annual ACRQ for October were delayed due to the meningitis mass vaccination effort. Messages will commence again on October 26th.

Improvements in the process
- Based on feedback provided, the "sender" from UHS was changed to Environmental Occupational Health rather than GM Environmental Occupational Health.
- MyUHS log-in page and UHS messages were updated to include: DO NOT open multiple MyUHS tabs. Doing so will cause unexpected errors.
- Clarification to questions on the ACRQ, including an option to schedule an appointment in lieu of listing medications.
- An obvious notice (pop-up box with number of errors) when the questionnaire submission is not complete due to errors or omissions on the form.
- Coming very soon! UHS has been working with the VCGRE office and RARC to upload ACRQ compliance data into the PI portal.

Obstacles encountered by submitters beyond MyUHS:
- Messages going to Clutter box (https://kb.wisc.edu/wiscaccountadmin/page.php?id=33784).
- UHS policy as reviewed by UW Madison legal does not allow messages to go to gmail, yahoo or other private accounts.

UHS continues to work with the software vendor for improvements:
- Upon initial access to MyUHS, a list of Forms to be completed will be presented.
- Recall of previous ACRQ submission.
- UHS continues to work with the vendor on a weekly basis and expects additional enhancements in another upgrade expected later in 2016.

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Committee Training
May, 2016-November, 2016

Committee Training at Monthly Meetings

May: ARROW Power User Tips

June-July: Viewing differences in protocols submitted in ARROW

July-August: How to inspect for Expired Materials

Aug.-Sept: ASHER Document

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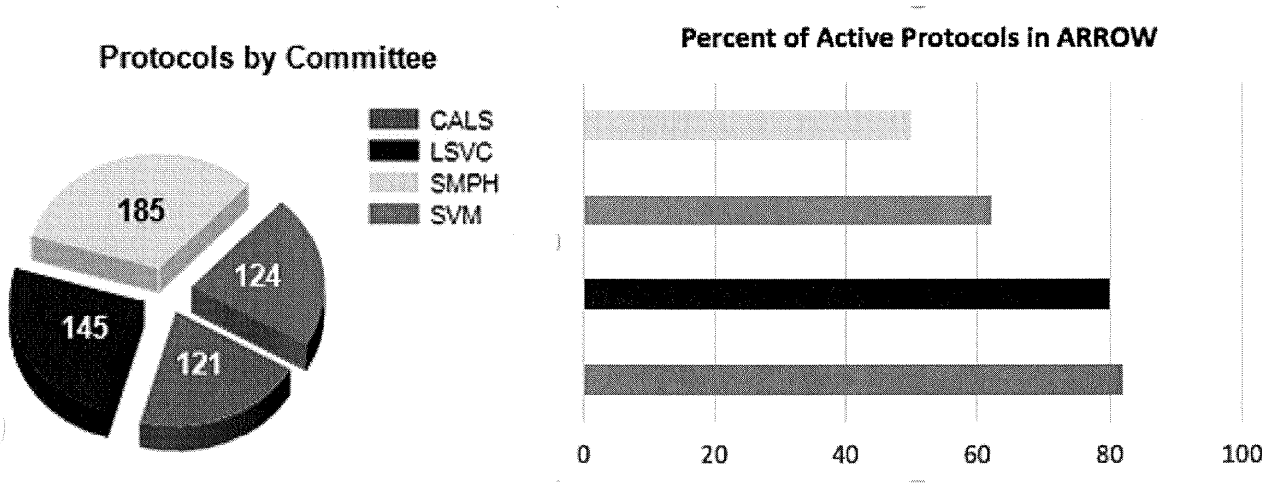

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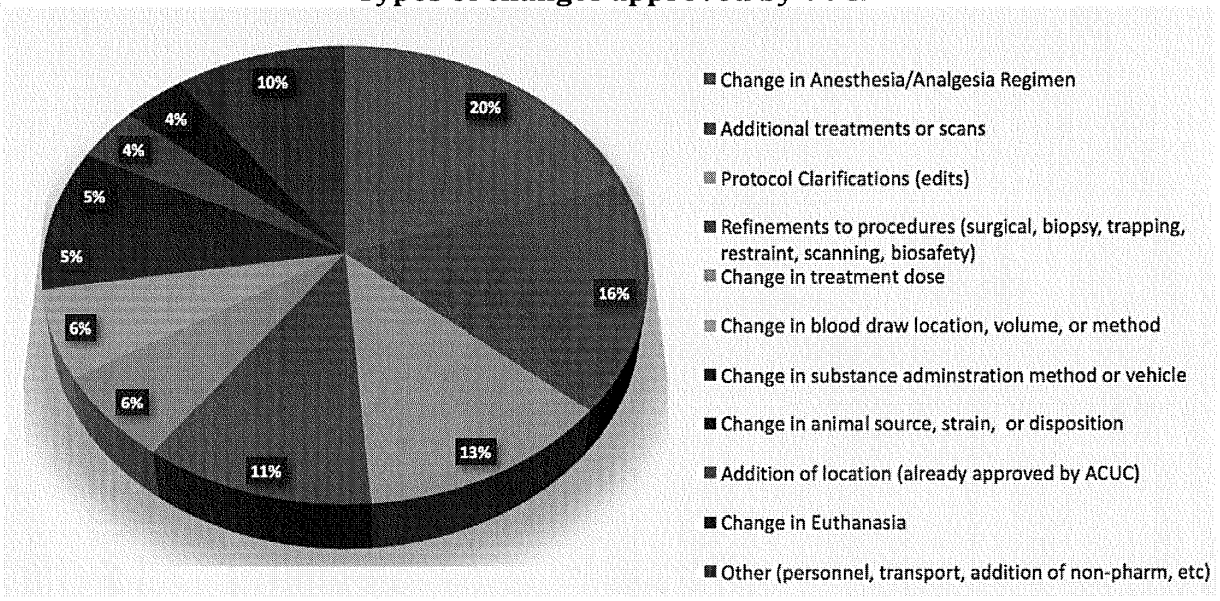

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During a protocol-approved experimental procedure, we observed a new phenomenon of potentially great value to anesthesiology and coma treatment. If we were to characterize this phenomenon in the remaining experiments of the series (after which the neural recording equipment would be repositioned/removed), we would need to make an adjustment to the procedure. The VVC program allowed us adjust the procedure as required in time for the next experiment date, and we have since reliably reproduced the phenomenon. Consultations with the veterinary staff at the WNPRC throughout the entire timeline of these events was very valuable. Had the VVC program not existed, it is unlikely that the usual protocol amendment process would have been completed in time to allow the necessary procedural adjustment and thus we may not have been able to determine the important factors giving rise to our finding.

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  - to produce a robust neuroendocrine stress response in rodents
- 40 protocols (16 approved in the last six months) that involve food or fluid regulation for the following reasons:
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  - to assess fuel switching control in genetically manipulated mice and to assess susceptibility to torpor response
  - fasting prior to dosing in order to determine the liberation, absorption, metabolization and distribution of the test compound
  - to isolate test compound effects from inhibited weight gain in studies of corticosteriods on skeletal muscle (pair-fed control groups for each experimental group)
- 144 protocols (49 approved in the last six months) that use non-pharmaceutical grade compounds for the following reasons:
  - no pharmaceutical-grade formulation is available
  - an equivalent veterinary or human drug is available for experimental use but the chemical-grade reagent is required to replicate methods from previous studies because results are directly compared to those of replicated studies
  - the equivalent veterinary or human drug is not available in the concentration or formulation appropriate to meet experimental requirements
  - the available human or veterinary drug does not meet the nontoxic vehicle requirements for the specified route of injection or for the proposed research species

Spring 2016 program review data for comparison (approx. 116 protocols in ARROW:

- *47 protocols approved for housing animals individually for experimental or veterinary reasons*
- *7 protocols that involve restraint for more than one hour*
- *28 protocols that involve food or fluid regulation*
- *117 protocols use non-pharmaceutical grade compounds*

UW-Madison Animal Care and Use Semi-Annual Program Review
Fall 2016 SMPH
ACUC III. Personnel Qualifications and Training Worksheet Sec. III

RARC Training courses (May 1, 2016 – Present)

- UW research personnel accessed courses 2119 times
- SMPH research personnel accessed courses 844 times
  - 271 Animal User Orientation
    - Revision
  - 59 Lab Animal Surgery Course
  - 223 Species Specific Courses
    - Online module/hands on training
      - 174: Mouse and Rat
      - 49: Swine Primate, Zebrafish, Cat, Rabbit
  - 291: Anesthesia, Medical Records, Aseptic Technique, Microisolator Technique, Nonsurvival Surgery, Anesthesia Machine User Guide, Controlled Substances

Waivers

- Approval granted from Dr. [redacted]/ACUC
- 2 SMPH waivers granted out of 19 total waivers campus wide
  - 2 Lab Animal Surgery

Revocations

- Trainers follow up with each individual
  - If no resolution, then follow up with PI
  - If still no resolution, report to Dr [redacted]
  - Last resort, report to ACUC
- To date 19 SMPH individuals revoked out of 36 total campus wide

SMPH Specific

- Meet and Greets:
  - [redacted]
  - [redacted] does not want a Meet & Greet
- Pharmacy 718-558 Laboratory Techniques in Pharmacology and Toxicology – Mouse handling lab specific for class requirements
- ART training: cat, dog, mouse, rat, rabbit, swine

Outreach

- Campus Visitor's Program
  - middle schools and high schools
- Wisconsin Science Festival
- Madison College Veterinary Technician Program

Other Training Updates

- Animal behavior and training: horses, swine, rats, kittens
- ART Training and tracking

UHS | UNIVERSITY HEALTH SERVICES
ENVIRONMENTAL & OCCUPATIONAL HEALTH

University Health Services Environmental and Occupational Health
Summary Animal Contact Risk Questionnaire (ACRQ) Status
October 25, 2016

Compliance with ACRQ
As of October 19 2016 the compliance rate was 95% with 3998 enrolled. The average compliance rate from April to October was 94%.

Impacts to compliance rate
- As noted in the last report, UHS provides a monthly list to RARC of those non-compliant. The monthly rate of those due to submit the annual ACRQ requiring message from RARC has been 9-23%.
- UHS continues to message supervisor and/or department administrator/chair and enrollee (as identified either by RARC or previous ACRQ submission) as a final step prior to providing the non-compliant list to RARC.
- UHS continues to identify and enroll those that are not listed on a protocol, eg. Courses and recently SVM hospital care staff.
- Second and third reminders to submit annual ACRQ for October were delayed due to the meningitis mass vaccination effort. Messages will commence again on October 26th.

Improvements in the process
- Based on feedback provided, the "sender" from UHS was changed to Environmental Occupational Health rather than GM Environmental Occupational Health.
- MyUHS log-in page and UHS messages were updated to include: DO NOT open multiple MyUHS tabs. Doing so will cause unexpected errors.
- Clarification to questions on the ACRQ, including an option to schedule an appointment in lieu of listing medications.
- An obvious notice (pop-up box with number of errors) when the questionnaire submission is not complete due to errors or omissions on the form.
- Coming very soon! UHS has been working with the VCGRE office and RARC to upload ACRQ compliance data into the PI portal.

Obstacles encountered by submitters beyond MyUHS:
- Messages going to Clutter box (https://kb.wisc.edu/wiscaccountadmin/page.php?id=33784).
- UHS policy as reviewed by UW Madison legal does not allow messages to go to gmail, yahoo or other private accounts.

UHS continues to work with the software vendor for improvements:
- Upon initial access to MyUHS, a list of Forms to be completed will be presented.
- Recall of previous ACRQ submission.
- UHS continues to work with the vendor on a weekly basis and expects additional enhancements in another upgrade expected later in 2016.

608.890.1992 | uhs.wisc.edu/eoh
University of Wisconsin-Madison | 333 East Campus Mall, Room 8303 | Madison, WI 53715-1381

Committee Training
May, 2016-November, 2016

Committee Training at Monthly Meetings

May: ARROW Power User Tips

June-July: Viewing differences in protocols submitted in ARROW

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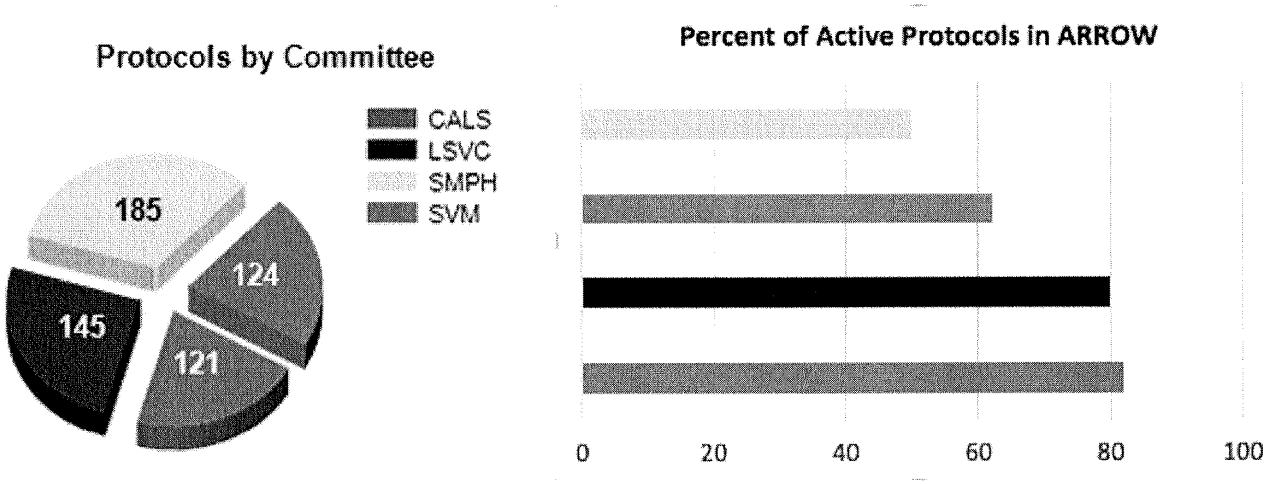

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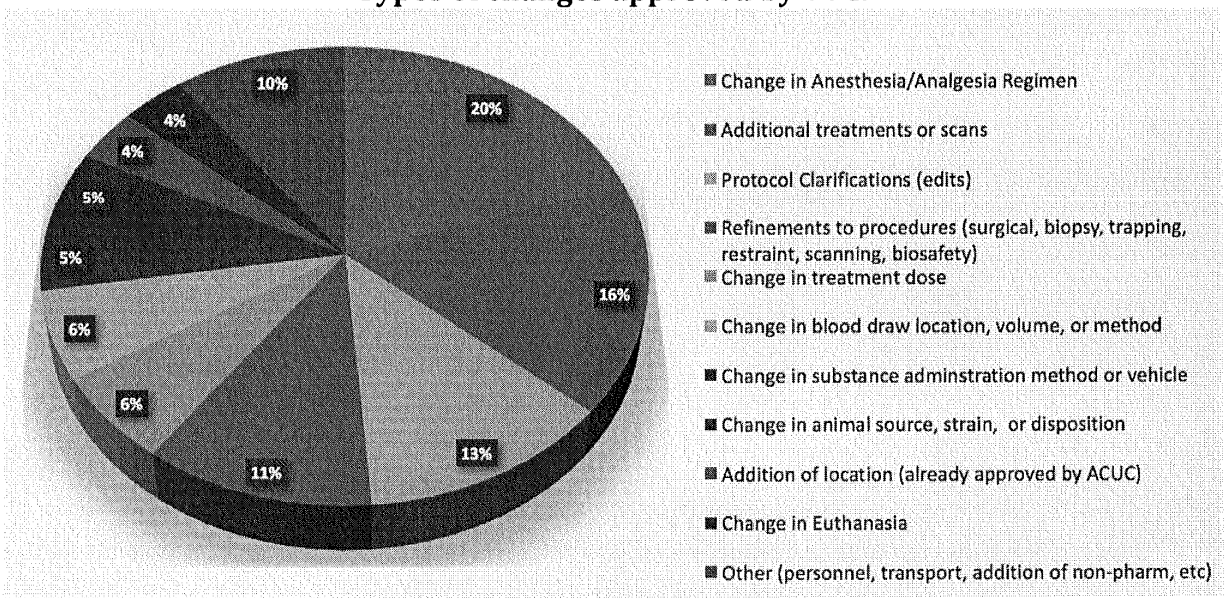

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UW-Madison Animal Care and Use Program Review Worksheet: Fall 2016 SMPH ACUC
(based on Defining the Animal Care and Use Program, Lab Animal 34(10) 41-44, *Guide for the Care and Use of Laboratory Animals 8th ed., and Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching 3rd ed.*)

(I). Physical Plant: "A well-planned, well-designed, well-constructed, and properly maintained and managed facility is an important element of humane animal care and use as it facilitates efficient, economical, and safe operation." (*Guide*, p.133). This includes animal facilities not located on the UW-Madison campus (e.g., Agricultural Research Stations).

A. Methods exist to assure Veterinary, ACUC, PI, and Program staff input into animal facility planning, design, and construction to ensure that new or remodeled facilities meet Program needs.
Fall 2016 ACUC response: Yes. Options for a C-bovis-free facility for SCID mice are under review.
B. The animal facilities adhere to performance standards in the areas of facility planning, design, and construction. All animal facilities meet relevant physical plant performance standards.
Fall 2016 ACUC response: Yes. Lab Animal Resources (LAR) and RARC will facilitate the collection of HVAC data from lab housing rooms for inclusion in the AAALAC Program Descriptions.
C. Appropriate areas are available for: • animal housing • animal care • sanitation of cages and other materials • materials receiving and storage • separation of species or isolation of individual projects when necessary • performance of aseptic surgery • other specialized spaces, facilities, and/or equipment required for the conduct of certain studies
Fall 2016 ACUC response: Yes.
D. Appropriate areas and procedures exist for receipt and quarantine of arriving animals, and separation and quarantine of animals if there are disease outbreaks.
Fall 2016 ACUC response: Yes.
E. Methods exist to monitor and maintain the physical condition of animal facilities to ensure that it remains adequate and appropriate.
Fall 2016 ACUC response: Yes.
F. Departures from The Guide are identified, discussed, and approved by the ACUC.
Fall 2016 ACUC response: Yes. The ACUC recognizes that there are times when humidity levels depart from *Guide* standards, primarily in the winter months, and accepts the monitoring by veterinary staff to ensure animal well-being, with the expectation that the veterinary staff will report clinical issues related to humidity to the ACUC. No such clinical cases were reported in the last six months. Dr. [redacted] agreed to notify PIs of the potential impact of low and fluctuating animal facility humidity levels on their individual research results as recommended by the 2014 AAALAC site visit team.
G. Procedures exist to identify, communicate, and correct animal facility physical deficiencies.
Fall 2016 ACUC response: Yes.
H. Other criteria that should be used to evaluate physical plant & the animal program?
Fall 2016 ACUC response: None.

(II). Animal Environment, Housing, and Management: "An appropriate program provides environments, housing, and management that are well-suited for the species or strains of animals maintained and takes into account their physical, physiologic, and behavioral needs, allowing them to grow, mature, and reproduce normally while providing for their health and well-being." (*Guide*, p.41). Adequate management requires appropriate and sufficient physical, procedural, and human resources. This includes the special needs of aquatic species, and animal facilities not located on the UW-Madison campus (e.g., Agricultural Research Stations).

A. When providing animal housing the institution considers the appropriateness of: • the shape, size, and construction of the animals' primary enclosures (cage, pen, etc.) • temperature, humidity, ventilation, and illumination
Fall 2016 ACUC response: Yes.
B. When providing animal housing the institution considers the appropriateness of behavioral management. That is, environmental enrichment and social housing programs are beneficial to animal well-being and are consistent with the goals of animal use (includes meeting needs for social housing and/or environmental enrichment, exercise for dogs, and promotion of the psychological well-being of nonhuman primates).
Fall 2016 ACUC response: Yes. Dr. [redacted] affirmed that the campus' Animal Social Housing and Enrichment Requirements (ASHER) document specifies regulatory-appropriate social housing and enrichment practices for all species housed at the SMPH. He emphasized that all dogs are housed with sufficient exercise space as specified by the Animal Welfare Act Regulations, and that in the event that dogs must be housed in a space with less than the required exercise space, individual supplemental exercise plans will be presented to the ACUC for review and approval. To date, no such supplemental plans have been required.
C. In assuring appropriate management of animals and animal facilities the institution considers: • animal husbandry, including selection, storage, preparation, and provision of food, bedding, and water • population management, including animal identification (cage cards, ear tags, tattoos, etc.) and records • weekend and holiday animal care • sanitation of enclosures and physical plant • integrated pest control programs
Fall 2016 ACUC response: Yes.
D. Furthermore, the institution considers: • facility security and biosecurity • preparation of a disaster plan that takes into account both personnel and animals • personnel security (pre-employment screening, etc.)
Fall 2016 ACUC response: Yes.
E. Methods exist to monitor and maintain the physical, procedural, and human contributions to adequate animal environment, housing, and management to ensure that they meet performance standards for all animals. That is, facilities are checked to ensure animals are fed, watered, cared for, and protected in species-appropriate ways.
Fall 2016 ACUC response: Yes. Dr. [redacted] said the veterinary staff continues to annually assess one feed and bedding vendor that is not considered a barrier facility. The most recent assessment found conditions at the vendor's site acceptable.
F. Facilities in which animals are housed and used are secure and provide animal and human safety. That is, access to animals in facilities is controlled, monitored, and/or documented.
Fall 2016 ACUC response: Yes.
G. Departures from The Guide are identified, discussed, and approved by the ACUC.
Fall 2016 ACUC response: Yes. A rodent cage top sanitization schedule that departs from *Guide* standards was adopted in January 2013, based on internal performance data. The schedule is to sanitize mouse cage tops once every three months, and rat cage tops once every two months. The veterinary staff continue to monitor for potential adverse effects and to date this schedule has been followed with no negative effects on animal well-being.
H. Procedures exist to identify, communicate, and correct deficiencies in animal environment, housing, and management.
Fall 2016 ACUC response: Yes.
I. Other criteria that should be used to evaluate animal environment, housing, management & the animal program?

Fall 2016 ACUC response: None

(III). Personnel Qualifications and Training: "All personnel involved with the care and use of animals must be adequately educated, trained, and/or qualified in basic principles of laboratory animal science to help ensure high-quality science and animal well-being. …Institutions are responsible for providing appropriate resources to support personnel training and the IACUC is responsible for providing oversight and for evaluating the effectiveness of the training program." (*Guide*, p.15). Personnel represent both a tremendous resource and a source of complexity in maintaining an effective Program. In view of the importance of training and the diversity of training needs, the training program must be comprehensive and flexible.

***Fall 2016: See also supporting report (attached).**

A. All categories of personnel that constitute the animal research and care community receive adequate and appropriate training, including: • animal care staff • management and supervisory personnel • research personnel (investigators, instructors, technicians, trainees, students) • IACUC members • Institutional Official • veterinarians and veterinary staff • physical plant and security staff
Fall 2016 ACUC response: Yes.
B. As appropriate, each member of the animal research and care community (as listed above) understands: • the components of the animal care and use Program • his or her role within that Program • how that role interacts with the roles of other members of the community
Fall 2016 ACUC response: Yes.
C. Initial formal and/or on-the-job training in Program goals and the humane care and use of animals is provided.
Fall 2016 ACUC response: Yes.
D. Personnel using or caring for animals participate regularly in continuing education activities relevant to their responsibilities.
Fall 2016 ACUC response: Yes.
E. Documentation of training exists and is accessible.
Fall 2016 ACUC response: Yes.
F. The effectiveness of the initial and continuing training of individuals working with animals is regularly evaluated.
Fall 2016 ACUC response: Yes.
G. Procedures exist to identify, communicate, and correct deficiencies in training.
Fall 2016 ACUC response: Yes.
H. Other criteria that should be used to evaluate training & the animal program?
Fall 2016 ACUC response: None

(IV). Occupational Health and Safety: "Each institution must establish and maintain an occupational health and safety program (OHSP) as an essential part of the overall animal care and use program of animal care and use…. An effective OHSP requires coordination between the research program (as represented by the investigator), the animal care and use program (as represented by the A.V., I.O. and IACUC), the environmental health and safety program, occupational health services, and administration (e.g., human resources, finance, and facility-maintenance personnel)." (*Guide*, p.17).

A. The UW-Madison Occupational Health and Safety Program performs hazard identification and risk assessment associated with: • animal care • animal experimentation • teaching using animals • outreach using animals • field studies using wild animals
Fall 2016 ACUC response: Yes.

B. The UW-Madison Occupational Health and Safety Program provides initial and continuing medical evaluation and preventive medicine for personnel with animal contact.
Fall 2016 ACUC response: Yes. As of mid-October 2016 overall compliance by animal users with the Animal Contact Risk Questionnaire (ACRQ) was 95%, with ongoing follow-ups by UHS staff with noncompliant users. See also supporting report from UHS (attached).
C. The UW-Madison Occupational Health and Safety Program identifies and provides occupational safety training to animal users including appropriate hygiene practices and instruction in appropriate PPE.
Fall 2016 ACUC response: Yes. Three required biosafety training courses are being consolidated into a single modular training. "Risk Communication in Animal Facilities" training is available online and training notices are sent out regularly. Within LAR facilities, the risk communication training and the use of consistent hazard signage appear to have improved staff safety awareness. Further improvements in communications are planned.
D. The UW-Madison Occupational Health and Safety Program monitors animal users, facilities, and procedures.
Fall 2016 ACUC response: Yes. UHS continues to monitor isoflurane levels in specific types of animal use areas. Allergen monitoring continues to be performed in LAR facilities for worker safety.
E. The ACUC and the institution monitor the effectiveness of the Occupational Health and Safety program.
Fall 2016 ACUC response: Yes.
F. Procedures exist to identify, communicate, and correct deficiencies in the Occupational Health and Safety program.
Fall 2016 ACUC response: Yes.
G. Other criteria that should be used to evaluate the Occupational Health and Safety Program for the animal program?
Fall 2016 ACUC response: Ms. [redacted] reported that the biosafety cabinet certification group is still catching up on certifications and repairs. As was reported at the spring review outside vendors are still helping, areas such as BSL-3 laboratories remain the highest priority for completion, and cabinets in animal areas will be serviced by UW employees. ACUC members should continue noting out-of-date cabinets on semiannual inspections so these can be prioritized.

(V). Veterinary Medical Care: "Veterinary care is an essential part of an animal care and use program. The primary focus of the veterinarian is to oversee the well-being and clinical care of animals used in research, testing, teaching, and production. This responsibility extends to monitoring and promoting animal well-being at all times during animals use and during all phases of the animal's life. …The veterinary care program is the responsibility of the attending veterinarian." (*Guide*, pp.105-106). At UW-Madison attending veterinarian obligations are shared among several veterinarians. Adequate veterinary care is a Program component that closely affects all other components.

A. The Program has access to and meets appropriate performance standards for animal procurement and transportation.
Fall 2016 ACUC response: Yes.
B. The Program has access to and meets appropriate performance standards for preventive medicine, including animal quarantine, stabilization, and separation, as well as surveillance, diagnosis, treatment, and control of disease.
Fall 2016 ACUC response: Yes.
C. The Program has access to and meets appropriate performance standards for management of experiment-associated disease, disability, or other sequelae.
Fall 2016 ACUC response: Yes.
D. The Program has access to and meets appropriate performance standards for assessment of animal well-being. Veterinary access to all animals is provided.
Fall 2016 ACUC response: Yes.
E. The Program has access to and meets appropriate performance standards for establishment of adequate surgical and post-surgical care, including proper use of anesthesia and analgesia. Anesthesia and analgesia (1) must be used before their expiration dates and (2) should be acquired, stored, their use recorded, and disposed of legally and safely.
Fall 2016 ACUC response: Yes.
F. The Program has access to and meets appropriate performance standards for proper selection and conduct of

euthanasia.
Fall 2016 ACUC response: Yes.
G. The Program has access to and meets appropriate performance standards for veterinary participation in protocol development and review.
Fall 2016 ACUC response: Yes. Veterinary pre-review of new protocols continues to have value for both PIs and the ACUC., and the workload is sustainable.
H. There are a sufficient number of veterinarians and veterinary technicians trained to meet Program needs.
Fall 2016 ACUC response: Yes.
I. There is effective evaluation and mentoring of research animal veterinarians to meet Program needs.
Fall 2016 ACUC response: Yes.
J. A mechanism exists for direct and frequent communication to ensure that timely and accurate information about problems associated with animal health, behavior, and well-being information is conveyed to the veterinary staff.
Fall 2016 ACUC response: Yes. Dr. [redacted] noted the mobile app for accessing animal emergency contacts is now in use by UWPD, and the animal health reporting app developed by LAR is now in use by a second animal program on campus.
K. Mechanisms exist to ensure appropriate veterinary participation in decisions regarding animal husbandry, preventive medicine, and experiment planning and conduct, including surgical and post-surgical care.
Fall 2016 ACUC response: Yes. Dr. [redacted] meets weekly with LAR leadership. Structured meetings of the veterinary staff, and the veterinary staff with LAR staff, promote cooperative decision-making in animal husbandry and care. RARC leadership meets monthly with Mr. [redacted] and Dr. [redacted] to coordinate animal care support.
L. Veterinarians are provided with sufficient authority to carry out their duties. Direct or delegated authority is given to the veterinarians to oversee all aspects of animal care and use.
Fall 2016 ACUC response: Yes.
M. Records document provision of adequate veterinary care to all animals. Veterinarians have access to these records.
Fall 2016 ACUC response: Yes.
N. The institution monitors the effectiveness of the Veterinary Care program.
Fall 2016 ACUC response: Yes.
O. Procedures exist to identify, communicate, and correct deficiencies in the Veterinary Care program.
Fall 2016 ACUC response: Yes.
P. The veterinary program offers a high quality of care and ethical standards appropriate to the species and the program.
Fall 2016 ACUC response: Yes.
Q. Other criteria that should be used to evaluate the program of veterinary care within the animal program?
Fall 2016 ACUC response: None.

(VI). Institutional Animal Care and Use Committee (IACUC): "The responsibility of the IACUC is to oversee and routinely evaluate the program." (*Guide*, p.24). More than any other group, the IACUC is directly responsible for ensuring the adequacy of all aspects of the Program and can protect the institution's privilege to use animals in research, testing, or education.

A. The ACUC is duly constituted according to the AWA and PHS Policy, and meets as necessary to fulfill its responsibilities.
Fall 2016 ACUC response: Yes.
B. The ACUC members understand the role and responsibilities of the ACUC.
Fall 2016 ACUC response: Yes.

C. The ACUC members receive suitable orientation, background materials, and specific training in understanding and evaluating issues brought before the committee. Training consists of a formal orientation to the institution's program; an overview of legislation, regulations, guidelines, and policies; and instruction on how to conduct protocol review, inspect facilities and labs, and evaluate the program. Committee member training includes both initial and ongoing training/education.
Fall 2016 2015 ACUC response: Yes. Dr. [redacted] provided a report on committee training topics covered during the last six months. See also supporting report (attached).
D. The ACUCs review and evaluate the Animal Program semiannually.
Fall 2016 ACUC response: Yes.
E. The ACUCs inspect and evaluate animal activity areas semiannually, including identified animal barrier vivaria and labs where animals go for procedures, surgery areas, transport vehicles, "temporary" housing, etc.
Fall 2016 ACUC response: Yes. Ms. [redacted] thanked members for their active participation in the inspections and provided information on the most recent inspections period. See also supporting report (attached).
F. The ACUCs inspect and evaluate drug storage and control programs.
Fall 2016 ACUC response: Yes. In response to questions about the ACUC's responsibility for controlled substances compliance, Dr. [redacted] explained that a task force appointed by the Chancellor determined that because most DEA license holders are animal researchers, the ACUC is responsible for compliance. The committee asked for clearer guidance on what is expected of the ACUCs in overseeing this compliance, and Dr. [redacted] said he will follow up.
G. The ACUCs review proposed uses of animals in research, teaching and outreach (i.e., protocols), including special review requirements regarding physical restraint, multiple major surgical procedures, food or fluid restriction, and the use of pharmaceutical grade chemicals. ACUC members named in protocols or with other conflicts recuse themselves from protocol decisions. ACUC oversight of approved use continues post-approval.
Fall 2016 ACUC response: Yes. Dr. [redacted] provided detailed information about turnaround review times, and the Veterinary Verified Change (VVC) approvals, including PI feedback about the process. See also supporting report (attached).
H. Departures from The Guide are identified, discussed, and approved by the ACUC.
Fall 2016 ACUC response: Yes. Ms. [redacted] summarized the departures from The Guide currently approved in protocols by the SMPH ACUC. See also supporting report (attached).
I. A mechanism is established for receipt and review of concerns involving the care and use of animals at the institution, including the establishment of a "Whistleblower Policy."
Fall 2016 ACUC response: Yes.
J. All minority reports submitted by appointed ACUC members with voting privileges were handled in according with applicable OLAW and USDA regulations.
Fall 2016 ACUC response: Yes. No minority reports have been submitted in the last six months.
K. The ACUCs have the authority to suspend animal activities that do not comply with regulations and policies.
Fall 2016 ACUC response: Yes.
L. The ACUCs submit reports to institutional officials.
Fall 2016 ACUC response: Yes.
M. The ACUCs advise and make recommendations to the Institutional Official on any aspect of the Program.
Fall 2016 ACUC response: Yes.
N. The institution backs the authority of the ACUCs.
Fall 2016 ACUC response: Yes.
O. An effective mechanism exists for direct and frequent communication to ensure that timely and accurate information is conveyed to the ACUC regarding problems in any Program component.
Fall 2016 ACUC response: Yes.
P. The ACUCs have adequate administrative support.

Fall 2016 ACUC response: Yes. The committee appreciates all of the support from RARC.
Q. Methods exist to monitor and maintain committee activities and effectiveness in support of the Program.
Fall 2016 ACUC response: Yes. Ms. [redacted] reported that the RARC Program Assessment Specialist office has launched a program of routine post-approval monitoring of protocols according to ACAPAC Policy 2016-059 entitled "Post Approval Monitoring." Since the routine reviews began at the end of August, four reviews have been completed, and one is in progress. One of the completed reviews was of an SMPH protocol and no noncompliance was identified. The review currently in progress is also of an SMPH protocol. One directed monitoring for an SMPH facility is ongoing, with regular reports being presented to the committee.
R. Procedures exist to identify, communicate, and correct deficiencies.
Fall 2016 ACUC response: Yes,
S. Other criteria that should be used to evaluate the ACUCs' role in the animal program?
Fall 2016 ACUC response: None.

(VII). Institutional Official (IO): Each institution must appoint an institutional official, who legally commits the institution to meet all requirements embodied in the AWA, AWRs, and PHS Policy by ensuring that the Program satisfies all performance criteria described in the Guide. The IO has the authority to allocate the resources needed to ensure the program's overall effectiveness (*Guide,* p.13). The Institutional Official must have a working understanding of his/her role in the animal program.

A. The ACUC has not identified any deficiencies in the I.O.'s understanding of Program structure.
Fall 2016 ACUC response: True. The ACUC acknowledged the recent appointment of Dr. [redacted] as interim I.O. effective October 1, 2016. Dr. [redacted] is an experienced ACUC Chair, and understands program structure.
B. The ACUC believes the IO monitors Program functions, including IACUC activities and membership.
Fall 2016 ACUC response: Yes.
C. The ACUC has not identified any deficiencies in the administrative, financial, and legal support for the Program of Animal Care.
Fall 2016 ACUC response: True.
D. The ACUC believes the IO receives appropriate and timely communications from the ACUC and other members of the Program, and carries out appropriate follow-ups and responses.
Fall 2016 ACUC response: Yes.
E. The IO has demonstrated authority to enforce Program policies to the ACUC's satisfaction.
Fall 2016 ACUC response: Yes.
F. Annual and other reports are submitted to federal agencies in a timely manner by the IO.
Fall 2016 ACUC response: Yes.
G. Methods exist to monitor and evaluate the effectiveness of the IO.
Fall 2016 ACUC response: Yes.
H. Other criteria that should be used to evaluate the IOs' role in the animal program?
Fall 2016 ACUC response: The ACUC has found it very beneficial to have the I.O. attend at least one regular ACUC meeting each year, and will request that Dr. [redacted] continue this practice.

Sections VIII and IX of this Worksheet are designed for internal self-evaluation purposes only. The institution is not obligated to communicate the findings of these sections to USDA, OLAW, or AAALAC unless those findings identify a program deficiency considered reportable by those agencies.

(VIII). Program Integration. For the Program to be effective, all Program components must function well together.

A. There is a cadre of individuals with expertise and understanding regarding Program components who can evaluate

Program adequacy.
Fall 2016 ACUC response: Yes.
B. There is strong and well-informed administrative coordination of efforts to support the Program.
Fall 2016 ACUC response: Yes. Communication between the ACUC, LAR leadership, and Dr. [redacted] office remain strong.
C. The ACUC believes that within its school/college Program there is effective and timely communication among veterinarians, principal investigators, the Committee, and the school/college administration so that each of these groups can carry out its designated responsibilities.
Fall 2016 ACUC response: Yes.
D. The ACUC believes that campus-wide there is effective and timely communication among Program administration, veterinarians, principal investigators, the Committee, and the Institutional Official (IO) so that each of these groups can carry out its designated responsibilities.
Fall 2016 ACUC response: Yes. Examples of integration between the SMPH and other campus animal programs were reiterated, such as sharing the animal health reporting system with other programs (SVM), and using CALS staff's expertise with swine for designing swine holding facilities and in training of LAR ART staff, were reiterated.
E. There are sufficient financial, physical, procedural, and human resources to meet Program requirements.
Fall 2016 ACUC response: Yes.
F. There is school/college-wide recognition of the need for and practice of compliance; that is, all Program personnel and participants accept that they must follow the rules.
Fall 2016 ACUC response: Yes.
G. Methods exist to monitor program integration to ensure that all Program elements function well together.
Fall 2016 ACUC response: Yes.
H. Procedures exist to identify, communicate, and correct deficiencies in program integration.
Fall 2016 ACUC response: Yes.
I. Other criteria that should be used to evaluate integration of the animal program?
Fall 2016 ACUC response: None.

(IX). Support of the Institutional Mission: The Program must support and enhance the institution's mission in the areas of research, teaching, and outreach that involve living vertebrate animals. Evaluation of the Program must consider whether and how well it fulfills its reason for existence.

A. The animal care program supports research, teaching, and outreach activities that involve animals.
Fall 2016 ACUC response: Yes.
B. The animal care program enhances research, teaching, and outreach activities that involve animals.
Fall 2016 ACUC response: Yes.
C. Methods exist to monitor and maintain the effectiveness of the program.
Fall 2016 ACUC response: Yes.
D. Other criteria that should be used to evaluate the efficiency and efficacy of animal program in fulfilling its mission?
Fall 2016 ACUC response: None.

APPENDIX 10

Heating, Ventilation and Air Conditioning (HVAC) System Summary

Heating, Ventilation and Air Conditioning (HVAC) System Summary

Summarize the heating, ventilation and air conditioning (HVAC) information for each animal facility, including all satellite facilities, indicating: a) source(s) of air, b) air recirculation rates if other than 100% fresh air, c) air exchange rates, d) relative pressure differentials, e) humidity control, and f) date of most recent measurement/evaluation. Include all animal holding rooms, (including satellite holding rooms), surgical facilities, procedure rooms, and support spaces integral to animal facilities (e.g., cage wash, cage and feed storage areas, necropsy, treatment, etc.). Air exchange rates within animal holding rooms and cage washing facilities are required. 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. HVAC information should be provided from assessments obtained within the past 12 months.

See following pages for each building's HVAC System Summary.

AAALAC CERTIFICATION DATA LEGEND

AIRFLOW MEASUREMENT TEST EQUIPMENT USED:

Shortridge ADM-860,870 or 880 used with the following accessories:

A. pito tube
B. velgrid
C. airfoil
D. 14”x14” airflow hood, short skirt
E. 12”x48” airflow hood
G. 24”x24” airflow hood
H. 36”x36” airflow hood
I. 24”x48” airflow hood
J. 14”x14” airflow hood, long skirt
K. 10”x18”x30” airflow hood
L. 36”x12” airflow hood

AIR FILTER TYPES:

M. pleated filters
N. rolled filters
O. bag filters
P. HEPA filters
Q. TA filters
R. washable metal filters
S. varicell filters
T. cartridge filters

HUMIDITY CONTROL:

W. system humidification
X. room humidification
Y. system humidification and room humidification
Z. branch humidification

2017 AAALAC CERTIFICATION DATA

THE UNIVERSITY of WISCONSIN MADISON

[redacted] Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM) EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	mice	1436	100% OA	M	I	negative	278	11.6	-0.0100	W	02/06/17
[redacted]	procedure	1526	100% OA	M	I	negative	297	11.7	-0.0060	W	02/06/17
[redacted]	mice	2153	100% OA	M	I	negative	361	10.1	-0.0022	W	02/06/17
[redacted]	storage	3300	100% OA	M	I	negative	560	10.2	-0.0110	W	02/06/17
[redacted]	storage	2888	100% OA	M	I	negative	533	11.1	-0.0094	W	02/06/17
[redacted]	mice	1933	100% OA	M	I	negative	478	14.8	-0.0167	W	02/06/17
[redacted]	mice	1972	100% OA	M	I	negative	414	12.6	-0.0017	W	02/06/17
[redacted]	mice	1744	100% OA	M	A	negative	369	12.7	-0.0125	W	02/06/17
[redacted]	mice	1631	100% OA	M	C	negative	375	13.8	-0.0266	W	02/06/17
[redacted]	mice	1688	100% OA	M	A	negative	421	15.0	-0.0215	W	02/06/17
[redacted]	[3] mice	1180	100% OA	M	A	negative	421	21.4	-0.0215	W	02/06/17
[redacted]	[1,2]cage wash	6472	100% OA	M	A & C	negative	1333	12.4	-0.0001	W	02/06/17

[1]dirty and clean sides of cage wash equipment are in the same space, room [redacted], served by a common ventilation system.

[2]cage wash room [redacted] has existing construction that is open to corridor (there is no door). The exhaust air volume is greater than the supply air volume in the room. Smoke pen indicates negative room pressure.

[3] [redacted]

2017 AAALAC CERTIFICATION DATA

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM) EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	quarantine	1755	100% OA	M,O	A	negative	522	17.8	-0.016	Y	02/14/17
[redacted]	[1]cage wash	12222	100% OA	M,O	A	negative	11070	54.3	-0.002	Y	02/14/17
[redacted]	procedure	880	100% OA	M,O,P	A	negative	461	31.4	-0.009	Y	02/14/17
[redacted]	[2] rec'v rm	1584	100% OA	M,O	A	negative	1306	49.5	-0.002	Y	02/14/17
[redacted]	TIC rm	1638	100% OA	M,O,P	A	positive	447	16.4	0.021	Y	02/14/17
[redacted]	dissect	1170	100% OA	M,O,P	A	positive	212	10.9	0.012	Y	02/14/17
[redacted]	surgery	1386	100% OA	M,O,P	A	positive	715	31.0	0.032	Y	02/14/17
[redacted]	cryogenics	990	100% OA	M,O,P	A	positive	452	27.4	0.006	Y	02/14/17
[redacted]	animal	2025	100% OA	M,O	A	negative	536	15.9	-0.007	Y	02/14/17
[redacted]	procedure	2025	100% OA	M,O,P	A	negative	1284	38.0	-0.011	Y	02/14/17
[redacted]	animal	2160	100% OA	M,O	A	negative	508	14.1	-0.007	Y	02/14/17
[redacted]	animal	2160	100% OA	M,O	A	negative	553	15.4	-0.012	Y	02/14/17
[redacted]	animal	2160	100% OA	M,O	A	negative	539	15.0	-0.013	Y	02/14/17
[redacted]	animal	2160	100% OA	M,O	A	negative	548	15.2	-0.009	Y	02/14/17
[redacted]	procedure	1944	100% OA	M,O,P	A	negative	1141	35.2	-0.008	Y	02/14/17
[redacted]	animal	2160	100% OA	M,O	A	negative	632	17.6	-0.023	Y	02/14/17
[redacted]	animal	2160	100% OA	M,O	A	negative	539	15.0	-0.009	Y	02/14/17
[redacted]	animal	2160	100% OA	M,O	A	negative	498	13.8	-0.004	Y	02/14/17
[redacted]	animal	2160	100% OA	M,O	A	negative	570	15.8	-0.009	Y	02/14/17
[redacted]	procedure	1186	100% OA	M,O,P	A	negative	1133	57.3	-0.018	Y	02/14/17
[redacted]	animal	3240	100% OA	M,O	A	negative	800	14.8	-0.003	Y	02/14/17
[redacted]	animal	3240	100% OA	M,O	A	negative	835	15.5	-0.003	Y	02/14/17
[redacted]	animal	3240	100% OA	M,O	A	negative	833	15.4	-0.009	Y	02/14/17
[3] [redacted]	fish	9772	100% OA	O	A	negative	1875	11.5	-0.010	W	02/15/17
3 [redacted]	fish	3911	100% OA	O	A	negative	784	12.0		W	02/15/17

[1]dirty and clean sides of cage wash equipment are in the same space, room [redacted], served by a common ventilation system. The room was balanced to a negative space pressure relative to adjacent areas.

[2] Room [redacted] has two doors. Room pressure reference is to Corridor [redacted].

3 [redacted] & [redacted] are a Suite with room pressure so indicated.

2017 AAALAC CERTIFICATION DATA

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED SA	TEST EQUIPMENT USED EX	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM)	MEASURED AIRFLOW EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	CATH-LAB	5707	100% OA	M,T	G	[1]G	Negative	1065	1393	14.6	-0.003	W	03/20/17
[redacted]	SURGERY	1242	100% OA	M,T	G	[1]G	Positive	477	227	23.0	-0.0002	W	03/20/17
[redacted]	VET TREAT	1823	100% OA	M,T	G	G	Negative	444	396	14.6	0.0025	W	03/20/17
[redacted]	HOLDING	1215	100% OA	M,T	G	[1]G	Negative	226	379	18.7	-0.028	Y	03/20/17
[redacted]	HOLDING	1215	100% OA	M,T	G	[1]G	Negative	216	375	18.5	-0.013	Y	03/20/17
[redacted]	HOLDING	1242	100% OA	M,T	G	[1]G	Negative	218	360	17.4	-0.027	Y	42814
[redacted]	HOLDING	1242	100% OA	M,T	G	[1]G	Negative	208	336	16.2	-0.008	Y	42814
[redacted]	HOLDING	1242	100% OA	M,T	G	[1]G	Negative	223	388	18.7	-0.036	Y	42814
[redacted]	HOLDING	1242	100% OA	M,T	G	[1]G	Negative	220	360	17.4	-0.008	Y	42814
[redacted]	HOLDING	1242	100% OA	M,T	G	[1]G	Negative	218	384	18.6	-0.046	Y	3/20/17
[redacted]	HOLDING	1242	100% OA	M,T	G	[1]G	Negative	226	355	17.1	-0.009	Y	3/20/17
[redacted]	HOLDING	1242	100% OA	M,T	G	[1]G	Negative	220	406	19.6	-0.041	Y	3/20/17
[redacted]	HOLDING	1242	100% OA	M,T	G	[1]G	Negative	206	369	17.8	-0.013	Y	3/20/17
[redacted]	FEED STRG	1536	100% OA	M,T	G	[1]G	Negative	232	365	14.3	-0.038	W	3/20/17
[redacted]	HOLDING	1215	100% OA	M,T	G	[1]G	Negative	239	359	16.0	-0.010	Y	3/20/17
[redacted]	HOLDING	1242	100% OA	M,T	G	[1]G	Negative	232	364	17.6	-0.008	Y	3/20/17
[redacted]	HOLDING	1242	100% OA	M,T	G	[1]G	Negative	237	358	17.3	-0.009	Y	3/20/17
[redacted]	Clean Cage Strg	4851	100% OA	M,T	G	G	Positive	628	641	7.8	0.0002	W	3/20/17
[redacted]	HOLDING	1242	100% OA	M,T	G	[1]G	Negative	217	335	16.2	-0.010	Y	3/20/17
[redacted]	NECROPSY	1215	100% OA	M,T	[1]I	[2]G	Negative	466	530	26.2	-0.009	W	3/20/17
[redacted]	HOLDING	5770	100% OA	M,T	G	G	Negative	1240	1473	15.3	-0.042	Y	3/20/17
[redacted]	HOLDING	This room under construction. 1403 sq. ft.			-		Negative	-		-	-	-	3/20/17
[redacted]	SURGERY	1566	100% OA	M,T	G		Positive	385	NA	14.8	-0.074	W	3/20/17
[redacted]	HOLDING	1575	100% OA	M,T	G	[1]G	Negative	455	322	17.3	0.006	Y	3/20/17
[redacted]	HOLDING	1575	100% OA	M,T	G	[1]G	Negative	418	301	15.9	0.008	Y	3/20/17

[1] Indicates adapter to fit opening.

[2] Table exhaust [redacted].

2017 AAALAC CERTIFICATION DATA

THE UNIVERSITY of WISCONSIN MADISON

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED SA	EX	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM)	EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	HOLDING	1566	100% OA	M,T	G	[1]G	Negative	422	247	16.2	0.006	Y	03/20/17
[redacted]	HOLDING	1566	100% OA	M,T	G	[1]G	Negative	432	247	16.6	0.011	Y	03/20/17
[redacted]	HOLDING	1575	100% OA	M,T	G	[1]G	Negative	428	285	16.3	0.003	Y	03/20/17
[redacted]	HOLDING	1539	100% OA	M,T	G	[1]G	Negative	382	258	14.9	0.003	Y	03/20/17
[redacted]	HOLDING	1566	100% OA	M,T	G	[1]G	Negative	263	275	10.5	-0.0006	Y	03/20/17
[redacted]	HOLDING	1566	100% OA	M,T	G	[1]G	Negative	216	330	12.6	-0.008	Y	03/20/17
[redacted]	HOLDING	1575	100% OA	M,T	G	[1]G	Negative	312	238	11.9	0.001	Y	03/20/17
[redacted]	PROCEDURE	1575	100% OA	M,T	G	[1]G	Negative	416	360	15.8	0.0006	W	03/20/17
[redacted]	HOLDING	1575	100% OA	M,T	G	[1]G	Negative	147	292	11.1	-0.014	Y	03/20/17
[redacted]	HOLDING	1575	100% OA	M,T	G	[1]G	Negative	380	399	15.2	-0.0007	Y	3/20/17
[redacted]	HOLDING	1566	100% OA	M,T	G	[1]G	Negative	203	269	10.3	-0.005	Y	3/20/17
[redacted]	PROCEDURE	1566	100% OA	M,T	G	[1]G	Negative	396	420	16.1	-0.0015	W	3/20/17
[redacted]	HOLDING	1566	100% OA	M,T	G	[1]G	Negative	196	297	11.4	-0.009	Y	3/20/17
[redacted]	HOLDING	1566	100% OA	M,T	G	[1]G	Negative	219	341	13.1	-0.010	Y	3/20/17
[redacted]	HOLDING	1575	100% OA	M,T	G	[1]G	Negative	237	304	11.6	-0.006	Y	3/20/17
[redacted]	PROCEDURE	1575	100% OA	M,T	G	[1]G	Negative	406	311	15.5	0.006	W	3/20/17
[redacted]	PROCEDURE	1548	100% OA	M,T	G	[1]G	Negative	312	275	12.1	0.006	W	3/20/17
[redacted]	PROCEDURE	1539	100% OA	M,T	G	[1]G	Negative	375	285	14.6	0.010	W	3/20/17
[redacted]	PROCEDURE	1557	100% OA	M,T	G	[1]G	Negative	404	339	15.6	0.030	W	3/20/17
[redacted]	PROCEDURE	1057	100% OA	M,T	G	B	Negative	317	922	52.3	-0.080	W	3/20/17
[redacted]	PROCEDURE	630	100% OA	M,T	F	G	Negative	191	307	29.2	-0.038	Y	3/20/17
[redacted]	HOLDING	630	100% OA	M,T	F	G	Negative	290	200	27.6	0.004	Y	3/20/17
[redacted]	HOLDING	630	100% OA	M,T	F	G	Negative	280	215	26.7	0.005	Y	3/20/17
[redacted]	HOLDING	630	100% OA	M,T	F	G	Negative	261	171	24.9	0.017	Y	3/20/17
[redacted]	PROCEDURE	630	100% OA	M,T	F	G	Negative	[2]224	153	21.3	0.0105	Y	3/20/17
[3][redacted]	Autoclave	1791	100% OA	M,T	G	[1]B	Negative	688	750	25.1	-0.0007	W	3/20/17

[1] Indicates adapter to fit opening.

[2] Rm [redacted] / SA CFM estimate / partial access to SA slot diffuser.

[3] Room [redacted] per dwg.

2017 AAALAC CERTIFICATION DATA

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED SA	TEST EQUIPMENT USED EX	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM)	MEASURED AIRFLOW EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	HOLDING	765	100% OA	M,T	G	G	Negative	176	116	13.8	0.004	Y	03/20/17
[redacted]	HOLDING	3618	100% OA	M,T	G	G	Negative	808	738	13.4	0.004	W	03/20/17
[redacted]	HOLDING	711	100% OA	M,T	G	G	Negative	223	98	18.8	0.008	W	03/20/17
[redacted]	PROCEDURE	810	100% OA	M,T	J	A	Negative	256	156	19.0	0.010	W	03/20/17
[redacted]	PROCEDURE	1755	100% OA	M,T	G	B,A	Negative	1720	1862	63.7	0.006	W	03/20/17
[redacted]	HOLDING	693	100% OA	M,T	G	G	Negative	178	95	15.4	0.011	W	03/20/17
[redacted]	PROCEDURE	810	100% OA	M,T	J	C	Negative	210	265	19.6	-0.076	W	03/20/17
[redacted]	PROCEDURE	755	100% OA	M,T	G	G	Negative	105	47	8.3	0.008	W	03/20/17
[1] [redacted]	Dirty Cage Wash	6514	100% OA	M,T	G	G	Negative	1032	436	9.5	0.011	W	03/20/17
[1] [redacted]	Clean Cage Wash	4465	100% OA	M,T	G	G	Negative	650	308	8.7	0.005	W	3/20/17
[redacted]	mice	5977	100% OA	O	G/B		negative		1506	15.1	-0.018	W	3/20/17

[1] Cage Washer ex cfms not measured. Machine has in-line exhaust fan which operates intermittently according to machine cycle.

2017 AAALAC CERTIFICATION DATA

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM) EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	rats	1240	100% OA	M, Q	D'	negative	239	11.6	-0.013	X	02/01/17
[redacted]	mice	1832	100% OA	M, Q	A	negative	548	17.9	-0.057	X	02/01/17
[redacted]	mice	1600	100% OA	M, Q	D'	negative	323	12.1	-0.009	X	02/01/17
[redacted]	rats	1272	100% OA	M, Q	D'	negative	383	18.1	-0.0065	X	02/01/17
[redacted]	mice	1272	100% OA	M, Q	D'	negative	429	20.2	-0.039	X	02/01/17
[redacted]	mice	1440	100% OA	M, Q	D'	negative	618	25.8	-0.111	X	02/01/17
[redacted]	rats	1272	100% OA	M, Q	D'	negative	523	24.7	-0.071	X	02/01/17
[redacted]	rats	1272	100% OA	M, Q	D'	negative	595	28.1	-0.057	X	02/01/17
[redacted]	rats	1400	100% OA	M, Q	D'	negative	528	22.6	-0.045	X	02/01/17
[redacted]	rats	1264	100% OA	M, Q	D'	negative	408	19.4	-0.057	X	02/01/17
[redacted]	rats	1248	100% OA	M, Q	D'	negative	465	22.4	-0.105	X	02/01/17
[redacted]	rats	1256	100% OA	M, Q	D'	negative	430	20.5	-0.084	X	02/01/17
[redacted]	mice	2528	100% OA	M, Q	D'	negative	611	14.5	-0.065	X	02/01/17
[redacted]	rats	1280	100% OA	M, Q	D'	negative	355	16.6	-0.032	X	02/01/17
[redacted]	rats	1296	100% OA	M, Q	D'	negative	407	18.8	-0.058	X	02/01/17
[redacted]	rats	1240	100% OA	M, Q	D'	negative	484	23.4	-0.054	X	02/01/17
[redacted]	rats	1520	100% OA	M, Q	D'	negative	481	19.0	-0.052	X	02/01/17
[redacted]	rats	1224	100% OA	M, Q	D'	negative	463	22.7	-0.060	X	02/01/17
[redacted]	procedure	1912	100% OA	M, Q	D'	negative	660	20.7	-0.020	X	02/01/17
[redacted]	supply room	872	100% OA	M, Q	D	negative	147	10.1	-0.006	X	02/01/17
[redacted]	procedure	2712	100% OA	M, Q	G	negative	522	11.5	-0.015	X	02/01/17
[redacted]	procedure	1792	100% OA	M, Q	B	negative	746	25.0	-0.021	X	02/01/17
					D'=14/14 flowhood w/ 12/12 adapter						

2017 AAALAC CERTIFICATION DATA

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM) EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	mice	1024	100% OA	M, Q	A	negative	287	16.8	-0.027	X	02/01/17
[redacted]	mice	1840	100% OA	M, Q	A	negative	369	12.0	-0.016	X	02/01/17
[redacted]	mice	1400	100% OA	M, Q	G	negative	289	12.4	-0.022	X	02/01/17
[redacted]	procedure	1344	100% OA	M, Q	G	negative	283	12.6	-0.061	X	02/01/17
[redacted]	mice	1280	100% OA	M, Q	G	negative	241	11.3	-0.001	X	02/01/17
[redacted]	mice	1400	100% OA	M, Q	D'	negative	272	11.7	-0.015	X	02/01/17
[redacted]	mice	1352	100% OA	M, Q	D'	negative	350	15.5	-0.039	X	02/01/17
[redacted]	mice	1248	100% OA	M, Q	G	negative	252	12.1	-0.010	X	02/01/17
[redacted]	rats	1280	100% OA	M, Q	G	negative	254	11.9	-0.073	X	02/01/17
[redacted]	mice	1235	100% OA	M, Q	G	negative	235	11.4	-0.039	X	02/01/17
[redacted]	hamsters	1280	100% OA	M, Q	D'	negative	269	12.6	-0.014	X	02/01/17
[redacted]	procedure	1344	100% OA	M, Q	G	negative	265	11.8	-0.063	X	02/01/17
[redacted]	[1]cage wash	9984	100% OA	M, Q	A/G/A	negative	2103	12.6	-0.034	X	02/01/17
[redacted]	mice	1400	100% OA	M, Q	G	negative	263	11.3	-0.051	X	02/01/17
[redacted]	mice	1512	100% OA	M, Q	G	negative	296	11.7	-0.055	X	02/01/17
[redacted]	mice	1512	100% OA	M, Q	G	negative	305	12.1	-0.054	X	02/01/17
					D'= 14/14 flowhood w/ 12/12 adapter.						

[1]dirty and clean sides of cage wash equipment are in the same space served by a common ventilation system. The room was balanced to a negative space pressure relative to adjacent areas.

2017 AAALAC CERTIFICATION DATA

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM) EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	mice	792	100% OA	M, Q	G	negative	154	11.7	-0.002	X	02/01/17
[redacted]	mice	712	100% OA	M, Q	G	negative	215	18.1	-0.007	X	02/01/17
[redacted]	procedure	1840	100% OA	M, Q	G	negative	415	13.5	-0.001	X	02/01/17
[redacted]	mice	1840	100% OA	M, Q	B	negative	420	13.7	-0.007	X	02/01/17
[redacted]	mice	2192	100% OA	M, Q	G	negative	397	10.9	-0.005	X	02/01/17
[redacted]	mice	1248	100% OA	M, Q	G	negative	293	14.1	-0.011	X	02/01/17
[redacted]	mice	1536	100% OA	M, Q	G	negative	385	15.0	-0.018	X	02/01/17
[redacted]	mice	1288	100% OA	M, Q	G	negative	285	13.3	-0.007	X	02/01/17
[redacted]	rats	672	100% OA	M, Q	G	negative	438	39.1	-0.0035	X	02/01/17
[redacted]	mice	2256	100% OA	M, Q	G	negative	521	13.9	-0.017	X	02/01/17
[redacted]	[1]cage wash	9984	100% OA	M, Q	G	negative	2421	14.5	-0.0004	X	02/01/17
[redacted]	mice	1160	100% OA	M, Q	G	negative	387	20.0	-0.007	X	02/01/17
[redacted]	mice	1440	100% OA	M, Q	G	negative	516	21.5	-0.007	X	02/01/17
[redacted]	mice	1344	100% OA	M, Q	G	negative	336	15.0	-0.011	X	02/01/17
[redacted]	mice	1360	100% OA	M, Q	G	negative	300	13.2	-0.027	X	02/01/17
[redacted]	procedure	1280	100% OA	M, Q	G	negative	1329	62.3	-0.0005	X	02/01/17
[redacted]	mice	1078	100% OA	M, Q	G	negative	246	13.7	-0.002	X	02/01/17
[redacted]	food storage	1239	100% OA	M, Q	G	positive	414	20.0	0.0526	X	02/01/17

[1]dirty and clean sides of cage wash equipment are in the same space, room [redacted], served by a common ventilation system.

2017 AAALAC CERTIFICATION DATA

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM) EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	procedure	1496	100% OA	M, Q	G	negative	454	18.2	-0.026	X	02/01/17
[redacted]	cat	1616	100% OA	M, Q	G	negative	350	13.0	-0.118	X	02/01/17
[redacted]	cat	1656	100% OA	M, Q	G	negative	355	12.9	-0.084	X	02/01/17
[redacted]	cat	1256	100% OA	M, Q	G	negative	252	12.0	-0.015	X	02/01/17
[redacted]	cat	1248	100% OA	M, Q	G	negative	257	12.4	-0.061	X	02/01/17
[redacted]	cat	1416	100% OA	M, Q	G	negative	314	13.3	-0.065	X	02/01/17
[redacted]	mice	1264	100% OA	M, Q	G	negative	415	19.7	-0.035	X	02/01/17
[redacted]	procedure	1232	100% OA	M, Q	G	negative	351	17.1	-0.013	X	02/01/17
[redacted]	rat	2360	100% OA	M, Q	A	negative	548	13.9	-0.108	X	02/01/17
[redacted]	rat	2464	100% OA	M, Q	A	negative	1127	27.4	0.0642*	X	02/01/17
[redacted]	rat	2256	100% OA	M, Q	G	negative	1179	31.4	-0.003	X	02/01/17
[redacted]	rat	2176	100% OA	M, Q	A	negative	996	27.5	0.036*	X	02/01/17
[redacted]	rat	2192	100% OA	M, Q	A	negative	1153	31.6	-0.049	X	02/01/17
[redacted]	rat	2168	100% OA	M, Q	A	negative	1123	31.1	-0.001	X	02/01/17
[redacted]	rat	2168	100% OA	M, Q	G	negative	924	25.6	-0.009	X	02/01/17

* Room pressure Okd by [redacted] / Temporary cage storage / No animals.

2017 AAALAC CERTIFICATION DATA

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM) EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	Anteroom	501	100% OA	Q, O	A	negative	143	17.1	-0.020	W	02/28/17
[redacted]	Live Holding	1249	100% OA	Q, O	A	negative	375	18.0	-0.0026	Y	02/28/17
[redacted]	Feed Rm	1778	100% OA	Q, O	A	negative	408	13.8	-0.012	W	02/28/17
[redacted]	animal	1340	100% OA	Q, O	A	negative	244	10.9	-0.007	W	02/28/17
[redacted]	Clean Cage	6387	100% OA	Q, O	A	negative	2212	20.8	-0.001	W	02/28/17
[redacted]	Dirty Cage	7930	100% OA	Q, O	A	negative	1900	14.4	-0.0013	W	02/28/17
[redacted]	procedure	1781	100% OA	Q, O	A	negative	409	13.8	-0.006	W	02/28/17
[redacted]	animal	2621	100% OA	Q, O	A	negative	697	16.0	-0.002	Y	02/28/17
[redacted]	animal	2631	100% OA	Q, O	A	negative	666	15.2	-0.002	Y	02/28/17
[redacted]	procedure	1160	100% OA	Q, O	A	negative	387	20.0	-0.061	W	02/28/17
[redacted]	animal	1076	100% OA	Q, O	A	negative	327	18.2	-0.063	Y	02/28/17
[redacted]	procedure	1153	100% OA	Q, O	A	negative	403	21.0	-0.052	W	02/28/17
[redacted]	animal	1133	100% OA	Q, O	A	negative	261	13.8	-0.065	Y	02/28/17
[redacted]	procedure	1125	100% OA	Q, O	A	negative	405	21.6	-0.062	W	02/28/17
[redacted]	animal	1136	100% OA	Q, O	A	negative	374	19.8	-0.067	Y	02/28/17
[redacted]	procedure	1144	100% OA	Q, O	A	negative	445	23.3	-0.057	W	02/28/17
[redacted]	animal	1096	100% OA	Q, O	A	negative	326	17.8	-0.070	Y	02/28/17
[redacted]	procedure	1133	100% OA	Q, O	A	negative	399	21.1	-0.06	W	02/28/17
[redacted]	animal	1133	100% OA	Q, O	A	negative	365	19.3	-0.063	Y	02/28/17
[redacted]	procedure	1089	100% OA	Q, O	A	negative	415	22.9	-0.061	W	02/28/17
[redacted]	animal	1070	100% OA	Q, O	A	negative	271	15.2	-0.067	Y	02/28/17
[redacted]	procedure	1764	100% OA	Q, O	A	negative	407	13.8	-0.018	W	02/28/17
[redacted]	animal	2627	100% OA	Q, O	A	negative	660	15.1	-0.002	Y	02/28/17
[redacted]	animal	1462	100% OA	Q, O	A	negative	347	14.2	-0.002	Y	02/28/17
[redacted]	animal	1438	100% OA	Q, O	A	negative	333	13.9	-0.002	Y	02/28/17
[redacted]	animal	1663	100% OA	Q, O	A	negative	397	14.3	-0.001	W	02/28/17
[redacted]	procedure	1771	100% OA	Q, O	A	negative	362	12.3	-0.010	W	02/28/17
[redacted]	animal	1738	100% OA	Q, O	A	negative	409	14.1	-0.002	Y	02/28/17
[redacted]	animal	1905	100% OA	Q, O	A	negative	445	14.0	-0.001	Y	02/28/17
[redacted]	animal	1466	100% OA	Q, O	A	negative	379	15.5	-0.001	Y	02/28/17
[redacted]	animal	1544	100% OA	Q, O	A	negative	415	16.1	-0.005	Y	02/28/17

2017 AAALAC CERTIFICATION DATA

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM) EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	DIRT VEST.	855	100% OA	M,P	[2] A	negative	177	12.4	-0.0002	W	03/01/17
[redacted]	CLEAN VEST.	540	100% OA	M,P	[2] A	[1] positive	100	11.1	0.0009	W	03/01/17
[redacted]	FEED STOR	2928	100% OA	M,P	A	[3] negative	520	10.7	-0.0023	W	03/01/17
[redacted]	HOLDING	2227	100% OA	M,P	A	negative	443	11.9	-0.006	W	03/01/17
[redacted]	HOLDING	2669	100% OA	M,P	A	negative	569	12.8	-0.024	W	03/01/17
[redacted]	PROCEDURE	1979	100% OA	M,P	A	negative	505	15.3	-0.014	W	03/01/17
[redacted]	HOLDING	2698	100% OA	M,P	A	negative	567	12.6	-0.013	W	03/01/17
[redacted]	HOLDING	2633	100% OA	M,P	A	negative	500	11.4	-0.021	W	03/01/17
[redacted]	HOLDING	2709	100% OA	M,P	A	negative	540	12.0	-0.042	W	03/01/17
[redacted]	PROCEDURE	2061	100% OA	M,P	A	negative	508	14.8	-0.044	W	03/01/17
[redacted]	PROCEDURE	1994	100% OA	M,P	A	negative	501	15.1	-0.018	W	03/01/17
[redacted]	HOLDING	2671	100% OA	M,P	A	negative	540	12.1	-0.031	W	03/01/17
[redacted]	HOLDING	2591	100% OA	M,P	A	negative	627	14.5	-0.024	W	03/01/17
[redacted]	CLEAN CAGE	11784	100% OA	M,P	A	positive	2386	12.1	0.028	W	03/01/17
[redacted]	DIRTY CAGE	9277	100% OA	M,P	A	negative	2578	16.7	-0.022	W	03/01/17
[redacted]	HOLDING	2605	100% OA	M,P	A	negative	539	12.4	-0.023	W	03/01/17
[redacted]	HOLDING	2725	100% OA	M,P	A	negative	557	12.3	-0.030	W	03/01/17
[redacted]	PROCEDURE	2051	100% OA	M,P	A	negative	535	15.7	-0.023	W	03/01/17
[redacted]	PROCEDURE	2061	100% OA	M,P	A	negative	514	15.0	-0.026	W	03/01/17
[redacted]	HOLDING	2616	100% OA	M,P	A	negative	584	13.4	-0.032	W	03/01/17
[redacted]	HOLDING	2745	100% OA	M,P	A	negative	533	11.7	-0.012	W	03/01/17

[1] Rm [redacted] positive to [redacted]. Can be negative to corridor. Actual pressure to corridor: -.006

[2] Duct traverse in [redacted].

[3] Rm [redacted] negative to [redacted] Clean Cage.

2017 AAALAC CERTIFICATION DATA

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM) EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	surgery	2007	100 % OA	M, O	I	positive	609	18.2	0.002	W	1/23/17
[redacted]	procedure	765	100 % OA	M, O	I	negative	204	16.0	-0.0007	W	01/23/17
[redacted]	surgery	1683	100 % OA	M, O	I	positive	562	20.0	0.003	W	01/23/17
[redacted]	lab	1224	100 % OA	M, O	I	negative	321	15.7	-0.018	W	01/23/17
[redacted]	fish	1395	100 % OA	M, O	I	negative	596	25.6	-0.015	W	01/23/17
[redacted]	fish	1260	100 % OA	M, O	I	negative	294	14.0	-0.012	W	01/23/17
[redacted]	fish	1818	100 % OA	M, O	I	negative	574	18.9	-0.008	W	01/23/17
[redacted]	fish	1242	100 % OA	M, O	I	negative	384	18.6	-0.014	W	01/23/17
[redacted]	procedure	1224	100 % OA	M, O	I	negative	375	18.4	-0.001	W	01/23/17
[redacted]	mice	1251	100 % OA	M, O	I	negative	335	16.1	-0.025	W	01/23/17
[redacted]	mice	1260	100 % OA	M, O	I	negative	265	12.6	-0.018	W	01/23/17
[redacted]	mice	1242	100 % OA	M, O	G	negative	288	13.9	13.9	W	01/23/17
[redacted]	mice	396	100 % OA	M, O	G	negative	227	34.4	-0.036	W	01/23/17
[redacted]	mice	405	100 % OA	M, O	G	negative	243	36.0	-0.040	W	01/23/17
[redacted]	mice	414	100 % OA	M, O	G	negative	232	33.6	-0.038	W	01/23/17
[redacted]	mice	396	100 % OA	M, O	G	negative	208	31.5	-0.027	W	01/23/17
[redacted]	mice	405	100 % OA	M, O	G	negative	211	31.3	-0.034	W	01/23/17
[redacted]	mice	405	100 % OA	M, O	G	negative	225	33.3	-0.035	W	01/23/17
[redacted]	mice	405	100 % OA	M, O	G	negative	207	30.7	-0.020	W	01/23/17
[redacted]	procedure	1224	100 % OA	M, O	I	negative	358	17.5	-0.008	W	01/23/17
[redacted]	fish	1269	100 % OA	M, O	I	negative	280	13.2	-0.004	W	01/23/17
[redacted]	fish	1260	100 % OA	M, O	I	negative	300	14.3	-0.015	W	01/23/17
[redacted]	fish	1260	100 % OA	M, O	I	negative	286	13.6	-0.009	W	01/23/17
[redacted]	fish	1233	100 % OA	M, O	I	negative	215	10.5	-0.021	W	01/23/17
[redacted]	fish	1242	100 % OA	M, O	I	negative	289	14.0	-0.022	W	01/23/17
[redacted]	mice	1260	100 % OA	M, O	I	negative	311	14.8	-0.005	W	01/23/17
[redacted]	procedure	1224	100 % OA	M, O	I	negative	301	14.8	-0.054	W	01/23/17
[redacted]	mice	1260	100 % OA	M, O	I	negative	281	13.4	-0.036	W	01/23/17
[redacted]	mice	1242	100 % OA	M, O	I	negative	337	16.3	-0.006	W	01/23/17
[redacted]	mice	1845	100 % OA	M, O	I	negative	465	15.1	-0.021	W	01/23/17
[redacted]	procedure	1224	100 % OA	M, O	I	negative	363	17.8	-0.026	W	01/23/17

2017 AAALAC CERTIFICATION DATA

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM) EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	mice	1260	100 % OA	M, O	I	negative	259	12.3	-0.022	W	01/23/17
[redacted]	mice	1836	100 % OA	M, O	I	negative	585	19.1	-0.022	W	01/23/17
[redacted]	mice	1242	100 % OA	M, O	I	negative	305	14.7	-0.010	W	01/23/17
[redacted]	Necropsy	1968	100 % OA	M, O	I	negative	925	28.2	-0.0025	W	01/23/17
[redacted]	clean cage w ash	2683	100 % OA	M, O	I	negative	1235	27.6	-0.004	W	01/23/17
[redacted]	dirty cage w ash	3774	100 % OA	M, O	I	negative	1184	18.8	-0.005	W	01/23/17

2017 AAALAC CERTIFICATION DATA

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM) EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	mice	5011	100% OA	M	A roof	negative	1151	13.8	-0.032	W	02/09/17
[redacted]	mice	4010	100% OA	M	A roof	negative	1091	16.3	-0.142	W	02/09/17
[redacted]	prep	1248	100% OA	M	A roof	negative	874	42.0	-0.036	W	02/09/17
[redacted]	prep	1407	100% OA	M	A+A	negative	540	23.0	-0.005	W	02/09/17
[redacted]	surgery	4988	100% OA	M	I	positive	754	9.1	.016	W	02/09/17
[redacted]	mice	11043	100% OA	M,O,P	G	positive*	2085	11.3	0.015	W	02/09/17
[redacted]	mice	2700	100% OA	M, O	A roof	negative	677	15.0	-0.030	W	02/09/17
[redacted]	mice	2304	100% OA	M, O	A roof	negative	634	16.5	-0.006	W	02/09/17
[redacted]	mice	2502	100% OA	M, O	A roof	negative	583	14.0	-0.018	W	02/09/17
[redacted]	pigs	3883	100% OA	M, O	A roof	negative	947	14.6	-0.029	W	02/09/17
[redacted]	mice	3453	100% OA	M, O	A roof	negative	905	15.7	-0.060	W	02/09/17
[redacted]	dogs	5175	100% OA	M, O	A roof	negative	1168	13.5	-0.010	W	02/09/17
[redacted]	dogs	3205	100% OA	M, O	A roof	negative	891	16.7	-0.074	W	02/09/17

* Room [redacted] is designed positive to [redacted] Ante room. Room pressure indicated as such.

2017 AAALAC CERTIFICATION DATA

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM) EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	Mice	2109	100% OA	P	A	negative	419	11.9	-0.022	W	01/06/17
[redacted]	Procedures	1022	100% OA	P	A	negative	401	23.5	-0.012	W	01/06/17
[redacted]	Mice	2059	100% OA	P	A	negative	394	11.5	-0.011	W	01/06/17
[redacted]	Procedures	1035	100% OA	P	A	negative	412	23.9	-0.014	W	01/06/17
[redacted]	Mice	2059	100% OA	P	A	negative	397	11.6	-0.01	W	01/06/17
[redacted]	Mice	2009	100% OA	P	A	negative	412	12.3	-0.024	W	01/06/17
[redacted]	Mice	2109	100% OA	P	A	negative	401	11.4	-0.017	W	01/06/17
[redacted]	Mice	2009	100% OA	P	A	negative	408	12.2	-0.017	W	01/06/17
[redacted]	Rat	2109	100% OA	P	A	negative	426	12.1	-0.023	W	01/06/17
[redacted]	Procedures	1035	100% OA	P	A	negative	396	23.0	-0.012	W	01/06/17
[redacted]	Fish	2059	100% OA	P	A	negative	426	12.4	-0.021	W	01/06/17
[redacted]	Mice	2059	100% OA	P	A	negative	399	11.6	-0.012	W	01/06/17
[redacted]	Procedures	1035	100% OA	P	A	negative	451	26.1	-0.012	W	01/06/17
[redacted]	Mice	2109	100% OA	P	A	negative	389	11.1	-0.015	W	01/06/17
[redacted]	Mice	2037	100% OA	P	A	negative	425	12.5	-0.036	W	01/06/17
[redacted]	Mice	2001	100% OA	P	A	negative	426	12.8	-0.029	W	01/06/17
[redacted]	Mice	2003	100% OA	P	A	negative	388	11.6	-0.047	W	01/06/17
[redacted]	Procedures	1035	100% OA	P	A	negative	398	23.1	-0.002	W	01/06/17
[redacted]	Mice	2003	100% OA	P	A	negative	410	12.3	-0.017	W	01/06/17
[redacted]	Mice	2037	100% OA	P	A	negative	415	12.2	-0.029	W	01/06/17
[redacted]	Procedures	1035	100% OA	P	A	negative	858	49.7	-0.037	W	01/06/17
[redacted]	Mice	2070	100% OA	P	A	negative	410	11.9	-0.025	W	01/06/17
[redacted]	Procedures	1035	100% OA	P	A	negative	657	38.1	-0.016	W	01/06/17
[redacted]	Mice	2014	100% OA	P	A	negative	411	12.2	-0.029	W	01/06/17
[redacted]	Mice	2014	100% OA	P	A	negative	416	12.4	-0.029	W	01/06/17
[redacted]	Procedures	1035	100% OA	P	A	negative	870	50.4	-0.072	W	01/06/17
[redacted]	Mice	2037	100% OA	P	A	negative	413	12.2	-0.011	W	01/06/17
[redacted]	Mice	2001	100% OA	P	A	negative	393	11.8	-0.014	W	01/06/17
[redacted]	Procedures	1428	100% OA	P	A	negative	628	26.4	-0.023	W	01/06/17
[redacted]	Mice	1405	100% OA	P	A	negative	324	13.8	-0.026	W	01/06/17
[redacted]	Procedures	1097	100% OA	P	A	negative	521	28.5	-0.008	W	01/06/17

2017 AAALAC CERTIFICATION DATA

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM) EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	Rat	1327	100% OA	P	A	negative	320	14.5	-0.031	W	01/06/17
[redacted]	Storage	743	100% OA	P	A	negative	189	15.3	-0.016	W	01/06/17
[redacted]	Mice	1344	100% OA	P	A	negative	329	14.7	-0.054	W	01/06/17
[redacted]	Wash Room Clean	10217	100% OA	P	G	positive (1)	3210	18.9	0.0040	W	01/06/17
[redacted]	Wash Room Dirty	15637	100% OA	P	G	negative (1)	3997	15.3	-0.0040	W	01/06/17
[redacted]	Mice	2063	100% OA	P	A	negative	410	11.9	-0.007	W	01/06/17
[redacted]	Mice	2063	100% OA	P	A	negative	396	11.5	-0.026	W	01/06/17
[redacted]	Procedures	1022	100% OA	P	A	negative	662	38.9	-0.018	W	01/06/17
[redacted]	Mice	1996	100% OA	P	A	negative	396	11.9	-0.026	W	01/06/17
[redacted]	Mice	1996	100% OA	P	A	negative	399	12.0	-0.017	W	01/06/17
[redacted]	Procedures	1035	100% OA	P	A	negative	856	49.6	-0.052	W	01/06/17
[redacted]	Empty	2063	100% OA	P	A	negative	409	11.9	-0.021	W	01/06/17
[redacted]	Procedures	1035	100% OA	P	A	negative	646	37.4	-0.024	W	01/06/17
[redacted]	Rats	2063	100% OA	P	A	negative	425	12.4	-0.034	W	01/06/17
[redacted]	Rats	1996	100% OA	P	A	negative	410	12.3	-0.044	W	01/06/17
[redacted]	Procedures	1052	100% OA	P	A	negative	852	48.6	-0.042	W	01/06/17
[redacted]	Rats	2014	100% OA	P	A	negative	387	11.5	-0.047	W	01/06/17
[redacted]	Rats	2016	100% OA	P	A	negative	409	12.2	-0.011	W	01/06/17
[redacted]	Rats	2030	100% OA	P	A	negative	413	12.2	-0.036	W	01/06/17
[redacted]	Mice	2273	100% OA	P	A	negative	402	10.6	-0.015	W	01/06/17
[redacted]	Procedures	1050	100% OA	P	A	negative	642	36.7	-0.023	W	01/06/17
[redacted]	Mice	2228	100% OA	P	A	negative	410	11.0	-0.042	W	01/06/17
[redacted]	Mice	2273	100% OA	P	A	negative	402	10.6	-0.027	W	01/06/17
[redacted]	Procedures	1050	100% OA	P	A	negative	859	49.1	-0.066	W	01/06/17
[redacted]	Mice	2273	100% OA	P	A	negative	402	10.6	-0.024	W	01/06/17
[redacted]	Mice	2016	100% OA	P	A	negative	404	12.0	-0.027	W	01/06/17
[redacted]	Mice	2273	100% OA	P	A	negative	390	10.3	-0.033	W	01/06/17
[redacted]	Mice	2016	100% OA	P	A	negative	395	11.8	-0.021	W	01/06/17
[redacted]	Mice	2228	100% OA	P	A	negative	402	10.8	-0.065	W	01/06/17
[redacted]	Procedures	1022	100% OA	P	A	negative	647	38.0	-0.017	W	01/06/17

(1) Room pressure test ports in [redacted] compare clean to dirty sides of cage wash.

2017 AAALAC CERTIFICATION DATA

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM) EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	Mice	2228	100% OA	P	G	negative	403	10.9	-0.040	W	01/06/17
[redacted]	Empty	1327	100% OA	P	G	negative	407	18.4	-0.013	W	01/06/17
[redacted]	Procedures	1052	100% OA	P	G	negative	856	48.8	-0.038	W	01/06/17
[redacted]	Mice	990	100% OA	O	A	negative	324	19.6	-0.0160	W	01/06/17
[redacted]	Mice	990	100% OA	O	A	negative	331	20.1	-0.0410	W	01/06/17
[redacted]	Frog	945	100% OA	O	G	negative	391	24.8	-0.0021	W	01/06/17
[redacted]	Mice	1918	100% OA	O	[1]G	negative	485	15.2	-0.0036	W	01/06/17
[redacted]	Mice	1137	100% OA	O	A	negative	375	19.8	-0.0280	W	01/06/17

[1]G indicates 2 x 2 flowhood with 6" extension for lab style S/A diffuser.

2017 AAALAC CERTIFICATION DATA

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM) EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	[1]cage wash	4300	100% OA	M	G	negative	1781	24.9	-0.008	X	03/07/17
[redacted]	storage	523	100% OA	M	G	negative	259	29.7	-0.066	X	03/07/17
[redacted]	mice	1713	100% OA	M	G	negative	673	23.6	-0.097	X	03/07/17
[redacted]	storage	1083	100% OA	M	G	negative	254	14.1	-0.045	X	03/07/17
[redacted]	mice	1713	100% OA	M	G	negative	426	14.9	-0.025	X	03/07/17
[redacted]	mice	1713	100% OA	M	G	negative	571	20.0	-0.070	X	03/07/17
[redacted]	mice	1154	100% OA	M	G	negative	510	26.5	-0.091	X	03/07/17
[redacted]	mice	1154	100% OA	M	G	negative	478	24.9	-0.043	X	03/07/17
[redacted]	mice	1154	100% OA	M	G	negative	345	17.9	-0.077	X	03/07/17
[redacted]	mice	1154	100% OA	M	G	negative	408	21.2	-0.019	X	03/07/17
[redacted]	mice	659	100% OA	M	G	negative	176	16.0	-0.048	X	03/07/17
[redacted]	mice	659	100% OA	M	G	negative	175	15.9	-0.018	X	03/07/17
[redacted]	mice	363	100% OA	M	G	negative	138	22.8	-0.028	X	03/07/17
[redacted]	testing room	900	100% OA	M, O	[2] G	positive	214	14.3	0.026	X	03/07/17
[redacted]	testing room	900	100% OA	M, O	[2] G	positive	256	17.1	0.019	X	03/07/17
[redacted]	testing room	1485	100% OA	M, O	[2] G	positive	318	12.8	0.021	X	03/07/17
[redacted]	testing room	1485	100% OA	M, O	[2] G	positive	595	24.0	0.017	X	03/07/17
[redacted]	testing room	900	100% OA	M, O	[2] G	positive	205	13.7	0.025	X	03/07/17
[redacted]	testing room	900	100% OA	M, O	[2] G	positive	188	12.5	0.008	X	03/07/17
[redacted]	testing room	962	100% OA	M, O	[2] G	positive	249	15.5	15.5	X	03/07/17
[redacted]	testing room	1005	100% OA	M, O	[2] G	positive	305	18.2	0.020	X	03/07/17
[redacted]	testing room	1575	100% OA	M, O	[2] G	positive	417	15.9	0.033	X	03/07/17
[redacted]	testing room	900	100% OA	M, O	[2] G	positive	222	14.8	0.012	X	03/07/17
[redacted]	testing room	900	100% OA	M, O	[2] G	positive	265	17.7	0.027	X	03/07/17
[redacted]	testing room	900	100% OA	M, O	[2] G	positive	154	10.3	0.006	X	03/07/17
[redacted]	testing room	900	100% OA	M, O	[2] G	positive	170	11.3	0.007	X	03/07/17
[redacted]	testing room	1350	100% OA	M, O	[2] G	positive	329	14.6	0.011	X	03/07/17

[1] Room [redacted] No Cage Washer installed. The room was previously balanced to a negative space pressure relative to adjacent areas.

[2] 2x2 Flow hood requires special top to read lab supply diffuser.

2017 AAALAC CERTIFICATION DATA

[redacted]

Bldg. No. [redacted]

ROOM NO.	ROOM USAGE	ROOM VOLUME (FT^3)	AIR SUPPLY	AIR FILTER TYPE	TEST EQUIPMENT USED	DESIGN ROOM PRESSURE	MEASURED AIRFLOW SA (CFM) EX	AIR CHANGES (AC/HR)	STATIC PRESSURE (IN. W.C.)	HUMIDITY CONTROL	DATE ASSESSED
[redacted]	testing room	900	100% OA	M, O	A	positive	306	20.4	0.005	X	03/07/17
[redacted]	procedure	900	100% OA	M, O	A	negative	204	13.6	-0.003	X	03/07/17
[redacted]	mice	900	100% OA	M, O	A	negative	156	10.4	-0.014	X	03/07/17
[redacted]	animal holding	2340	100% OA	M, O	A	negative	707	18.1	-0.018	X	03/07/17
[redacted]	animal holding	1800	100% OA	M, O	A	negative	364	12.1	-0.016	X	03/07/17
[redacted]	animal holding	1260	100% OA	M, O	A	negative	358	17.0	-0.047	X	03/07/17
[redacted]	clean cage w ash	2975	100% OA	M, O	G	positive	1029	20.8	0.009	X	03/07/17
[redacted]	dirty cage wash	3803	100% OA	M, O	G	negative	670	10.6	-0.003	X	03/07/17

APPENDIX 11

Aquatic Systems Summary

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 circulation, e.g., static, re-circulated, constant flow, or some combination of these. If applicable, indicate water exchange frequency and amount (percentage).
(6) Provide a key word for filtration employed, e.g., biological, chemical, mechanical, etc. 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	Circulation (5)	Filtration (6)	Disinfection (e.g., UV, ozone)
Rooms and	Zebrafish (E, L, J, A)	Group	Fresh	RO	Automatic recirculating system with H_20 exchange daily	Biological – bio-media, Chemical – carbon filter and mechanical – sock filter and filter pads	UV
Rooms and	Xenopus (E, J, A)	Group	Fresh	RO	Automatic recirculating system with H_20 exchange daily. Static: H_20 approximately 75% is replaced when indicated by water quality testing.	Biological – bio-media, chemical – carbon filter; mechanical -- filter pads and pleated filter.	UV for Recirculating System in Room . Water change out using UV treated water in Room .
Rooms ,	Zebrafish (E, L, J, A)	Group	Fresh	RO	Automatic recirculating system with H_20 exchange daily	biological – bio-media, chemical – carbon filter and mechanical – sock filter and filter pads	UV
Rooms	Zebrafish (E, L, J, A)	Group	Fresh	RO	Automatic recirculating system with H_20 exchange daily	biological – bio-media, chemical – carbon filter and mechanical – sock filter and filter pads	UV
Rooms	Zebrafish (E, L, J, A)	Group	Fresh	RO	Automatic recirculating system with H_20 exchange daily	Biological and mechanical	UV
Rooms &	Minnows (E, L, J, A)	Group	Fresh	RO	Automatic recirculating system with H_20 exchange daily	Biological and mechanical	UV

*Records of equipment maintenance (filter changes, UV bulb changes, probe changes, calibrations, etc.) should be available for review.

Appendix 11 (continued)
Aquatic Systems Summary – Part II

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):**
[redacted]	Continuous with probe, chiller	N/A	Continuous with probe, auto dosing	2x/week Chemical test	2x/week Chemical test	2x/week Chemical test	Continuous with probe	N/A	Conductivity – Continuous with probe, auto dosing Chlorine – 2x/week, Chemical test RO tank chlorine – Monthly, Chemical test Alkalinity – 2x/week, Chemical test
[redacted]	Daily with probe	N/A	Daily with probe	At least weekly	At least Weekly	At least Weekly	At least Weekly	N/A	Chlorine – weekly , Chemical test Hardness – weekly, Chemical test
[redacted]	Daily	Daily	Daily	Weekly	2x/week	Weekly	Monthly	N/A	Conductivity – Daily Chlorine – 2x/week RO tank chlorine - Monthly
[redacted]	Daily	N/A	Daily	Weekly	Weekly	Weekly	Weekly or as needed	N/A	
[redacted]	Daily	N/A	Daily	Weekly	Weekly	Weekly	Daily	N/A	Hardness – Monthly
[redacted]	Daily	N/A	Daily	Weekly	Weekly	Weekly	Daily	N/A	

(1) In these columns, please indicate monitoring frequency, e.g. daily, weekly, monthly or other point sampling frequency; continuous/real time, or none, if applicable. Also indicate method of control (heaters versus room HVAC, hand versus auto dosing, etc.).
(2) Indicate other parameters and their monitoring frequency, e.g., alkalinity, total hardness, conductivity, chlorine/chloramine, etc.

This information may be provided in another format, provided that all requested data is included.

Appendix 11 (continued)

SMPH Aquatic Animal Management Program

Note that laboratory-specific SOPS for management are encouraged and may be necessary. Copies of SOPs should be kept in the Aquatic Animal Management binder or be otherwise easily accessible

1. Animal handling:
    a. Handling should be kept to the minimum required
    b. Use nets whenever practical for the species and situation; use species-appropriate mesh size
    c. Species-specific handling practices should be used when handling animals; nitrile gloves (not latex) should be used when handling adult amphibians
2. Food should be dated and stored appropriately, ideally in some type of sealed container. If refrigeration is needed, a dedicated refrigerator for food is not required if food is properly sealed and labeled.
3. All water used in aquatic systems should be de-chlorinated
4. Algal growth must not obscure reasonable/acceptable viewing of animals; tank must be replaced/cleaned if animals cannot be adequately viewed (OK label obscured tanks with no animals as "Empty" if tanks are cleaned in bulk on a schedule; write this into an SOP)
5. All components of an aquatics operation, including animal rooms and support spaces, should be kept clean and orderly; note that most chemical disinfectants are inappropriate for aquatic systems
6. Electrical hazards around aquatic systems must be eliminated or reduced to the lowest practical level
    a. GFCI should be used whenever possible near aquatic operations
    b. Electrical cords and equipment should be kept off the floor if possible and as far as is practical from water tanks; utilizing a "drip loop" technique (a loop of cord dropped below outlet level just before the outlet) may be useful
7. Training and care:
    a. Aquatic animals must receive daily care from appropriately trained personnel
        i. Documentation of training or experience must be maintained for all personnel
            1. Training can be by laboratory staff members, RARC members, or Animal Care Staff (e.g. LAR) members
            2. Documentation should be kept in the Aquatic Animal Management binder and/or general laboratory training binder
    b. Daily animal checks and care must be recorded and signed/initialed
8. Record keeping:
    a. Records of water quality checks, daily animal care, feeding, and important system maintenance must be kept. Entries must always be dated a signed/initialed
    b. Records systems can be laboratory-specific, but must contain minimum-required information and be easy to read. Copies should be maintained in an Aquatic Animal Management binder, or be otherwise easily accessible. Records should be kept for minimum of 1 year.

Appendix 11 (continued)

Water quality minimum requirements

1. Water temperature, pH, nitrogen waste products (Ammonia, Nitrite, Nitrate) must be monitored
    a. Water temperature must be checked daily
    b. pH, ammonia and nitrite must be checked at least weekly
    c. Nitrate must be checked at least monthly in re-circulating systems
2. Dissolved O_2 in re-circulating systems with closed or pressurized filtration must be checked at least monthly
    a. These systems are typically large commercial re-circulating systems and do not include individual tanks with a standard aquarium filter
3. Aquatic laboratories using RO (reverse osmosis), DI (de-ionized) or water filtered through activated carbon must test water directly from the RO, DI or filtration unit (i.e. water source for the system) for chlorine at least monthly to confirm the units are functioning properly; this may be monitored on a building- wide basis by the building manager.
4. If salt-water (marine) tanks are used, salinity must be checked at least weekly
5. Additional water characteristics that can be monitored include alkalinity, conductivity, hardness (general and/or carbonate), and heavy metals
6. Other water characteristics can be monitored based on individual laboratory needs

Appendix 11 (continued)

General water quality standards for aquatic species*

	Zebrafish	*Xenopus laevis*
Temperature	75-84 °F (24-29 °C); higher temperatures in the range are recommended for breeding	50-72 °F (10-22 °C); 66-68 °F (20-23 °C) is optimum
pH	6.5-8.5	6.0-8.5
Ammonia**	≤ 0.02 ppm (or ≤ 0.02 mg/L) is optimum; <1.0 is necessary	≤ 0.02 ppm is optimum; <1.0 is necessary
Nitrite***	≤ 0.5 ppm is optimum; < 5.0 is necessary	≤ 0.5 ppm; < 5.0 is necessary
Nitrate	≤ 40 ppm	≤ 40 ppm
Conductivity	Up to 1050 mS/cm	Up to 1050 mS/cm
Hardness	150 – 500 ppm	150 – 500 ppm
Chlorine	Undetectable	Undetectable
Dissolved 02	70-100% saturation	40-100% saturation
Heavy metals (Zn, Cu, Hg, Pb)	0 to trace	0 to trace

*Species other than Zebrafish and *X. Laevis* may have individually-developed standards, to be developed and maintained by the laboratory
**In static systems or newly established systems, keep ammonia below the toxic level of 1.0 ppm. Ammonia should never be above 0.02 ppm in an established non-static system
***In newly established systems, keep nitrite below the toxic level of 5.0 ppm. Nitrite should never be above 0.5 ppm in an established system.

APPENDIX 12

Primary Enclosures and Animal Space Provisions

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**
Zebrafish	1.5 L tank 3 L tank 10 L tank	According to the Guide, Eighth Edition.	The Guide, Eighth Edition	FDA approved, food grade, USP class VI, autoclavable polycarbonate.
Zebrafish	3.5L tank 8.1 L tank	According to the Guide, Eighth Edition.	The Guide, Eighth Edition	FDA approved, food grade, USP class VI, autoclavable polycarbonate.
Zebrafish	55 gallon 3 L 10 gallon 1 L 5 gallon 9 L	According to the Guide, Eighth Edition.	The Guide, Eighth Edition	FDA approved, food grade, USP class VI, autoclavable polycarbonate.
Xenopus	5 L 16 L 21 L	According to the Guide, Eighth Edition	The Guide, Eighth Edition	Glass and molded plastic tank.
Xenopus	24"W x 20"L x 12"H = 90L	According to the Guide, Eighth Edition	The Guide, Eighth Edition	Glass and molded plastic tank.
Xenopus	20"W x 12"L x 12"H = 39L	According to the Guide, Eighth Edition	The Guide, Eighth Edition	Glass and molded plastic tank.

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**
Xenopus	24"W x 16"L x 12"H = 73L	According to the Guide, Eighth Edition	The Guide, Eighth Edition	Glass and molded plastic tank.
Xenopus	36"W x 20"L x 12"H = 141L	According to the Guide, Eighth Edition	The Guide, Eighth Edition	Glass and molded plastic tank.
Rat/Guinea Pig	12 ½"W x 22"L x 8"H Floor area = 213 in^2	According to the Guide, Eighth Edition	The Guide, Eighth Edition	Polycarbonate Static
Rat	10 ¼"W x 19"L x 8"H Floor area = 141 in^2	According to the Guide, Eighth Edition	The Guide, Eighth Edition	Polysulfone Static
Rat	10 ½"W x 19"L x 8"H Floor area = 134 in^2	According to the Guide, Eighth Edition	The Guide, Eighth Edition	Polysulfone Static
Rat	13.4"W x 17"L x 7.8"H Floor area = 141 in^2	According to the Guide, Eighth Edition	The Guide, Eighth Edition	[redacted] disposable cage PETE plastic
Rat	9"W x 16 ½"L x 7"H = 148½ in^2	According to the Guide, Eighth Edition	RARC Special Husbandry Protocol; The Guide, Eighth Edition	Wire
Mouse	7 ½"W x 11 ½"L x 5"H Floor area = 75 in^2	According to the Guide, Eighth Edition	The Guide, Eighth Edition	Polysulfone IVCS/static
Mouse	11½"W x 13 ½"L x 5"H Floor area = 75 in^2	According to the Guide, Eighth Edition	The Guide, Eighth Edition	[redacted] cage IVCS
Mouse	7½"W x 11 ½"L x 5"H = Floor area = 67 in^2	According to the Guide, Eighth Edition	The Guide, Eighth Edition	Polysulfone plastic Static
Mouse	9.2"W x 14.7"L x 5½"H Floor area = 81 in^2	According to the Guide, Eighth Edition	The Guide, Eighth Edition	[redacted] disposable cage PETE plastic

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**
Rabbit	27"W x 27"L x 18"H = 5 ft^2	According to the Guide, Eighth Edition	The Guide, Eighth Edition	Stainless steel and injection molded plastic. Six bank cages.
Cat	28"W x 28"L x 28"H= 5.4 ft^2	According to the Guide, Eighth Edition	The Guide, Eighth Edition	Stainless steel
Cat Rooms at [redacted]	Rm [redacted] = 72.29 ft^2 Rm [redacted] = 83.3 ft^2 Rm [redacted] = 90.76 ft^2 Rm [redacted] = 102.6 ft^2 Rm [redacted] = 90.195 ft^2	According to the Guide, Eighth Edition	The Guide, Eighth Edition	Open room with galvanized steel enclosure
Canine	5'W x6'L x6'H = 30 ft^2	According to the Guide, Eighth Edition	The Guide, Eighth Edition	Aluminum/Stainless Steel
Canine	4'W x 6'L x 6'H = 24 ft^2	According to the Guide, Eighth Edition	The Guide, Eighth Edition	Aluminum/Stainless Steel
Canine	4¼'W x 4¾'L = 20.1 ft^2	According to the Guide, Eighth Edition	The Guide, Eighth Edition	Galvanized Steel
Swine	9'W x 10'L x 7'H = 90 ft^2	According to the Guide, Eighth Edition	The Guide, Eighth Edition	Galvanized Steel gang kennel

*For aquatic species, provide tank volume.

**Include descriptors such as open-topped, static microisolator, individually-ventilated cage systems (IVCS).

APPENDIX 13

Cleaning and Disinfection of the Micro- and Macro-Environment

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	Other Comments
Micro-environment			
Solid-bottom cages (static)	Mechanical washer	Weekly	Autoclaved upon request, Spot cleaned as needed
Solid-bottom cages (IVC)	Mechanical washer	Every other week (EOW) as approved by the IACUC	Autoclaved upon request, Spot cleaned as needed
Suspended wire-bottom or slotted floor cages	Mechanical washer	Weekly	
Cage lids (wires)	Mechanical washer	Every other week	Autoclaved upon request
Filter tops – Mice (Microisolators)	Mechanical washer	Every three months	Autoclaved upon request, Spot cleaned as needed
Filter tops – Rats (Microisolators)	Mechanical washer	Every two months	Autoclaved upon request, Spot cleaned as needed
Cage racks for static cages	Mechanical washer	Racks as needed and at least quarterly	
Cage racks and stacks for individually vented cages	Mechanical washer	Racks/stacks as needed and at least every six months	Wall mounted systems are wiped down at the time of stack change out.
Cage pans under suspended cages	Mechanical washer	Rats, Rabbits, Cats- every other week	
Play pens, floor pens, stalls, etc.	High-pressure sprayers, hand mop	Cats: mopped weekly Dogs/Pigs: mopped daily and sanitized with high-pressure sprayers- weekly	
Corrals for primates or outdoor paddocks for livestock	N/A	N/A	
Aquatic, amphibian, and reptile tanks and enclosures	Hand Wash	As outlined in “Other Comments”	Recirculating Filtered Tanks- Daily automatic 10% water exchange. Particulate filters are changed every 3-5 days; Mechanical Filters are changed every 3-6 weeks; Activated carbon substrate & filter is changed at least monthly and algae is controlled by wiping down aquaria walls with soft sponge as needed. Tanks are changed and sanitized anytime emptied or as needed

Area	Washing/Sanitizing Method (mechanical washer, hand washing, high-pressure sprayers, etc.)	Washing/ Sanitizing Frequency	Other Comments
Feeders	Mechanical washer	At least every two weeks	Autoclaved upon request
Watering Devices	Mechanical washer; hand wash	Weekly or as needed	Autoclaved upon request (water bottles) All stoppers in Level 1 facilities are autoclaved.
Exercise devices and manipulanda used in environmental enrichment programs, etc.	Mechanical washer; hand wash	Every other week, or as needed	Wash method depends on the size of the unit
Transport cages	Mechanical washer	After each use	All units used for transport are disposable or standard housing cages
Operant Conditioning & Recording Chambers, Mechanical Restraint Devices (chairs, slings, etc.)	Hand wash	After each use	
Euthanasia Chambers	Hand wash	Monthly	Chambers are wiped out after each use.

Area	Washing/Sanitizing Method (mechanical washer, hand washing, high-pressure sprayers, etc.)	Washing/ Sanitizing Frequency	Other Comments
Macro-Environment			
ANIMAL ROOMS			
Floors	Hand mopping; floor scrubber	Weekly or as needed	
Walls	Hand washing; high-pressure sprayer	When room is emptied or as needed	
Ceilings	Hand washing; high-pressure sprayer	When rooms are emptied or as needed	
Ducts/Pipes	Hand washing	When rooms are emptied or as needed	
Fixtures	Hand washing	When rooms are emptied or as needed	
CORRIDORS			
Floors	Hand mopping; floor scrubber	Weekly or as needed.	
Walls	Hand washing	As needed	
Ceilings	Hand washing	As needed	
Ducts/Pipes	Hand washing	As needed	
Fixtures	Hand washing	As needed	
SUPPORT AREAS (e.g., surgery, procedure rooms, etc.) Complete for each area:			
Floors	Hand mopping; floor scrubber	Weekly or as needed.	
Walls	Hand washing	As needed	
Ceilings	Hand washing	As needed	
Ducts/Pipes	Hand washing	As needed	
Fixtures	Hand washing	As needed	
IMPLEMENTS (note whether or not shared)			

Area	Washing/Sanitizing Method (mechanical washer, hand washing, high-pressure sprayers, etc.)	Washing/ Sanitizing Frequency	Other Comments
Mops	Sanitized by the agents they are used to apply	Every use	
Mop buckets	Mechanical washer	As needed	Buckets are rinsed after each use.
Aquaria nets	Hand cleaned	After each use	
Other			
OTHER			
Vehicle(s)	Hand washed, Power spray	After each use	Washed and disinfected.
Other transport equipment (list) – Transport cages	Mechanical washer	After each use	

APPENDIX 14

SMPH Summary:
Multiple Major Survival Surgery

IACUC No.	Species	Surgery Description	Time Between Surgeries	Protocol-Specified Monitoring
M00054	Mus Rattus	Brain lesion followed by electrode placement, or systemic convulsant or lesioning drug administration followed by electrode placement.	1 week to 4 months	Monitored day of procedure and daily after.
M005155	African clawed frog	Repeated oocyte harvest	at least 6 weeks	Monitored hourly for several hours and kept in a separate vessel. Remain isolated for at least 3 days post-op to ensure suture closure, quarantine for infection, and treat any post-op issues. Then returned to frog tank and monitored each morning for the 7 days.
M005159	Mus	Ischemia of kidney via clamping of renal artery then contra nephrectomy	At least 5 days	Monitored for approximately 1 hour for full recovery on either a water-heated circulating pad or under a heat lamp. Following recovery, they are monitored at 4-6 and 12-18 hours post-op and then every 12 hours for 48 hours post-op at time of analgesic administration.
M005184	Rabbit	Tumor implantation, then microwave ablation	7-10 days	Tumor bearing animals monitored daily and overall appearance recorded. Overt signs of illness (lack of mobility, inappetence, and weight loss > 15-20% initial body weight) determined based on animal records. If signs of pain or illness seen an RARC vet is contacted.
M005204	Rattus	Renal transplant, then nephrectomy	7-10 days	Monitored for 1 hour post-op for recovery from anesthesia and at 4-6 and 12-18 hours post-op. Monitored for activity level, general appearance, and bleeding or urine leakage at incision site. Creatinine and BUN measured weekly to monitor kidney function. If rats show clinical signs of uremia or high levels of creatinine and/or BUN, additional blood draw may be needed to access health.

IACUC No.	Species	Surgery Description	Time Between Surgeries	Protocol-Specified Monitoring
M005204	Mus	Renal transplant, then nephrectomy	7-10 days	Monitored for 1 hour post-op for recovery from anesthesia and at 4-6 and 12-18 hours post-op. Monitored for activity level, general appearance, and bleeding or urine leakage at the incision site. Creatinine and BUN may be measured weekly to monitor kidney function. If mice show clinical signs of uremia or show high levels of creatinine and/or BUN, an additional blood draw may be needed to access the health.
M005215	Mus	Heart or lung transplant, followed by hemisplenectomy	at least one week	Monitored closely every 6-12 hours for the first 48 hours. Monitored for ability to move, eat, and drink. Wound closure monitored to ensure closed and free of infection. After initial recovery, inspected daily for overall appearance, graft function, and evidence of pain or disability. Mice being used in an experiment or that had a surgical procedure are monitored daily for a min of 5 days post-procedure. Mice that are doing well monitored 1x or 2x per week for lethargy, posture, etc.
M005215	Mus	Hemisplenectomy, followed by heart or lung transplant	at least one week	Monitored closely every 6-12 hours for the first 48 hours. Monitored for ability to move, eat, and drink. Wound closure monitored to ensure closed and free of infection. After initial recovery, inspected daily for overall appearance, graft function, and evidence of pain or disability. Mice being used in an experiment or that had a surgical procedure will be monitored daily for a min of 5 days post-procedure. Mice that are doing well monitored 1x or 2x per week. Animals that appear lethargic, show no defecation in the cage, have a hunched position, or show other signs of distress/discomfort will be discussed with vet staff or euthanized immediately.
M005258	Mus	Islet graft implantation, then post-implantation nephrectomy	at least one week	Monitored for 1 hour and observed again at 4 and 12 hours post-op. Following recovery, returned to cage and given food and water ad lib. Monitored for activity level, general appearance (hunching, ruffled coat).

IACUC No.	Species	Surgery Description	Time Between Surgeries	Protocol-Specified Monitoring
M005286	Mus	1) Spinal cord regeneration surgery, 2) Reopen incision for fluorescent labeling of graft 2 weeks later	Two weeks	Observed at ~15 min post-op, then every 30 min for 2 hours total. Kept in the laboratory until ambulatory, then returned to animal facility. Observed next morning by laboratory staff and administered more analgesic if signs of discomfort (hunched posture, immobility, ruffled fur). Visited by laboratory staff daily. Pain assessed by restlessness, unusual noise, and wound licking or biting behavior, lethargy, and hunched posture or other signs of pain.
M005286	Mus	1) Peripheral nerve regeneration surgery, 2) Reopening of incision to either reattach the nerves, place a fluorescent tracer, or perform electrophysiology	At least one week	Observed at ~15 minutes post-op, then every 30 minutes for 2 hours total. Kept in the laboratory until ambulatory, then returned to animal facility. Observed next morning by laboratory staff and administered more analgesic if signs of discomfort (hunched posture, immobility, ruffled fur). Visited by laboratory staff daily. Pain assessed by restlessness, unusual noise, and wound licking or biting behavior, lethargy, and hunched posture or other signs of pain.
M005286	Rattus	1) Rat optic nerve regeneration surgery, 2) Reopening of incision to place fluorescent label at end of graft 2 months later	8 weeks	Observed at ~15 minutes post-op, then every 30 minutes for 2 hours total. Kept in the laboratory until ambulatory, then returned to animal facility. Observed next morning by laboratory staff and administered more analgesic if signs of discomfort (hunched posture, immobility, ruffled fur). Visited by laboratory staff daily. Pain assessed by restlessness, unusual noise, and wound licking or biting behavior, lethargy, and hunched posture or other signs of pain.
M005286	Rattus	1) Spinal cord regeneration surgery, 2) Reopening of incision to place fluorescent label at end of graft 2 weeks later	13-15 days	Observed at ~15 minutes post-op, then every 30 minutes for 2 hours total. Kept in the laboratory until ambulatory, then returned to animal facility. Observed next morning by laboratory staff and administered more analgesic if signs of discomfort (hunched posture, immobility, ruffled fur). Visited by laboratory staff daily. Pain assessed by restlessness, unusual noise, and wound licking or biting behavior, lethargy, and hunched posture or other signs of pain.

IACUC No.	Species	Surgery Description	Time Between Surgeries	Protocol-Specified Monitoring
M005286	Rattus	1) Peripheral nerve regeneration surgery, 2) Reopening of incision to either reattach the nerves, place a fluorescent tracer, or perform electrophysiology	at least one week	Observed at ~15 minutes post-op, then every 30 minutes for 2 hours total. Kept in the laboratory until ambulatory, then returned to animal facility. Observed next morning by laboratory staff and administered more analgesic if signs of discomfort (hunched posture, immobility, ruffled fur). Visited by laboratory staff daily. Pain assessed by restlessness, unusual noise, and wound licking or biting behavior, lethargy, and hunched posture or other signs of pain.
M005286	Rattus	1) Optic nerve crush surgery, 2) Reopening of incision to place fluorescent label distal to crush site 2 months later	2-8 weeks later	Observed at ~15 minutes post-op, then every 30 minutes for 2 hours total. Kept in the laboratory until ambulatory, then returned to animal facility. Observed next morning by laboratory staff and administered more analgesic if signs of discomfort (hunched posture, immobility, ruffled fur). Visited by laboratory staff daily. Pain assessed by restlessness, unusual noise, and wound licking or biting behavior, lethargy, and hunched posture or other signs of pain.
M005286	Mus	1) Mouse optic nerve regeneration surgery, 2) Reopen incision for fluorescent labeling of graft 2 months later	8 weeks	Observed at ~15 minutes post-op, then every 30 minutes for 2 hours total. Kept in the laboratory until ambulatory, then returned to animal facility. Observed next morning by laboratory staff and administered more analgesic if signs of discomfort (hunched posture, immobility, ruffled fur). Visited by laboratory staff daily. Pain assessed by restlessness, unusual noise, and wound licking or biting behavior, lethargy, and hunched posture or other signs of pain.
M005290	Rattus	TBI/Electrode implantation and Osmotic pump placement	2-4 weeks	Checked every 15 minutes for the first hour and/or until awake and exhibiting normal behavior (eating, drinking, grooming, exploring). Then, observed once daily for at least one day following surgery and then at least every other day as long as animals are well. No further experimentation is undertaken until body weight is regained and appear healthy (at least 72 hours).

IACUC No.	Species	Surgery Description	Time Between Surgeries	Protocol-Specified Monitoring
M005290	Mus	TBI/Electrode implantation and Osmotic pump placement	at least one week	Checked every 15 minutes for the first hour and/or until awake and exhibiting normal behavior (eating, drinking, grooming, exploring). Then, observed at least once daily following surgery and then at least every other day as long as animals are well. No further experimentation is undertaken until body weight regained and appear healthy (at least 72 hours).
M005385	Mus	Myocardial infarction and Patch/stem cell application	1-7 days	Observed every 15 minutes for one hour post-surgery, then every 6-24 hours for minimum of 3 days. Records maintained by surgeons using the RARC recommended form Small animal anesthesia/surgery log in a laboratory notebook.
M005385	Rattus	Myocardial infarction and Patch/stem cell application	1-7 days	Observed every 15 minutes for one hour post-surgery, then every 6-12 hours for a min of 3 days. Records maintained by surgeons using RARC recommended form Small animal anesthesia/surgery log in a laboratory notebook.
M005387	Rattus	Kidney transplant followed by native kidney nephrectomy	10 days	Monitored for 1 hour post-op and again at 4-6 and 12-18 hours post-op. Monitored for activity level, general appearance, as well as bleeding or urine leakage at the incision site. Monitored daily for signs of pain or distress and clinical signs of uremia. Creatinine and BUN measured weekly to monitor kidney function. If rats show clinical signs of uremia or show high levels of creatinine and/or BUN, an additional blood draw may be needed to access health.
M005413	Rattus	Short middle cerebral artery occlusion (MCAO) then long MCAO	48 hours	Closely monitored by research staff (at least 2x daily) for the first 72 hours, during which time animals that show signs of significant discomfort or distress (as evident from respiratory distress or unusual bleeding or excessively moribund behavior) are excluded from study and euthanized immediately.
M005413	Mus	Middle cerebral artery occlusion followed by intracranial injection	4 hours (separate anesthesia events)	General post-procedural care between procedures, then closely monitored by research staff (at least 2x daily) for the first 72 hours, during which time animals that show signs of significant discomfort or distress (as evident from respiratory distress or unusual bleeding or excessively moribund behavior) are excluded from study and euthanized immediately.

IACUC No.	Species	Surgery Description	Time Between Surgeries	Protocol-Specified Monitoring
M005416	Mus	Myocardial infarction, then Stem Cell injection	2 hours to 3 weeks	Recovered under the continuous observation of surgeon until sternal. Then, observed every 15 min for 1 hour post-op, then every 6-24 hours for minimum of 3 days.
M005416	Rattus	Myocardial infarction, then stem cell injection	1 hour to 3 weeks	Continuously observed until sternal and then about every 15 minutes for 1 hour post-op, then every 6-24 hours for minimum of 3 days.
M005558	Mus	Craniotomy and Intracranial injection, repeated to deliver therapeutics	2 months	Monitored daily by laboratory staff on weekdays for pain or discomfort related to surgery and later for pain, discomfort or neurological deficit as a result of tumor progression.
M005570	Mus	Renal Capsule Grafting then Unilateral Nephrectomy	At least 2 weeks	Monitored daily for 3 days post-op, then 2x week. Examined by lab staff for signs of pain. If body condition scoring falls to score of 1 or 2 prior to the planned experimental end date, the animal is immediately euthanized.
M005577	Rattus	Transplantation of engineered hepatocytes under the kidney capsule, followed by nephrectomy	1-4 weeks	Within 1 hour after surgery they are awake; can be returned to normal housing. However, observed for an additional 1hour as a precaution. Pain assessed by appearance and behavior.
M005577	Mus	Transplantation of engineered hepatocytes under the kidney capsule, followed by nephrectomy	1-4 weeks	Within 1 hour after surgery they are awake; can be returned to normal housing. However, observed for an additional 1hour as a precaution. Pain assessed by appearance and behavior.
M005613	Mus	Electrode Implantation Lentivirus and AAV Injection	2 weeks	Visually inspected for signs of infection and discomfort daily and analgesics administered post-op.
M005646	Rattus	Omentum implantation, Kidney subcapsular transplants, Nephrectomy, and omentectomy including graft removal	At least 60 days	Monitored daily for several days for infection including redness or drainage from wound, behavior, skin turgor, lethargy and weights as possible signs of dehydration or infection.

IACUC No.	Species	Surgery Description	Time Between Surgeries	Protocol-Specified Monitoring
M005646	Mus	Liver/thymic fragment implant under the kidney capsule, then 1) ILC (islet-like clusters) transplant under the contralateral kidney capsule, then 2) Nephrectomy for removal of kidney bearing the ILC transplant **OR** ILC transplant either under the kidney capsule or intrapancreatic or into the EFP, followed by either Nephrectomy or epidymal fat pad removal or pancreatectomy (i.e. surgical removal of organ bearing the graft). Each animal will only undergo 2 procedures: the transplant and graft removal.	2 months	Monitored daily for 3 days post-op, then 2x week for duration of experiment. For SQ implantation, monitored daily for 2 days. During recovery from anesthesia, placed in a cage directly under a controlled source of heat to maintain temperature. When surgery is expected to last > 20 min, mouse placed on heating pad during procedure.
M005697	Mus	Intracortical injection of calcium indicators dyes or viral vectors (AAV2-based) followed by EEG/EMG implant and sometimes cranial window.	At least 2-3 weeks	Attitude and activity, food and water consumption, and condition of the operative site will be checked daily during the week after surgery.
M01253	Mus	Hemisplenectomy followed by heterotopic heart transplant	One week	Checked daily until incision healed, and minimum of weekly post healing until endpoint.
M01427	Mus	Ischemia followed by ischemia; ovariectomy followed by ischemia	1 to 10 days	Analgesia every 6-12 hours for min of 2 days.
M02311	Mus	Kidney capsule implant followed by another kidney capsule implant	12 weeks	Checked every 6-12 hours for 48 hours and daily after.
M02488	Mus	Insert ligature around ureter followed by removal of ligature	At least 3 days	Monitored for 1 hour for full recovery on either a water-heated circulating pad or under a heat lamp. Following recovery they are monitored at 4-6 and 12-18 hours and then every 6-12 hours for 48 hours post-op at the time of analgesic administration.
M02520	Mus Rabbit	Periosteal transection or resection, followed by same	At least 3 weeks	Constant observation until conscious. Respiration rate, mucus membrane color, CRT monitored every 15 minutes until rabbit is sternal and aware of surroundings. Body temps monitored every 15 minutes until within normal range. Once conscious, checked hourly for a minimum of 2 hours.

APPENDIX 15

SMPH Summary:
Food & Fluid Regulation

IACUC No.	Species	Type of Restriction	Justification	Length of Restriction	Health Monitoring
M005064	Mus	Feed restriction	Study metabolic parameters without interference from postprandial variation. Catabolic state.	6 to 24 hours	Daily per normal monitoring procedures plus cages labeled with additional card indicating date and time of fasting protocol.
M00511	Mus	Fasting	Prior to glucose tolerance and insulin resistance testing.	Fast 4 to 16 hours.	Daily per normal monitoring procedures
M005156	Mus	Fasting	Fast overnight prior to measuring blood glucose levels.	16 hours	Daily per normal monitoring procedures
M005159	Mus	Restricted feed	To ensure full dose of gavaged material into stomach is absorbed and interacts with feed.	Access to feed following each of 3 daily gavages for at least 1 hour for up to 60 days.	Pair fed mice provided food ad lib, and daily intake is monitored and compared to interval fed mice. Mice trained to eat in three intervals before study begins.
M005161	Mus	Caloric restriction	Caloric Restriction is only well-established protocol in mammals that consistently increases lifespan and delays age-related physiological declines.	Two types: (1) Beginning diets at ~ 2 months of age, euthanize at 5 months and 25 months. (2) Beginning at ~15 months of age, euthanize at 30 months.	Log for each mouse: Mon, Wed & Fri at feeding: Food pellets remaining. Weekly: weight and body condition score.
M005177	Rattus	Scheduled food and fluid access: Oropharyngeal Function / Videofluoroscopy, biting and object handling	Motivator for behavioral tests requiring rats to eat.	16 to 20 hours	Weighed to ensure temporary food withdrawal has no effect on health.

IACUC No.	Species	Type of Restriction	Justification	Length of Restriction	Health Monitoring
M005177	Rattus	Scheduled food and fluid access: Tongue force and ultrasonic vocalization testing	Motivator for behavioral tests requiring rats to seek water as a task reward.	21 hours per day	Daily or weekly record of weights and water consumption during acclimation and treatment. Establish a "working weight" for each rat after initial acclimation and ensure weight is 85% or greater of this "working weight." Entails 2-wks of regulated water access.
M005177	Rattus	Scheduled food and fluid access: Ghrelin assay	Establish baseline ghrelin for comparison to non-restricted levels.	24 hours	After initial sample, no longer restricted.
M005210	Mus	Fasting	Fasting before blood collection for Glucose Tolerance Test (GTT) or Insulin Tolerance Test (ITT).	Fasted 4 hours prior to blood collection. Fasted overnight (up to 18 hours) prior to some blood sampling or some glucose tolerance tests. In addition, food is removed during the ITT and GTT assays.	Daily per normal monitoring procedures
M005224	Mus	Fasting	Prevent diet from interfering with baseline readings for glucose intolerance and insulin resistance.	5 hour fast prior to testing.	Daily per normal monitoring procedures
M005231	Rattus	Operant Training with Food or Water Reward	Controlled food/water access as motivator for training.	Access to food or water for two 15-min periods separated by 12 hours. If food access is regulated, water is available ad lib and vice versa. Two weeks after training begins the evening food or water sessions are reduced to 5 mins and the morning session replaced by the food or water rewards animal attains by performing behavioral tasks.	Weigh animals daily during training period. If more than a 10% weight loss relative to pre-training weight, evening food or water sessions are lengthened for attainment of good body condition.

IACUC No.	Species	Type of Restriction	Justification	Length of Restriction	Health Monitoring
M005238	Mus	Fasting Prior to Diabetic Induction	Fasting can help prevent sudden surge in blood glucose levels after administration of streptozotocin (STZ).	Prior to injection of STZ, mice are fasted 4 hours. Fasted 5 consecutive days.	Daily per normal monitoring procedures
M005252	Rattus	Fasting for Glucose Tolerance Test	Assess metabolic reaction to a glucose challenge.	8 to 12 hours	Daily per normal monitoring procedures
M005258	Mus	Fasting overnight	Streptozotocin and glucose both act on b-cell GLUT2 transporters. Fasting increases Streptozotocin's effectiveness. To assess function of transplanted islets in mice, fasting oral glucose tolerance tests a green tea polyphenol epigallocatechin-3-gallate (EGCG) re-performed.	Up to 20 hours.	Daily per normal monitoring procedures
M005301	Mus	Food restriction before dosing	Determine the serum levels of green tea polyphenol epigallocatechin-3-gallate (EGCG). Fasting necessary to measure liberation, absorption, metabolization and distribution of test compound.	Fasted overnight before treatment with EGCG and nano-EGCG.	Daily per normal monitoring procedures
M005336	Rattus	Pair Feeding	Pair feeding is standard practice for studying effects of corticosteroids on skeletal muscle. To ensure the effects observed are due to drug effect and not due to inhibited weight gain.	Pair feeding: • Food per cage weighed 1x/day. Daily weight differences calculated as amount consumed. • Control group given only as much food as their pair-match rat consumed the previous day. Studies last 1-4 weeks.	Weight and body condition scores monitored at least daily.

IACUC No.	Species	Type of Restriction	Justification	Length of Restriction	Health Monitoring
M005383	Mus	Fasting to confirm hyperglycemia	Confirm Diabetes Mellitus (DM) w/ fasted glucose measurement to study relationship between DM and role of osteoclast-like cells (OCL's) in aneurysm.	8 hours	Daily per normal monitoring procedures
M005394	Mus	Fasting for Imaging Procedures	Minimize effect of recent eating on bio-distribution of imaging agents, and prevent potential artifacts in acquired images.	Up to 24 hours	Weighed immediately prior to scanning, otherwise recorded weekly.
M005407	Rattus	Water restriction	Motivator for rats entering a weight-bearing chamber.	3 hours immediately prior to behavioral assay.	Daily per normal monitoring procedures
M005471	Mus	1. Fasting. 2. Caloric restriction	1. FFR in metabolic cages to assess fuel switching control in genetically manipulated mice, and assess susceptibility to torpor response.2. Test whether calorie restriction affects accumulation of dermal white adipose tissue (dWAT), and whether that is important to its positive effects.	1. Fasting: Limited to one period of 36 hours (food withdrawn at start of sleep cycle, and returned before the dark cycle on next day). Water is ad lib.2. Calorie Restriction: Fed daily full amount of precision pellets or food allocation with 25% reduced carbohydrate component for 8-20 weeks.	1. Behavior observed. Weight not allowed to drop more than 20% total (weighed daily). 2. Efficacy of the protocol for different strains and sexes is evaluated by weekly body weight checks.

IACUC No.	Species	Type of Restriction	Justification	Length of Restriction	Health Monitoring
M005486	Rattus	Scheduled food and fluid access.	Tongue force and USV testing: Water restriction as motivator for performing task. Oropharyngeal Function/Videofluoroscopy, Biting and object handling: Food restriction as motivator for behavioral tests requiring rats to eat.	14 day acclimation period of water regulation (food ad lib) that gradually decreases access to a water bottle in the home cage on days 1-4; Days 5-14: 3 hours access to the water dish affixed to cage bottom. The treatment period involves a 21 hour cycle, with animals getting ad lib water after each 3 hour training session. Oropharyngeal Function/Videofluoroscopy, Biting and object (pasta) handling: Food restricted overnight (16-20 hours) prior to testing.	Weights and water consumption during acclimation and treatment periods recorded at least weekly. Baseline weight recorded after a 2-week acclimation. Animals in the Videofluoroscopic Imaging studies weighed to ensure temporary food withdrawal has no effect on health.
M005489	Rattus	24hour fast	Obtain pancreatic islets in a fasted state for metabolic research.	24 hours	Daily per normal monitoring procedures
M005500	Rattus	Food Restriction for MRI - rats	13C-labeled compounds used to study metabolism by measuring metabolites produced from injected compounds. Fasting for >14 hours pre-imaging reduces ratio of bicarbonate to injected pyruvate by 74%; fasting for 24 hours increases ratio of lactate to alanine by ~ 50%. Rats fasted for 24 hours have reduced ratios of bicarbonate to total 13C signal and alanine to total 13C signal by 46% and 12%, respectively, in the kidneys.	Up to 24 hours. Twelve sessions in 20 weeks.	Daily per normal monitoring procedures

IACUC No.	Species	Type of Restriction	Justification	Length of Restriction	Health Monitoring
M005500	Mus	Food Restriction for MRI - mice	13C-labeled compounds used to study metabolism by measuring metabolites produced from injected compounds. Fasting for >19 hours pre-imaging reduces the incorporation of injected pyruvate into bicarbonate by 85%, and a significant decrease in murine blood glucose can be achieved after 6 hours of fasting with no significant drop in blood glucose levels for 12 hours of fasting compared to 6 hours of fasting	Up to 19 hours	Daily per normal monitoring procedures
M005520	Mus	Food and fluid restriction: Plethysmography and gas exposure	Measure ventilation in freely behaving mice in a chamber.	They are generally in plethysmograph for <4 hours. When exposed to gas, mice may be placed in a tube. They may be in tubes for up to 12 hours. Rarely mice are in chamber for >4 hours, then provided nutrition and water via hydrogel or dietgel.	Daily per normal monitoring procedures
M005532	Mus	Fasting for Colonography	To eliminate fecal material that may obstruct or interfere with colongraphy scans.	24 hours before scanning, regular chow is replaced with a veggie/sunflower nut diet or synthetic chemical diet. 12 hours before scanning, food is removed and water is replaced with NuLytely solution to clean out remaining fecal material.	Daily per normal monitoring procedures

IACUC No.	Species	Type of Restriction	Justification	Length of Restriction	Health Monitoring
M005532	Rattus	Fasting for Colonography	To eliminate fecal material that may obstruct or interfere with colonography scans.	25 hours before scanning, regular chow is replaced with a veggie/sunflower nut diet or synthetic chemical diet. 12 hours before scanning, food is removed and water is replaced with NuLytely solution to clean out remaining fecal material.	Daily per normal monitoring procedures
M005541	Rattus	Food and fluid restrictions	To understand the effects of experimental manipulations on hedonic behaviors associated with depression and anxiety. Food and water deprivation produces robust eating and drinking behavior that are measures of hedonic responses.	Not to exceed 20 hours. Only occurs 2x per animal with interval of at least 1 week.	Daily per normal monitoring procedures
M005541	Mus	Food and fluid restrictions	To understand the effects of experimental manipulations on hedonic behaviors associated with depression and anxiety. Food and water deprivation produces robust eating and drinking behavior that are measures of hedonic responses.	Not to exceed 20 hours. Only occurs 2x per animal with interval of at least 1 week.	Daily per normal monitoring procedures
M005554	Mus	Fasting	Minimize the effect of recent eating on the biodistribution of administered imaging agents (glucose and insulin effect on uptake).	Fasted up to 12 hours prior to imaging. Not more frequent than 3 days apart.	Daily per normal monitoring procedures

IACUC No.	Species	Type of Restriction	Justification	Length of Restriction	Health Monitoring
M005557	Rattus	Water Regulation and Food Regulation	The water regulation as a training motivator to train rats to press tongues against a force incremented disc. Temporary withdrawal from food prior to VSS (videofluoroscopic swallowing study) as behavioral motivator to encourage rats to eat.	14 day acclimation period of water regulation (food ad lib) that gradually decreases access to a water bottle in the home cage on days 1-4, days 5-14 access to water is in a dish inside a replicate tongue training enclosure. For remainder of experiment (2-weeks, or 8-weeks), rats have access to water for 3 hours/day. Prior to VSS at baseline, 2-week, and 8-week experimental time points, rats are food regulated overnight (18 hours).	Water and food consumption are monitored throughout. Baseline weight is recorded following the acclimation period.
M005570	Mus	Void Spot Assay (VSA) & Uroflow Analysis (UFA) & Glucose Tolerance Test (GTT)	VSA: To avoid water bottle droplets covering or diluting urination spots on filter paper, and so voiding patterns can be analyzed without adjusting for water consumption.UFA: To assess urinary flow rate and frequency using a metabolic cage. May be food restricted 2 hrs prior and during testing to decrease fecal output.GTT: Fasting to ensure changes in plasma glucose and insulin levels do not correspond to the postprandial state.	VSA - FFR: no water; food ad lib, 1 to 4 hours. May be applied to the same animal 2 to 6 times in their lifetime with a minimum of 1 day between each test.UFA - FFR: no food; sugar water ad lib, 2 to 4 hrs. May be applied to the same animal 2 to 6 times in their lifetime with a minimum of one week between each test. GTT - FFR: no food; water ad lib, 5 to 8 hrs. Fasted for up to 5 hours, glucose tested, IP injected with glucose, fasted again for up to 3 hours and then glucose tested again. This may be applied to same animal 2 to 6 times in their lifetime with a minimum of one week between each test.	Body condition scores assessed prior to starting trial and again at the end of trial.
M005577	Mus	Fasting	To establish baseline gamma-glutamyl transferase results to measure efficacy of insulin gene therapy in correcting hyperglycemia.	4 to 18 hours	Daily per normal monitoring procedures

IACUC No.	Species	Type of Restriction	Justification	Length of Restriction	Health Monitoring
M005577	Rattus	Fasting	To establish baseline gamma-glutamyl transferase measurement results for efficacy of insulin gene therapy in correcting hyperglycemia.	4 to 18 hours	Daily per normal monitoring procedures
M005580	Mus	Fasting for PET imaging	To increase specificity of radiolabeled glucose.	Fasted for 6-12 hours prior to PET imaging.	Daily per normal monitoring procedures
M005589	Mus	Fasting prior to glucose and insulin tolerance tests	To estimate the secretion function of beta cells from glucose tolerance tests, food must be restricted for approximately 12 hours prior to testing. High-fat feeding needed to detect potential dysfunction of glucose metabolism that is normally minor or negligible.	Before glucose tolerance tests, mice are fasted for 12-15 hours (or overnight), with normal water access. A subgroup requires high-fat food for about 2-3 months starting at ~1 month old.	Daily per normal monitoring procedures plus observed by laboratory staff at end of overnight fast to ensure no adverse events.
M005599	Mus	Fasting prior to oral glucose tolerance test	To produce low basal glucose levels to perform studies on insulin secretion/glucose homeostasis.	Food restriction for 4-12 hours prior to glucose tolerance test.	Daily per normal monitoring procedures plus monitored by laboratory staff during the restriction period. Restriction immediately precedes euthanasia.
M005625	Mus	Fasting	4-hour food restriction prior to euthanasia to normalize physiological parameters. A 6-hour restriction is used in insulin tolerance testing to prevent food-induced insulin release. A 16-hour restriction is used in the glucose tolerance testing to establish fasting levels.	4 to 16 hours	Daily per normal monitoring procedures.

IACUC No.	Species	Type of Restriction	Justification	Length of Restriction	Health Monitoring
M005627	Mus	Overnight food and fluid regulation	To promote volitional eating and drinking needed for videofluoroscopy and videorecording assays of eating and drinking.	Up to 18 hours	Daily per normal monitoring procedures
M005630	Mus	Food and fluid restriction for Renal Injury Model	Required to induce rhabdomyolysis acute renal failure.	Up to 15 hours	Daily per normal monitoring procedures
M005646	Rattus	Fasting - Pre-streptozotocin (STZ) treatment	Fasting improves the consistency and efficacy of STZ treatment.	Up to 6 hours	Daily per normal monitoring procedures
M005646	Mus	Fasting prior to streptozotocin (STZ) injections and glucose tolerance tests (GTT).	STZ is more effective and provides for more consistent diabetes induction if the animals have fasted. Fasting prior to GTTS is standard procedure; blood glucose levels must be in a basal unstimulated state prior to stimulation with glucose.	6 hours prior to STZ and GTT procedures, ad lib water. For the GTT total fast is 8 hours (6 hour fast and 2 hour procedure).	Daily per normal monitoring procedures
M005668	Mus	Fasting for oral dosing	Fasting to get best drug absorption into blood stream from gut.	Fasted for up to 16 hours in 24 hour. period. Fasted maximum of 1x/day up to 7 days. Food is reintroduced within 3 hours of drug administration. Water is ad lib.	Monitored daily for changes in behavior or signs of discomfort.
M02251	Rattus	Regulated feed	Food as motivation to learn task.	Initial (1 to 3 weeks): 90% ad lib. Once trained: two hours restriction prior to behavioral testing.	Weighed every morning pre- and post-testing. Weight loss below 90% ad lib weight, removed from testing until weight corrected.

IACUC No.	Species	Type of Restriction	Justification	Length of Restriction	Health Monitoring
M02251	Rattus	Restricted fluids	Fluid as motivation to learn task.	15 hours per day prior to behavioral testing. Testing days are non-consecutive.	Weighed daily pre-testing. Weight loss of 15% and removed from testing until weight corrected.
M02505	Rattus	Feed restriction	Behavioral testing requires rats to eat.	Behavioral testing 16 to 20 hours. Ghrelin protein assay 24 hours.	Weighed 2x/week. Weight loss >10% of initial body weight receive additional food, or removed from study.
M02505	Rattus	Fluid restriction	For tongue force testing and ultrasonic vocalization rats have water reward for 3 hours.	21 hours per day	Weighed every other day. Weight loss >10% of initial body weight receive additional food, or removed from study.

APPENDIX 16

Functional Areas and Operations: Heating, Ventilation and Air –Conditioning (HVAC)

UW Madison School of Medicine **5/17/2017**

AAALAC Certification HVAC System Information

	Air Handling Unit and Exhaust Fan Description and System Redundancy	Air Handling Unit Filter Rating	Constant Volume Manually Balanced System	Pressure Independent Air Supply and Exhaust Terminals	Reheat	Reheat Control Valve Failure Position Open/Clsd/Last	Central Air Handling Unit Humidification	Local Humidification	Room Pressure Balanced by Supply/Exhaust Volume Offset	Room Pressure Indicator Device			DDC Control with Electric Actuation	DDC control with Pneumatics	Pneumatic Control	[redacted]			Emergency Power supplies Vivarium Mechancal/Electrical Systems
										Magnahelic Gauge	Ball in Tube	Digital Display				Room Temperature	Room Humidity	AHU Airflow Failure	
[redacted] floor	1	[redacted]	[redacted]	[redacted]	[redacted]			[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted] floor	2	MERV 10	Yes	No	Yes	[redacted]	Yes	No	Yes	Yes	No	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted] Vivarium	3	MERV 14	No	Yes	Yes	[redacted]	Yes	Yes	Yes	No	No	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	4	MERV 8	Yes	No	Yes	[redacted]	Yes	No	Yes	Yes	No	No	[redacted]	[redacted]	[redacted]	[redacted]			[redacted]
[redacted]	5	MERV 15	No	Yes	Yes	[redacted]	Yes	No	Yes	No	No	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted] floor	6	MERV 15	Yes	No	Yes	[redacted]	Yes	Yes	Yes	19	No	No	[redacted]	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]
[redacted] floor	7	MERV 15	Yes	No	Yes	[redacted]	Yes	Yes	Yes	No	No	No	[redacted]	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]
[redacted] Vivarium	8	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]			[redacted]
[redacted]	9	HEPA	No	Yes	Yes	[redacted]	Yes	No	Yes	No	Yes	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	10	MERV 14	No	Yes	Yes	[redacted]	Yes	No	Yes	No	No	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	11	HEPA	No	Yes	Yes	[redacted]	Yes	No	Yes	No	Yes	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	12	MERV 14	Yes	No	Yes	[redacted]	Yes	No	Yes	No	No	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	13	MERV 8	No	Yes	Yes	[redacted]	Yes	No	Yes	No	Yes	No	[redacted]	[redacted]	[redacted]				[redacted]
[redacted]	15	MERV 15	No	Yes	Yes	[redacted]	Yes	No	Yes	No	Yes	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	18	MERV 14	No	Yes	Yes	[redacted]	Yes	No	Yes	No	No	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

NOTES:	
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UW Madison School of Medicine 6/14/2017

AAALAC Certification HVAC System Information

Satellite Rooms / Policy 45

	Air Handling Unit and Exhaust Fan Description and System Redundancy	Air Handling Unit Filter Rating	Constant Volume Manually Balanced System	Pressure Independent Air Supply and Exhaust Terminals	Reheat	Reheat Control Valve Failure Position Open/Clsd/Last	Central Air Handling Unit Humidification	Local Humidification	Room Pressure Balanced by Supply/Exhaust Volume Offset	Room Pressure Indicator Device			DDC Control with Electric Actuation	DDC control with Pneumatics	Pneumatic Control	Remote Alarming to Building/Lab Manager and Building Automation System			Emergency Power supplies Vivarium Mechancal/Electrical Systems
										Magnahelic Gauge	Ball in Tube	Digital Display				Room Temperature	Room Humidity	AHU Airflow Failure	
[redacted] Room [redacted]	1	MERV 14	No	Yes	Yes	Last	Yes	No	Yes	No	No	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted] Room [redacted]	2	MERV 14	No	Yes	Yes	Last	Yes	Yes	Yes	No	No	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted] / Rooms [redacted]	3	MERV 15	No	Yes	Yes	Last	Yes	No	Yes	No	No	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted] Rooms [redacted]	4	MERV 15	No	Yes	Yes	Open	Yes	No	Yes	No	No	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted] Room [redacted]	5	MERV 15	No	Yes	Yes	Last	Yes	No	Yes	No	No	Yes	[redacted]	[redacted]	[redacted]	[redacted]			[redacted]
[redacted] Rooms [redacted]	6	MERV 14	No	Yes	Yes	Last	Yes	No	Yes	No	No	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted] Room [redacted]	7	MERV 8	Yes	No	Yes	Open	Yes	No	Yes	Yes	No	No	[redacted]	[redacted]	[redacted]				[redacted]
[redacted] Rms [redacted]	8	MERV 11	Yes	No	No	Open	Yes	No	Yes	No	No	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	9	MERV 15	No	Yes	Yes	Last	Yes	No	Yes	No	Yes	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted] Rms [redacted]	10	MERV 15	No	Yes	Yes	Last	Yes	No	Yes	No	Yes	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted] Rooms [redacted]	11	MER V 14	No	Yes	Yes	Open	Yes	No	Yes	No	No	No	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

NOTES:

1. [redacted]
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12. [redacted]

APPENDIX 17

Policy 2012-045-v:
Laboratory Housing of Animals

University of Wisconsin-Madison, Research Animal Resources Center

Policy Number: 2012-045-v
Policy Title: Laboratory Housing of Animals

Purpose: For experimental reasons, research animals are sometimes housed outside of dedicated animal housing space within a vivarium, usually within a researcher's laboratory. For example, animals may need to be exposed to certain environmental conditions that cannot be provided within the vivarium. This policy addresses requirements for non-vivarium housing of animals, for which investigative staff provide some or all husbandry.

POLICY: Housing of animals outside a dedicated vivarium for greater than 12 hours requires IACUC approval. Such housing must be based on clearly defined needs that cannot be accommodated within dedicated animal facilities and must be described in an IACUC-approved animal care and use protocol. The protocol must also contain details of husbandry practices and the suitability of the laboratory environment for housing animals (e.g. adequate ventilation, light:dark cycle.) On rare occasion an IACUC at its discretion may grant approval for housing in a location that does not meet all of the requirements listed below.

Requirements for housing animals in a laboratory include:

Physical Requirements:

- Inspection of the location by the IACUC or its designee before animals are house there.
- HVAC system performance data for proposed location including air changes per hour, source of air supply, and where air supply exhausts.
  - Any room designated for the housing of animals must have at minimum 10 complete air changes per hour. Confirmation of 10 or more air changes per hour is required before animal housing can begin (aquatic species excluded).
    - Ongoing documentation of HVAC system performance data and 10 or more air changes per hour will be required in every 3-year renewal of the pertinent protocol(s), with the measured value and date of testing included.
    - For laboratory spaces in AAALAC International accredited programs, HVAC system performance data no older than one year from the time of the scheduled site visit is required. The collection of these data may be at the investigator's expense.
- When housing in a laboratory or other non-vivarium space rodent cages must be covered with a micro-isolator lid to reduce allergen exposure to personnel.
- Temperature and humidity data indicating that proposed location can be maintained within recommended ranges.
  - Temperature range for housing of animals must conform to the Guide recommendations for the species.
  - An automated 24-hour system of monitoring temperature, with a notification feature if range is exceeded, must be present in the housing location. Monitoring of room

temperatures and response to out-of-range temperatures must conform to pertinent animal facility SOP. Confirmation of installation is required before animal housing can begin.

- A species appropriate light:dark cycle can be maintained in the proposed location.
- Proper storage of feed and water in the proposed location.
- Appropriate caging and physical location can be determined to prevent exposure of laboratory or other personnel to potential animal allergens.
- If housing of animals is approved for a shared laboratory space, a once yearly allergen level assessment of the housing area is required at a time when animals are present.
- Waste management procedures, especially if animals are exposed to potentially dangerous chemicals, biohazards, or radiation.
- Appropriate caging and physical location can be determined to eliminate or mitigate electrical hazards.

Training and Veterinary Access Requirements (All Species):

- Training of individual laboratory personnel by RARC veterinary staff or designee in appropriate husbandry practices for the species being housed, including proper documentation of husbandry procedures (e.g. cage changes, water quality monitoring).
  - o Retraining of individuals will occur on a 3-year basis.
  - o Training of new staff must be completed prior to their providing husbandry for animals in laboratory housing.
- Familiarity with sick animal reporting methods, including weekend and holiday care plans.
- An emergency plan is in place for contacting necessary individuals if animals need to be moved.
- Notification to veterinary staff when animals are moved to or from laboratory housing.
- Veterinary staff will have access to animals in laboratory housing to allow for inspection/ health assessment.
- Veterinary staff monitoring of husbandry documentation and health of animals at least monthly for laboratories that house animals for more than 24 consecutive hours.

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PI	Protocol number	Species	Room(s)	Justification	HVAC	Maximum Time
[redacted]	M1253, M2311, M5082, M5215	Mice	[redacted]	Rapid specialized processing of tissues in laboratory space is required. Animals are moved to laboratory overnight to minimize stress responses associated with moving animals immediately prior to the procedure.	13.2 Air Changes/Hour. Animals usually kept overnight in hood.	Short-term: >12 hours, <24 hours
[redacted]	M5226	Mice/Rats	[redacted]	Animals must be chronically housed in specialized chambers that create hypoxic but normobaric conditions.	NA – animals maintained in special self-contained hypoxic/normobaric chambers	Duration of study
[redacted]	M5405	Zebrafish	[redacted]	Zebrafish embryos housed in incubator adjacent to imaging equipment.	NA – aquatics housing within an incubator	Typically only up to 10 dpf. Rarely up to 30 dpf.
[redacted]	M5217	Mice	[redacted]	Special equipment and processes needed for the processing and administration of *T. gondii* oocysts.	16.0 air changes/hour. 100% outside air.	Duration of study
[redacted]	M2501	Mice	[redacted]	Special equipment and processes needed for the processing and administration of *L. monocytogenes*.	16.0 air changes/hour. 100% outside air.	Short term: <72 hours
[redacted]	M5332	Rat	[redacted]	Animals must be chronically housed in specialized chambers that create intermittent hypoxic conditions.	NA – animals maintained in special self-contained hypoxic chambers	Duration of study
[redacted]	M450	Mice	[redacted]	Special processes needed for the preparation and administration of pathogenic *E. coli*, and for monitoring infection in animals.	NA – animals maintained in a BSC or hood	Seldom used. Generally short-term housing (<48 hours); rarely up to 14 days.

APPENDIX 18

Chemical, Physical & Biological Hazards Lists

Chemical Agents

IACUC No.	Species	Hazard Category	Name of Chemical Agent
M005064	Mus	carcinogen	Bromodeoxyuridine (BrdU) Tamoxifen
		teratogen	Bromodeoxyuridine (BrdU) Tamoxifen
M005103	Mus	teratogen	Tamoxifen
		carcinogen	Tamoxifen
M005111	Rattus	mutagen	BrdU
M005142	Rattus	mutagen	BrdU
M005160	Mus Rattus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
M005161	Mus	teratogen	Docetaxel Temsirolimus
		toxin	Docetaxel
M005165	Mus	carcinogen	BrdU
M005166	Mus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
M005182	Mus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
M005193	Mus	carcinogen	BrdU
M005197	Mus	carcinogen	Vorinostat
M005210	Mus	carcinogen	BrdU Tamoxifen
		mutagen	BrdU
		teratogen	Tamoxifen
M005212	Mus	carcinogen	BrdU
M005214	Mus	carcinogen	Vorinostat
		mutagen	Vorinostat
		teratogen	Vorinostat
M005221	Mus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
M005226	Mus Rattus	mutagen	hydroxyurea
M005290	Mus	toxin	Chemoconvulsant
M005303	Mus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
M005311	Mus	carcinogen	doxorubicinlomustinemelphalannanoparticlepaclitaxel

IACUC No.	Species	Hazard Category	Name of Chemical Agent
		toxin	doxorubicin lomustine melphalan nanoparticle paclitaxel
		mutagen	doxorubicin
M005318	Mus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
M005328	Mus	toxin	Rapamycin
M005333	Mus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
M005342	Mus	carcinogen	Tamoxifen
		teratogen	Chemopreventive and Chemotherapeutic agents Tamoxifen
M005345	Mus Rattus	carcinogen	BrdU Tamoxifen
		teratogen	Tamoxifen
		mutagen	BrdU
M005363	Mus	carcinogen	EdU and BrdU
		mutagen	EdU and BrdU
M005388	House mouse	carcinogen	BrdU
		mutagen	BrdU
M005394	Mus	carcinogen	4-nitroquinoline-1-oxide (4-NQO)
M005405	Zebrafish	carcinogen	nocodazole
		teratogen	nocodazole
M005416	Mus Rattus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
M005439	Rattus	carcinogen	Bleomycin
M005444	Rattus	carcinogen	BrdU
M005471	Mus	carcinogen	BrdU/EdU markers of mitosis Tamoxifen
		teratogen	Tamoxifen
M005479	Mus Rattus	carcinogen	cytoxandoxorubicinetoposide
		toxin	cytoxan etoposide
		teratogen	doxorubicin cytarabine
		mutagen	doxorubicin
M005484	Mus	carcinogen	5 fluorouracil
		mutagen	5 fluorouracil
		teratogen	5 fluorouracil
M005485	Mus	carcinogen	Chemotherapeutic treatments

IACUC No.	Species	Hazard Category	Name of Chemical Agent
		mutagen	Chemotherapeutic treatments
		teratogen	Chemotherapeutic treatments
M005520	Mus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
M005525	Mus	carcinogen	BrdU
M005534	Mus Rattus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
M005541	Mus Rattus	carcinogen	BrdU
M005542	Mus	carcinogen	BrdU
M005554	Mus	teratogen	Fulvestrant Tamoxifen
		carcinogen	Tamoxifen
M005555	Mus Rattus	toxin	Carbon Tetrachloride
		carcinogen	Doxorubicin Tamoxifen
		teratogen	Doxorubicin Tamoxifen
		mutagen	Doxorubicin
M005558	Mus Rattus	carcinogen	Temozolomide chemotherapy
		mutagen	Temozolomide chemotherapy
		teratogen	Temozolomide chemotherapy
		toxin	Temozolomide chemotherapy
M005570	Mus	carcinogen	Erlotinib or Genistein Tamoxifen or Raloxifene
		teratogen	Tamoxifen or Raloxifene
M005571	Mus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
M005580	Mus	teratogen	Chemotherapy/chemoprevention treatment
		toxin	Chemotherapy/chemoprevention treatment
M005589	Mus	carcinogen	BrdU Tamoxifen
		teratogen	Tamoxifen
M005597	Mus	carcinogen	Bleomycin
		teratogen	Bleomycin
M005601	Mus	toxin	carbon tetrachloride chemotherapy
		carcinogen	Tamoxifen
		teratogen	Tamoxifen
M005602	Mus	carcinogen	5-fluorouracil
		teratogen	5-fluorouracil
M005611	Mus	carcinogen	EdU or BrdU
M005625	Mus	carcinogen	TCDD

IACUC No.	Species	Hazard Category	Name of Chemical Agent
		toxin	TCDD
M005628	Mus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
M005630	Mus	toxin	Carbon Tetrachlorate
M005644	Mus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
M005660	Mus	toxin	Fluorouracil (5-FU)
		teratogen	Fluorouracil (5-FU)
M005664	Rattus	carcinogen	BrdU ErdU
M005668	Mus	carcinogen	Bromodeoxyuridine (BrdU)
M005669	Mus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
M005670	Mus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
M005675	Mus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
M005708	Mus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
M00664	Mus Rattus	teratogen	Tamoxifen
M00712	Mus Rattus	mutagen	5-bromo-2-deoxyuridine (BrdU)
M00843	Mus	mutagen	5-bromo-2-deoxyuridine (BrdU)
		teratogen	5-bromo-2-deoxyuridine (BrdU)
		carcinogen	Tamoxifen
		teratogen	Tamoxifen
M01162	Mus	toxin	tetrachloro-p-dioxin
M01221	Mus Rattus	mutagen	5-bromo-2-deoxyuridine (BrdU)
M01246	Mus	carcinogen	Doxorubicin
		mutagen	Doxorubicin
		toxin	Fluorouracil (5-FU)
M01247	Mus	carcinogen	Doxorubicin
		mutagen	Doxorubicin
		toxin	Fluorouracil (5-FU)
M01441	Mus Rattus	mutagen	5-bromo-2-deoxyuridine (BrdU)
		teratogen	5-bromo-2-deoxyuridine (BrdU)
M01461	Mus Rattus	mutagen	5-bromo-2-deoxyuridine (BrdU)
		teratogen	5-bromo-2-deoxyuridine (BrdU)
M01662	Mus	toxin	Lipopolysaccharides
M01668	Mus	carcinogen	Bleomycin Tamoxifen

IACUC No.	Species	Hazard Category	Name of Chemical Agent
		teratogen	Fulvestrant Tamoxifen
M01725	Rattus	carcinogen	Adriamycin
M01732	Mus	mutagen	5-bromo-2-deoxyuridine (BrdU)
		teratogen	5-bromo-2-deoxyuridine (BrdU) analogs of L-ribo-beta-neoglycoside of digitoxin chemotherapy agents
		toxin	analogs of L-ribo-beta-neoglycoside of digitoxin chemotherapy agents
M02059	Mus	mutagen	Tamoxifen
		teratogen	Tamoxifen
M02258	Mus	mutagen	Tamoxifen 5-bromo-2-deoxyuridine (BrdU)
		teratogen	Tamoxifen 5-bromo-2-deoxyuridine (BrdU)
M02269	Mus	carcinogen	Cisplatin
		toxic agent	Cisplatin
M02270	Mus Rattus	carcinogen	Cyclophosphamide
		mutagen	Cyclophosphamide
		teratogen	Cyclophosphamide
		toxic agent	Cyclophosphamide
M02275	Mus	mutagen	Tamoxifen
		teratogen	Tamoxifen
M02284	Mus	carcinogen	Nanoparticles
		toxin	Nanoparticles
M02285	Mus Rattus	carcinogen	Nanoparticles
		toxin	Nanoparticles
M02289	Mus	carcinogen	Cisplatin
		toxic agent	Cisplatin
M02293	Mus	carcinogen or mutagen	TCDD (dioxin)
M02297	Mus	carcinogen	Tamoxifen
		teratogen	Tamoxifen Edu
		mutagen	temozolomide
M02329	Mus	carcinogen or mutagen	12-O-tetradecanoyl phorbol 12-myristate 13-acetate (TPA)
		toxic agent	DMSO
M02448	Mus	carcinogen or mutagen	Brd Idu
		carcinogen	Tamoxifen
		teratogen	Tamoxifen AZ-75 Vismodegib
M02456	Rattus	carcinogen or mutagen	BrdU

IACUC No.	Species	Hazard Category	Name of Chemical Agent
M02460	Mus	toxic agent	DMSO
M02464	Mus	carcinogen	Tamoxifen
		teratogen	Tamoxifen
		carcinogen or mutagen	bleomycin
M02465	Mus	carcinogen or mutagen	azoxymethane
		toxic agent	dextran sodium sulfate chrysin indole-3 carbinol curcumin DIM TNBS oxazolone
M02468	Mus	carcinogen or mutagen	cyclophosphamide
M02469	Rattus	carcinogen or mutagen	bleomycin urethane
		toxic agent	PS-1145 dihydrochloride withaferin A
M02472	Mus	toxic agent	17-AAG Taxanes rapamycin cytotoxic chemotherapies
M02478	Mus	carcinogen or mutagen	DNCB
M02489	Mus	teratogen	lenalidomide
M02493	Mus	toxic agent,	nanoparticles
		carcinogen or mutagen	nanoparticles
M02496	Mus	toxic agent	nanoparticles
		carcinogen or mutagen	nanoparticles
M02505	Rattus	carcinogen or mutagen	progesterone estradiol
M02515	Mus	toxic agent	2-chloro ethyl sulfide
		carcinogen or mutagen	2-chloro ethyl sulfide
M02518	Mus	carcinogen or mutagen	cisplatin carboplatin
		toxic agent	ZD6126 ZD6174
M02520	Mus rabbit	carcinogen or mutagen	BrdU alizarin complexone
M02619	Mus	toxic agent	DMSO
		carcinogen	Tamoxifen
		teratogen	Tamoxifen
M02624	Mus	carcinogen	doxorubicin

IACUC No.	Species	Hazard Category	Name of Chemical Agent
		mutagen	doxorubicin
		teratogen	doxorubicin Tamoxifen
		carcinogen	Tamoxifen
		toxic agent	herceptin
M02632	Mus	carcinogen or mutagen	Cytoxan
		toxic agent	Cytoxan
M02635	Mus	carcinogen or mutagen	fluorouracil
		carcinogen	Tamoxifen
		teratogen	Tamoxifen
M02645	Mus Rattus	carcinogen or mutagen	BrdU

Physical Agents

IACUC No.	Species	Physical Agent(s)
M005012	pig	Computed tomography angiography (x-ray) Intravascular ultrasound X-ray
M005020	Zebrafish	Fluorescence imaging
M005103	Mus	MRI (high magnetic field) Cesium Irradiation (ionizing irradiation)
M005129	Rattus	MRI (high magnetic field)
M005138	Mus Rattus	Fluorescence imaging
M005156	Mus	Cesium Irradiation (ionizing irradiation)
M005161	Mus	IVIS Optical imaging Luciferin MicroCT (x-ray) microPET (radioactive tracers)
M005162	Mus	X-ray
M005164	Mus	MRI (high magnetic field) CT Scan (x-ray)
M005177	Rattus	Videofluoroscopy Barium
M005182	Mus Rattus	Transthoracic Echocardiography (ultrasound)
M005184	rabbit	CT imaging (x-ray) MRI (high magnetic field) Ultrasound imaging External Beam Radiation therapy
M005193	Mus	MRI (high magnetic field) CT Scan (x-ray)
M005196	pig	MRI (high magnetic field) CT Scan (x-ray) Ultrasound Omnipaque 300 Gadolinium Superparamagnetic iron oxide Ultrasmall superparamagnetic iron oxide
M005199	Mus	Cesium Irradiation (ionizing irradiation)
M005200	pig	MRI (high magnetic field)
M005203	pig	MRI (high magnetic field)
M005212	Mus	Bioluminescence imaging Luciferin

IACUC No.	Species	Physical Agent(s)
M005217	Mus	Densitometry imaging (x-rays) Fluorescence imaging Bioluminescence imaging
M005226	Mus Rattus	Echocardiography (ultrasound) MRI (high magnetic field) CT Scan (x-ray)
M005238	Mus	Densitometry imaging (x-rays) Micro CT (x-rays)
M005243	Rattus	Echocardiography (ultrasound)
M005264	pig	Fluoroscopy (x-rays) CT scan (x-rays)
M005266	pig	MRI (high magnetic field) CT Scan (x-ray) Ultrasound
M005268	Zebrafish	UV irradiation
M005283	Mus	MRI (high magnetic field) Optical imaging Fluorescent imaging agents
M005287	dog	CT scan (x-rays) MRI (high magnetic field) Ultrasound Angiography (x-ray)
M005301	Mus	MRI (high magnetic field) Ultrasound
M005311	Mus	IVIS Optical imaging
M005318	Mus	X-Ray irradiation
M005319	Mus	IVIS Optical imaging
M005323	Rattus	MRI (high magnetic field)
M005328	Mus	X-Ray irradiation
M005331	dog	Angiography (x-rays) CT scan (x-rays) MRI (high magnetic field)
M005363	Mus	IVIS Optical imaging Micro-CT (x-rays)
M005380	pig	Fluoroscopy (x-rays)
M005383	Mus	MRI (high magnetic field); ultrasound
M005385	Mus Rattus	Echocardiography (ultrasound)
M005389	Mus Rattus	Bioluminescence/biofluorescence imaging

IACUC No.	Species	Physical Agent(s)
M005394	Mus	MicroCT (x-ray) MicroPET (radioactive tracers) IVIS Optical imaging Luciferin Ultrasound/Photoacoustic Imaging X-Ray irradiation
M005404	Mus	MicroCT (x-ray) MicroPET (radioactive tracers) X-Ray irradiation
M005405	Zebrafish	Confocal Multiphoton, Light sheet microscopy
M005413	Mus	Imaging (laser)
M005414	rabbit	Optical coherence tomography (light)
M005416	Mus Rattus	Bioluminescence and fluorescence imaging CT scan (x-rays) MRI (high magnetic field) Echocardiography (ultrasound) Ultrasound
M005418	pig	PET (radioactive tracers); MRI (high magnetic field)
M005428	Mus	Fluorescent microscopy Optical coherence tomography (light) MRI (high magnetic field)
M005429	Rattus	Echocardiography (ultrasound)
M005444	Rattus	Cesium Irradiation (ionizing irradiation)
M005471	Mus	MRI (high magnetic field)
M005476	Mus	X-Ray irradiation
M005479	Mus	X-Ray irradiation
M005484	Mus	X-Ray irradiation
M005485	Mus	Optical imaging
M005486	Rattus	Videofluoroscopic Imaging (x-rays)
M005500	Mus Rattus	MRI (high magnetic field)
M005501	pig	X-ray Ultraound CT scan (x-rays) PET (radioactive tracers) MRI (high magnetic field)

IACUC No.	Species	Physical Agent(s)
M005510	Mus	MRI (high magnetic field) Ultrasound
M005512	pig	MRI (high magnetic field) Ultrasound Fluoroscopy (x-rays)
M005525	Mus	Optical Coherence Tomography (laser)
M005531	dog	Angiography Fluoroscopy (x-rays) Echocardiography (ultrasound) MRI (high magnetic field) PET (radioactive tracers)
M005532	Mus Rattus	Bioluminescence and fluorescence imaging MicroCT (x-ray) MRI (high magnetic field) MicroPET (radioactive tracers) Ultrasound/photoacoustic imaging
M005534	Mus Rattus	X-Ray irradiation MRI (high magnetic field)
M005544	pig	CT scan (x-rays) MRI (high magnetic field) Ultrasound
M005555	Mus Rattus	Echocardiography (ultrasound)
M005557	Rattus	Videofluoroscopy (x-rays)
M005558	Mus Rattus	Fluorescent imaging X-Ray irradiation
M005572	Mus Rattus	Fluoroscopy Optical coherence tomography (light) Radiograph imaging CT Imaging (x-rays) MRI (high magnetic field)
M005580	Mus	MicroCT (x-ray) MicroPET (radioactive tracers)
M005585	Mus	Fluorescent imaging
M005587	Mus	Optical Coherence Tomography (light) Confocal Laser Scanning Ophthalmoscopy (laser)
M005588	Mus	Echocardiography (Ultrasound)
M005606	pig	CT scan (x-rays) MRI (high magnetic field) Ultrasound
M005616	Rattus	X-ray
M005627	Mus	Videofluoroscopy (x-rays)
M005628	Mus	Fluorescence and Bioluminescent imaging

IACUC No.	Species	Physical Agent(s)
M005630	Mus Rattus	MicroCT (x-ray) MRI (high magnetic field) Optical imaging PET (radioactive tracers) Photoacoustic/Ultrasound imaging External Beam Laser
M005644	Mus	MRI (high magnetic field)
M005647	Mus	IVIS Optical imaging Luciferin
M005660	Mus	Cesium Irradiation (ionizing irradiation) X-ray irradiation
M005670	Mus	MRI (high magnetic field) PET (radioactive tracers) CT scan (x-rays) X-Ray irradiation
M005685	Mus Rattus	Ultrasound Echocardiography (Ultrasound)
M005697	Mus	Fluorescence imaging
M005699	Mus	Fluorescent Imaging X-Ray irradiation
M005714	Mus	X-Ray irradiation
M005730	Mus	Fluorescent imaging
M00712	Mus Rattus	irradiation (gamma)
M00843	Mus	irradiation (UV) irradiation (gamma rays)
M00969	Mus	irradiation (x-rays)
M01055	Mus	optical imaging luciferin
M01246	Mus	optical imaging luciferin
M01247	Mus	partial body irradiation (x-rays) optical imaging
M01427	Mus	Echocardiography (ultrasound)
M01441	Mus Rattus	intense light (for light-induced retinal degeneration)
M01461	Mus Rattus	Echocardiography (ultrasound)
M01662	Mus	CT scan (x-rays) irradiation (x-rays) optical imaging

IACUC No.	Species	Physical Agent(s)
M01668	Mus	MRI (high magnetic field) PET (radioactive tracers)
M01744	Mus	bioluminescence imaging
M01769	Mus	laser Doppler imaging fluorescence imaging with luciferin irradiation (ionizing radiation)
M01771	Mus	Optical coherence tomography (light) near-infrared light treatment (light)
M02059	Mus	whole brain irradiation (x-rays),
M02065	cat	ultrasound, MRI (high magnetic field) Optical coherence tomography (light)
M02249	Mus Rattus	laser Doppler imaging
M02258	Mus	ultrasound
M02269	Mus	Bioluminescence imaging CT scan (x-rays)
M02272	ambystoma	Light microscopy fluorescent imaging CT scan (x-rays) PET (radioactive tracers)
M02275	Mus	irradiation (gamma)
M02284	Mus	irradiation (gamma)
M02285	Mus Rattus	irradiation (gamma)
M02289	Mus	irradiation PET (radioactive tracers)
M02292	Rattus	MRI (high magnetic field) PET (radioactive tracers)
M02298	Mus	Optical coherence tomography (light) fluorescein angiography
M02305	Mus	MRI (high magnetic field)
M02311	Mus	irradiation (x-rays)
M02321	marmoset Mus Rattus	MRI (high magnetic field)
M02328	cat	Optical coherence tomography (light) ultrasound, fluorophotometry (light)
M02337	Rattus	MRI (high magnetic field) PET (radioactive tracers)
M02469	Rattus	PET (radioactive tracers)
M02471	rabbit	ultrasound

IACUC No.	Species	Physical Agent(s)
M02472	Mus	bioluminescence imaging
M02477	rabbit	ultrasound
M02478	Mus	irradiation (gamma) irradiation (UV)
M02489	Mus	irradiation (x-rays) MRI (high magnetic field)
M02493	Mus	fluoresence imaging luciferin MRI (high magnetic field)
M02496	Mus	fluoresence imaging luciferin MRI (high magnetic field) CT scan (x-rays)
M02505	Rattus	videofluoroscopy (x-rays)
M02510	rabbit	fluorescein angiography OCT
M02515	Mus	ultrasound optical imaging (light) CT scan (x-rays)
M02516	swine	MRI (high magnetic field)
M02518	Mus	MicroCT (x-ray) microPET (radioactive tracers) ultrasound optical imaging (light)
M02520	Mus rabbit	CT scan (x-rays)
M02616	Mus Rattus	CT (x-ray) PET (radioactive tracers) optical imaging (light)
M02618	swine	MRI (high magnetic field)
M02623	swine	fluoroscopy (x-rays) ultrasound
M02632	Mus	irradiation (x-rays)
M02634	Mus	CT scan (x-rays)
M02635	Mus	irradiation (x-rays)
M02636	dog	Echocardiography (ultrasound)
M02642	Rattus swine	PET (radioactive tracers) CT scan (x-rays)
M02645	Mus Rattus	MRI (high magnetic field)

Biological Agents

IACUC No.	Species	BSL	Name of Biological Agent
M005082	Mus	1, 2	Heat killed Epstein-Barr Virus Peripheral blood mononuclear cells Tetanus Toxoid Diphtheria
M005090	Mus	2	Human cells Non-human primate cells
M005103	Mus	1, 2	Genetically altered antibodies or protein antigens or inhibitors Lipopolysaccharide
		2	Bacillus Calmette–Guérin BCG Diphtheria Toxin Pertussis toxin Trichuris Suis OVA
M005129	Rattus	2	Cobra venom factor
M005142	Rattus	2	Her2/Neu oncogene in retroviral/lentiviral vector
M005149	Mus	2	Human fecal microbiota Pseudomonas aeruginosa Staphylococcus aureus Candida albicans Escherichia coli Acinetobacter baumannii
M005161	Mus	2	Human cancer cells
M005170	pig	1, 2	Escherichia coli LPS GFP Lentivirus vector
M005197	Mus	2	Epstein Barr Virus
M005199	Mus	2	Human thymus, lier, and blood cellsMycobacterium bovis BCGSalmonella typhi Ty21aEpstein-Barr virus (strain B95-8 encoding GFP)Human Herpesvirus 6A (strain U1102 encoding GFP)Sterile extracts of Aspergillus
		1, 2	Lipopolysaccharide
M005210	Mus	2	Adenovirus Human Pancreatic Islets
M005212	Mus	2	Prostate cancer cells
M005214	Mus	2	Epstein Barr Virus Human cytomegalovirus
M005216	rabbit	2	Human bone marrow-derived MSCs
M005217	Mus	2	Listeria monocytogenes Toxoplasma gondii Human chorionic gonadotropin Influenza virus Freund's adjuvent
M005235	Mus	2	Human Pluiripotent Stem Cells

IACUC No.	Species	BSL	Name of Biological Agent
M005242	Mus Rattus	2	Mutated cDNAs for integrins that either inhibit or activate them, GEFs or GTPases that are part of the integrin pathway, Cripsr-Cas, Cre recombinase, cDNAs for growth factors
		2	Recombinant mcherry-Milk Fat Globule-EGF factor-8 protein, or recombinant protein fragments or peptides
		2	TGF-b1 or 2, VEGF, CTGF
		2	C3 transferase, Rho inhibitors, Rac/cdc42 inhibitors
		2	siRNAs for integrins and GEFs or GTPases that are part of the integrin pathway
		2	Replication deficient Adeno/lentiviral vectors encoding specific cDNAs, miRNA or siRNA
M005255	Mus	2	Complete Freund's Adjuvant DNA vaccines
M005283	Mus	2	Human tumor cells
M005301	Mus	2	Human prostate cancer cells
M005319	Mus	2	Influenza virus
M005328	Mus	2	Busulfan Liver or bone marrow Human leukemia cells
M005333	Mus	2	Human islets
M005335	Rattus	2	Non-human primate derived MSCs Human derived MSCs
M005342	Mus	2	Fisetin 5-Fluorouracil (5-FU, Dimethyl Sulfoxide(DMSO) Aspirin Resveritrol Lactobacillus rhamnosus GG(LGG) Mouse intestinal tumor cells AdenoCre Virus
M005345	Mus	2	Adenovirus Retrovirus Lentivirus
M005385	Mus Rattus	2	Human MSCs
M005394	Mus	2	Human tumor cells

IACUC No.	Species	BSL	Name of Biological Agent
M005405	Zebrafish	2	Streptococcal iniae Pseudomonas aeruginosa Aspergillus fumigatus Aspergillus nidulans Blastomyces dermatitidis Listeria monocytogenes Streptococcal pyogenes Edwardsiella tarda Staphylococcus aureus Mycobacteria marinum Cryptococcal species
		2	Blebbistatin 5-lipoxygenase 15-lipoxygenase inhibitor SQ, 22536 adenylate cyclase inhibitor, thapsigargin CRAC channel inhibitor, BTPZ ARP2/3 inhibitor and control, CK666 and CK669 Brefeldin A hydroxychloroquine prednisone Cox2 inhibitors (NS-398), Cxcr2 inhibitor (SB225002), EGF receptor inhibitor, Src inhibitors and Lyn inhibitors, VEGFR inhibitor (SU5402), GSK-3 inhibitor, JNK inhibitor (SP600125), Bestatin LTB4 receptor antagonist (U-75302), MEK inhibitor U0126, MMP inhibitor GM60001, Latrunculin A Tunicamycin NFkB inhibitor (BAY11-7082), Sulfasalazine Luteolin Withaferin A Nox1 inhibitor, PAD inhibitors (CL-Amidine), PI3K inhibitor (LY294002), PKA inhibitor KT5720, PKC inhibitor GF109203X, PLC inhibitor U-73122, PP2 Src inhibitor and control, PP3 PTP1B inhibitor sc-222227, Rac inhibitor NSC23766, Rho kinase inhibitor, Rockout FTY720 S1P inhibitor NSC 74959, Stat3 inhibitor, phosphatase inhibitor BpV Vegf inhibitor SU5416
M005416	Mus Rattus	2	Human stem cells
M005434	Mus	2	KCNJ13 GFP AAV Lentiviral particles Human iPS-RPE cells
M005440	Mus	2	Human cells Her2/Neu oncogene in retroviral/lentiviral vector
M005451	Rattus	2	AAV2/8
M005476	Mus	2	ALV-vectors Human myeloma, stromal cells
M005484	Mus	2	Tumor cells Bone marrow transduced with ecotropic retroviruses
M005485	Mus	2	Human breast cancer cells, human cell line ATCC
M005488	Mus	2	Recombinant DNA (Hsf1) Human LuCaP Cells Prostate cancer cells
M005510	Mus	2	Prostate cancer cells
M005508	Mus Rattus	1,2	Lipopolysaccharide
M005512	pig	2	Injectable biomaterial Human stem cells
M005515	Mus	2	Human skin cancer cells

IACUC No.	Species	BSL	Name of Biological Agent
M005520	Mus	2	AAV Rabies
M005521	Mus	2	Human Cells
M005525	Mus	2	AAV2
M005534	Mus Rattus	2	Human fibrocyte cells Human thymus or skin tissue Human peripheral blood mononuclear cells Human cells
M005554	Mus	2	Human cells
M005558	Mus	2	MicroRNA Human brain cancer cells
M005561	dog	2	Engineered vocal fold mucosa
M005567	Mus	2	Neisseria musculi Neisseria meningitidis
M005570	Mus	2	Mouse primary cells and tissues Human prostate cancer cells, BPH-1 derivatives, TURP samples
M005571	Mus	2	Human tumor cells
M005577	Mus Rattus	2	Human DNA Insulin-producing Hepatocytes Lentivirus containing Insulin Gene Construct
		2	Recombinant Adenovirus and Adeno-Associated Virus containing Insulin Gene Construct
M005580	Mus	2	Mouse Cells AdenoCre Virus Human Cells
M005585	Mus	2	Human medullary thyroid cancer cells
M005589	Mus	2	Lentivirus
M005596	Mus Rattus	2	C1inh
M005599	Mus	2	Commensal Bacteria from human feces Unfractionated human feces
M005601	Mus	2	Human cells
M005607	Rattus	2	Attenuated mengovirus Sendai virus
M005611	Mus	2	Human macrophages MSCs
M005613	Mus	2	Lentivirus vectors AAV vectors
M005628	Mus	2	Breast cancer cells ERβ-expressing tumors
M005630	Mus	2	Human cells
M005644	Mus	1, 2	Antibodies or protein antigens or inhibitors Bacillus Calmette–Guérin (BCG) Diphtheria toxin Histoplasma capsulatum Influenza A/WSN/33 Lipopolysaccharide LCMV Mycobacterium tuberculosis Recombinant Vaccinia virus

IACUC No.	Species	BSL	Name of Biological Agent
M005645	Mus	2	Histoplasma capsulatum yeast
M005646	Mus	2	Human isolated islets Human pluripotent stem cells Human pancreatic extracellular matrix derived hydrogel (hp-HG)
M005647	Mus	2	Human cells MOG 35-55 in CFA Pertussis toxin
M005660	Mus	2	Retrovirally infected mouse cells
M005668	Mus	2	AAV Adenovirus Lipopolysaccharide Pertussis toxin
M005670	Mus	2	Diphtheria toxin Human tumor cells
M005690	Mus	2	ELA, E.G7 OVA, Myc-Cap, prostate or fibroblast/sarcoma or B16 melanoma transduced with lenti-AR, lenti-PAP, lenti-OVA and/or lenti-SSX-2 to express antigens, A2Tg prostate tumors, and RWPE-1 (prostate immobilized epithelial cell line).
		2	pTVG-HPAP, pTVG-SSX2, pTVG-AR, pCIneocOVA, and pCIneosOVA
		2	Human exosomes Human peripheral blood monocytes cells
		2	Granulocyte macrophage colony-stimulating factor (GM-CSF), toll-like receptor agonists
		2	Recombinant Listeria monocytogenes (engineered to express PAP or OVA)
M005699	Mus	2	Human tumor cells
M00712	Mus Rattus	2	recombinant DNA (growth factors, cellular tumor repressor protein Rb, Dlg-1, cre recombinase)
M00843	Mus	2	human cancer cell lines pseudovirus

IACUC No.	Species	BSL	Name of Biological Agent
M00969	Mus	2	recombinant DNA (many) E. coli cloning strains Listeria vesicular stomatitis virus-OVA vaccinia virus-OVA LCMV-OVA attenuated adenovirus disarmed mouse retrovirus Fungi Histoplasma Paracoccidiodes brasiliensis Agrobacterium Aspergillus Candida albicans Saccharomyces cerevisae Listeria monocytogenes Rhizopus orzae Fusarium oxysporum Cryptococcus Geomyces destructans Fonsecea pedrosoi Diphtheria toxin
		3	Blastomyces
M01055	Mus	2	human cancer cell lines,
M01221	Mus Rattus	2	recombinant DNA cDNA encoding diphtheria toxin SMPH Agent 1 tetanus AAV lentivirus SMPH Agent 2
M01246	Mus	2	human cancer cell lines
M01247	Mus	2	human cancer cell lines diphtheria toxin
M01253	Mus	2	heat killed Epstein-Barr virus diphtheria toxin tetanus toxoid and diphtheria pediatrics vaccine
M01305	Rattus	2	siRNA microRNA pre-microRNA small molecule inhibitors,
M01441	Mus Rattus	2	adenovirus lentivirus retroviruses
M01479	xenopus	2	recombinant DNA
M01662	Mus	2	Human kidney cell lines
M01668	Mus	2	Recombinant DNA human cell lines
M01725	Rattus	2	S. aureus P. aeruginosa

IACUC No.	Species	BSL	Name of Biological Agent
M01732	Mus	2	Human cancer cell lines
M01744	Mus	2	Human cancer cell lines
M01769	Mus	2	recombinant DNA lentivirus hESC and iPS cells
M02036	Mus	2	recombinant DNA
M02059	Mus	2	pluripotent human stem cells NHP cells tetanus and diphtheria toxoid vaccines
M02066	Mus	2	recombinant DNA lentivirus human cells
M02249	Mus Rattus	2	human stem cells
M02251	Rattus	2	Adeno-associated Virus
M02269	Mus	2	human tumor cells
M02270	Mus Rattus	2	protozoan parasites
M02272	ambystoma	2	various RNAs viral vectors
M02275	Mus	2	recombinant DNA human cancer cells,
M02284	Mus	2	Adeno-associated Virus human induced pluripotent stem cells
M02285	Mus Rattus	2	recombinant DNA adenovirus diphtheria toxin human circulating angiogenic cells
M02289	Mus	2	human tumor cells
M02292	rat	2	rat mesenchymal stem cells rat macrophages human cells human stem cells LPS
M02293	Mus	2	pertussis toxin
M02298	Mus	2	AAV lentiviral packaging vector
M02311	Mus	2	tetanus toxoid/diphtheria vaccine human cells human stem cells
M02319	Mus	2	SMPH Agent 3 tetanus toxin recombinantly produced SMPH Agent 3
M02324	Mus	2	SMPH Agent 2 SMPH Agent 1
M02346	Mus	2	SMPH Agent 3 recombinantly produced SMPH Agent 3
M02447	Mus	2	human cancer cells
M02448	Mus	2	E. coli 1677

IACUC No.	Species	BSL	Name of Biological Agent
M02457	Mus	2	recombinant mycobacterium strains pertussis toxin diphtheria toxin
		3	Mycobacterium tuberculosis H37Rv
M02468	Mus	2	transgenic Aspergillus species Pseudomonas
M02472	Mus	2	human tumor cells
M02477	rabbit	2	iPSC iPSC-derived MSCs human BM-derived MSCs
M02478	Mus	2	murine papilomavirus
M02489	Mus	2	human and mouse cancer cells
M02491	Mus	2	vaccinia virus ectromelia virus
M02493	Mus	2	recombinant DNA and proteins human tumor cell lines human cells
M02496	Mus	2	transfected cells recombinant proteins human tumor cells human cells
M02501	Mus	2	Listeria mutants MRSA mutants RPWE-1 sarcoma cells
M02512	Mus	2	self-inactivating lentivirus AAV serotype 2/8
M02515	Mus	2	S. aureus P. aeruginosa Group A Streptococcus A. baumannii K. pneumoniae human cells
M02518	Mus	2	human cells human tumor explants
M02609	Mus	2	human cancer cells
M02619	Mus	2	recombinant DNA human cancer cells shRNA lentivirus transduced melanoma cells
M02624	Mus	2	human cancer cells
M02632	Mus	2	leukemia cells
M02633	Mus	2	genetically altered kaposi sarcoma associated herpesvirus human cord blood cells
M02634	Mus	2	recombinant DNA human bone marrow extract human stem cells
M02635	Mus	2	human cancer cells

IACUC No.	Species	BSL	Name of Biological Agent
M02645	Mus Rattus	2	recombinant human fibroblast growth factor human cancer cells human neural stem cells
M02648	Mus	2	Human bone marrow derived angiogenic cells endothelial progenitor cells

APPENDIX 19

Animal Social Housing & Enrichment Requirements (ASHER)

RARC: Animal Social Housing & Enrichment Requirements (ASHER)

1) **Social Housing**

a) Definitions: Single housing is defined as 1 animal in 1 primary enclosure; pair housing is 2 animals in 1 primary enclosure, and social housing is 3 or more animals in 1 primary enclosure.
   i) There are 2 categories of single housing:
      (1) Category 1 single housing: 1 animal in 1 room, or 1 animal per primary enclosure housed in way where there is no or minimal visual, olfactory, auditory and/or tactile contact with conspecifics.
      (2) Category 2 single housing: 1 animal per primary enclosure, with visual, olfactory, auditory, and/or tactile contact with conspecifics.

b) Social Housing Program
   i) Social housing will be applied according to this document.
   ii) Social housing strategies may differ from that described in this document if there is scientific justification and IACUC approval, or at RARC veterinary discretion.
   iii) Some individuals of a social species may be incompatible for social housing, such as adult male mice used for breeding, adult male rabbits and female hamsters.
      (1) These animals may be permanently separated into single housing.
   iv) Female rodents near the time of parturition may be singly housed to allow for recommended minimum space.
   v) There may be instances where there is only 1 individual animal of a social species; e.g., 1 animal remaining in a long-term study, or 1 animal ordered for a small or pilot study.
      (1) To prevent additional experimental variables (e.g., by the addition of a new animal to the pen/cage), these animals may be separated into single housing until the end of the experiment.
   vi) Some species (e.g., 13-lined ground squirrels) are not considered social and will be housed individually.
   vii) Enhanced environmental enrichment may be indicated for category 1 single housing; RARC veterinarians may evaluate this on a case-by-case basis.

2) **Environment Enrichment**

a) Environmental enrichment will be applied according to this document.
b) Environmental enrichment strategies may differ from that described in this document if there is scientific justification and IACUC approval, or at RARC veterinary discretion.

3) **IACUC Review**

a) At least once yearly each IACUC will review the **Animal Social Housing & Enrichment Requirements**

Each species will be in compliance with the UW Default Housing method. (see table on pg. 2 and 3). Each species should be provided with at least one of the Default Enrichment devices, with the option for including additional devices. Deviations from the defaults (housing or enrichment) are possible, but must be justified in the protocol or done at the direction of an RARC veterinarian.

(Footnotes apply on following table)

* All food must be vet approved; some animals may be on lower calorie or lower fat diets, so all treats may not be appropriate for all animals. Food enrichment must also not interfere with the study goals.

^ All toys must be vet approved.

✪ Default housing and enrichment only required for these species when being used in biomedical protocols.

RARC: Animal Social Housing & Enrichment Requirements (ASHER)

Species	Default Housing	Default Enrichment	Secondary Enrichment	3rd	4th
Mice	Social/pair housing	Nesting material	Shelters/ structures/lofts	Food treats* (sunflower seeds)	Exercise devices
Rats	Social/pair housing	Shelters/structures/lofts	Chewing items, nesting material	Food treats*	
Rabbits (also see page following table)	Females: social/pair housing (if possible) Males: singly (category 2)	Toys^, perching devices, shelters/structures	Larger runs, playtime outside of cage	Food treats*	Chew items
Hamsters	Females: singly (category 2) Males: pair housing (if possible)	Shelters/structures	Nesting material	Chew Items	Food treats*
Gerbils	Pair housing	Chew items, nesting material	Shelters/structures	Food treats*	
Guinea Pigs	Females: social/pair housing Males: pair housing (if possible)	Shelters/nesting materials	Food treats*	Chew Items	Positive human interaction
Dogs	Social/pair housing	Sufficient exercise space	Positive human interaction, food treats, toys^	Resting board, textile bedding when appropriate	
Cats	Social/pair housing	Elevated resting surface	Scratching devices, toys^	Positive human interaction, pheromone	Food treats*
Ferrets	Social/pair housing	Sleeping device, structures	Toys^	Food treats*	Positive human interaction
Ground squirrels	Single housing	Nesting material	Shelters/structures		

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RARC: Animal Social Housing & Enrichment Requirements (ASHER)

Chinchillas	Social/pair housing	Dust bath, shelters/structures	Play area, chew items	Food treats*	
Pigs ✪	Social/pair housing	Toys^	Ice, food treats*	Scratching surfaces	
Sheep ✪	Social/pair housing	Sheep in adjacent pen for singly housed animals	Complex forage/ Salt licks	Food treats*	

RARC: Animal Social Housing & Enrichment Requirements (ASHER)

Species	Default Housing	Default Enrichment	Secondary Enrichment	3rd	4th
Goats ✪	Social/pair housing	Climbing structure	Food treats*	Toys^	
Cattle (dairy) ✪	Intact males: singly (category 2) Others: social/pair housing	Dairy cow brush/ time on pasture/ complex forage	Positive human interaction		
Cattle (beef) ✪	Intact males: singly (category 2) Others: social/pair housing	Time on pasture/Complex forage	Salt licks	Cow brush	
Horses ✪	Intact males: singly (category 2) Others: social/pair housing	Time on pasture/ brushing/ positive human interaction	Food treats*		
Small birds (highly species dependent)	Pair/group housing	Perching structures	Visual cage barriers, shelters/structures, nesting material	Food treats*	Water baths
Reptiles (highly species dependent)	Pair/group housing (when species appropriate)	Shelters/structures	Hiding devices	Food treats*	
Amphibians (highly species dependent)	Pair/group housing (when species appropriate)	Shelters/structures	Hiding devices	Food treats*	
Fish (highly species dependent)	Pair/group housing (when species appropriate)	Hiding devices (when species appropriate)			
Nonhuman primates					

Dr. [redacted] March 2015

RARC: Animal Social Housing & Enrichment Requirements (ASHER)

Social Housing of Rabbits

Purpose:

The ILAR *Guide for the Care and Use of Laboratory Animals*, 8th edition (2011) states that "Appropriate social interactions among members of the same species (conspecifics) are essential to normal development and well-being"[1] but acknowledges that social housing is not always possible -- -- "Not all members of a social species are necessarily compatible. Social housing of incompatible animals can induce chronic stress, injury, and even death."[1] This document details specific information and requirements for the social housing of rabbits.

University of Wisconsin Program for Social Housing of Rabbits:

1. Male rabbits are not considered social due to aggressive and territorial behaviors. Male rabbits are not to be pair- or group-housed. Castration of intact rabbits to mitigate aggressiveness is not considered to be in the best interest of animal well-being, and may create unwanted study variables. For the purposes of this program, castration is not considered to be an acceptable practice solely for the purpose of attempting to socially house male rabbits.
2. Female rabbits of any age may be singly housed if there is clearly defined scientific justification for single housing in the pertinent ACUC-approved animal use protocol(s); such justification will be reviewed by the ACUC at least once every 3 years during protocol renewal.
3. Female rabbits ≥18 weeks of age that have never been pair- or group-housed are not to be socially housed, as older rabbits display aggressive behaviors and there is increased risk for harm to animal well-being.
    a. At the discretion of the research animal veterinarian, female rabbits ≥18 weeks of age that have at one time been successfully housed with other rabbits, and that are on a study with no scientific justification for single housing, may be socially housed; such housing will be discontinued if aggressive behaviors are displayed that endanger animal well-being
4. Female rabbits <18 weeks of age will be pair- or group-housed.
5. Veterinary-directed exceptions to required pair- or group-housing as defined by this document are acceptable, if based on clinical or animal well-being needs. Such exceptions must be documented in the animal's clinical record and include reasoning for the exception and a description of pertinent long-term husbandry plans. The ACUC will be informed of any veterinary-directed exceptions.
6. In all cases of single housing of rabbits, provisions will be made to house rabbits so that tactile and/or visual and/or olfactory contact with conspecifics is allowed, with the exception of category 1 single housing; in these cases, enhanced forms of environmental enrichment may be utilized as per veterinary direction.

Reference:

Institute of Laboratory Animal Resources (U.S.) 2011. *Guide for the Care and Use of Laboratory Animals 8th ed.*, Washington, D.C.: National Academy Press

APPENDIX 20

SMPH Summary:
Prolonged Restraint

Appendix 20: Prolonged Restraint

IACUC No.	Species	Type of Restraint	Duration	Acclimation	Monitoring
M005144	Mus	Restrict normal movement in tube device.	2 hours	N/A – purpose is to induce mild stress	Monitor continuously while in restraint tubes. Immediately removed and returned to home cage if signs of extreme distress.
M005292	Zebrafish	Whole body restraint. Embryos in methylcellulose for observation.	5 days (before they begin feeding)	N/A for this procedure	Observation at least every 12 hours. Euthanasia if moribund.
M005303	Mus	Whole body restraint in loose sleeve that restricts animal movements to a location in sound exposure study.	4 hours	Mice adapt readily to the sleeve.	Every 5 min during restraint. If mice show no signs of struggle or distress, increase intervals to 30 minute maximum.
M005416	Mus	Limb immobilization with plaster cast	2 weeks	N/A for this procedure	Daily for chewed plaster, abrasions, venous occlusion, urine scalding and ambulation.
M005541	Rattus & Mus	Restrict normal movement in small container	2 hours	N/A – purpose is to induce mild stress	Observed for respiration and physical alertness during restraint.
M005569	Mus	Whole body restraint in tube so tail can be exposed to parasitic water.	65 minutes	Mice adapt readily to restraint device.	Observed for duration of restraint.
M005697	Mus	Head restraint for in vivo imaging of brain.	10 hours	Daily training sessions for one week with positive reinforcement.	Continuous

APPENDIX 21

Acronym List

Appendix 21: Acronyms

AALAS	American Association for Laboratory Animal Science
ACAPAC	All Campus Animal Planning and Advisory Committee
ACRQ	Animal Contact Risk Questionnaire (UW-Madison's Medical Evaluation Form)
ALAT	Assistant Laboratory Technician (AALAS Certification Level)
ARROW	Application Review for Research Oversight at Wisconsin (online protocol submission system)
ARS	UW-Madison Animal Research Safety
ART	Animal Research Technician
ASHER	Animal Social Housing and Enrichment Requirements document
ATS	Animal Transfer Station
BRMS	Biomedical Research Model Services (formerly Lab Animal Resources)
BSC	Biological Safety Cabinet
BSL	Biosafety Level
CALS	UW-Madison College of Agricultural and Life Sciences
CBSP	Certified Biological Safety Professional
CDC	Centers for Disease Control and Prevention
CEO	Chief Executive Officer
CHP	Chemical Hygiene Plan
CIH	Certified Industrial Hygienist
[redacted]	[redacted]
CPIA	Certified Professional IACUC Administrator
[redacted]	[redacted]
DACLAM	Diplomate, American College of Veterinary Medicine
DMR	Designated Member Review
EH&S	Environment, Health and Safety. A Division of UW-Madison Facilities, Planning and Management (FP&M)
ETO	Ethylene Oxide (EtO) gas sterilization
ETS	Office of Engineering and Technical Services
FP&M	UW-Madison Facility, Plant & Management department
IBC	Institutional Biosafety Committee
IO	Institutional Official
ISSCR	International Society for Stem Cell Research
IVCs	Individually Ventilated Caging Systems
LAR	Laboratory Animal Resources (former name of BRMS)
LAT	Laboratory Animal Technician (AALAS Certification Level)
LATG	Laboratory Animal Technologist (AALAS Certification Level)
L&S	UW-Madison College of Letters and Science
[redacted]	[redacted]
MPH	Master of Public Health degree
[redacted]	[redacted]
NAS	National Academies of Science
NIH	National Institutes of Health

OBS	UW-Madison Office of Biological Safety
OLAW	PHS Office of Laboratory Animal Welfare
ORIP	NIH's Office of Research Infrastructure Programs
ORS	UW-Madison Office of Radiation Safety
PAPR	Powered Air Purifying Respirator
PHS	Public Health Service
PI	Principal Investigator
PPE	Personal Protective Equipment
RARC	Research Animal Resources Center
[redacted]	[redacted]
SCRO	Stem Cell Research Oversight Committee
[redacted]	[redacted]
SMPH	UW-Madison School of Medicine and Public Health
SOP	Standard Operating Procedure
SVM	UW-Madison School of Veterinary Medicine
[redacted]	[redacted]
UHS	UW-Madison University Health Service
USDA	United State Department of Agriculture
UW	University of Wisconsin
VCRGE	Office of the Vice Chancellor for Research and Graduate Education (formerly the Graduate School)
[redacted]	[redacted]