Program Description
Animal Care and Use Program

Hunter College
of the City University of New York

695 Park Avenue, New York, NY

April 2019

For
AAALAC International

Program Description

Section 1. Introduction

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

Hunter College of the City University of New York (CUNY)

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.

Hunter College is a senior college and the largest unit of the City University of New York. It is located on the Upper East Side of Manhattan, immediate neighbor to Weill Cornell Medical College, the New York Academy of Science, The Rockefeller University, and Memorial Sloan-Kettering Cancer Center. Hunter was established in 1870 as a woman's undergraduate college whose mission was to train high-quality teachers for New York City public schools. Hunter takes pride that more women holding doctorate degrees in the country today received their bachelor's from Hunter College than from any other American college or university. Further, we are the only institution in the world from which two female Nobel Laureates earned their undergraduate degrees (Rosalind Yalow, 1978 and Gertrude Elion, 1988). Hunter has been coeducational since 1964. Since its inception, the characteristics of its student body have gradually changed from American-born and middle class to a mixture of ethnic backgrounds and economic strata. Throughout this evolution in the student body, Hunter has maintained the same mission: to provide quality undergraduate education for New York City's diverse population of students. There is a strong institutional commitment to educating students from underrepresented populations. In 1969, the New York State Legislature made Hunter one of the senior colleges of the CUNY system. CUNY is one of the largest university systems in the United States, with seven senior colleges, six community colleges, a technical college, graduate school, a law school, a school of public health and a new medical school. Hunter itself has approximately 700 faculty, 17,000 undergraduates and 20,000 students overall.

Hunter is a Science and Liberal Arts college offering about 50 disciplinary degrees, including Biology, Chemistry, Mathematics, Physics, and Psychology. Within many majors, there are opportunities for advanced undergraduates to take graduate courses and to participate in funded research. Hunter is a major participant in the CUNY Ph.D. programs in Biochemistry, Biopsychology, Chemistry, Molecular, Cellular and Developmental Biology, and Physiology and Neurobiology. There are 50 research laboratories at Hunter, each headed by a tenure-track faculty member. Hunter has increasingly strong doctoral-level programs in biomedical research

administered through the Graduate School. At Hunter, investigations using animal models are some of the most important components of the research effort, and the primary goal of Hunter's animal resource program is to provide optimal conditions for housing animals used in research projects. Hunter College conducts high quality internationally recognized research that is supported by a number of PHS funding sources. As part of this research, the faculty at Hunter College also provides top notch scientific and research training for a large, highly motivated and diverse undergraduate student population, the first science experience for many, who then pursue scientific research as a career. To support this effort the College maintains a centralized and effectively run animal facility that is the focus of this program description.

C. Note that AAALAC International's three primary standards are *the Guide for the Care and Use of Laboratory Animals* (*Guide*), NRC, 2011; the *Guide for the Care and Use of Agricultural Animals in Research and Teaching* (*Ag Guide*), FASS, 2010, and the European Convention for the Protection of Vertebrate Animals Used for Experimental and Other Scientific Purposes, Council of Europe (ETS 123). Other regulations and guidelines used (U.S. Department of Agriculture (USDA), Public Health Service (PHS) Policy, Good Laboratory Practice (GLP), Canadian Council on Animal Care (CCAC), etc.) may also apply. Describe which of the three primary standards and other regulations and guidelines are used as standards for the institutional animal care and use program and how they are applied. For example, an academic institution in the United States with an Office of Laboratory Animal Welfare (OLAW) Assurance may use the standards of the *Guide* and PHS Policy for all animals, the Animal Welfare Act regulations for covered species, and the *Ag Guide* for agricultural animals used in agricultural research and teaching (see also *Guide*, pp. 32-33). In the European Union, the standards applied might be the *Guide*, ETS 123, Directive 2010/63, and any country-specific regulations.

Hunter maintains an Animal Welfare Assurance with the NIH Office of Laboratory Animal Welfare (OLAW) and uses the standards of the Public Health Service (PHS) Policy on Humane Care and Use of Laboratory Animals (Policy), the *Guide for the Care and Use of Laboratory Animals (Guide),* and the New York State Department of Health Laboratory Animal Welfare Program, Title 10 New York Codes, Rules and Regulations Subpart 55-1 to evaluate the program for animal care and use.

D. Describe the organization and include an accurate, current, and detailed organizational chart or charts 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 publicly available, provide the titles and names; for individuals whose information is not publicly available, you may provide titles only.), and degree (if applicable) of each individual at the level of supervisor or above. Names of animal care staff below the title of supervisor need not be included, but the titles and number of animal care personnel under each supervisor should be

included. If animal care responsibility is administratively decentralized, including the management of satellite housing areas/locations, the organizational chart or charts must include all animal care programs, indicating the relationship between each administrative unit and personnel, the Attending Veterinarian, and the Institutional Official.

There are clear, unambiguous lines of authority and responsibility for the Animal Care and Use program at Hunter. The overall authority rests with the college [redacted], and in that role, ensures that the animal care and use program complies with federal, state and local laws, regulations, policies and guidelines. The IACUC reports to the Institutional Official.

[redacted] and is an employee of Hunter College. The animal facility is managed by [redacted] who is [redacted] reports to Dr. [redacted] who reports directly to the college [redacted].

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.

[redacted]

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

Hunter currently has 23 approved animal protocols from 19 different Principal Investigators. Below, we provide narrative summaries of exemplar projects from the major laboratories employing animal models.

[redacted] uses targeted mutagenesis and mouse genetics to examine how the odorant receptor (OR) functions in odor detection and axonal projections. [redacted] employs mouse embryonic stem cell technology coupled with genetic manipulation to alter the expressed OR proteins. [redacted]s interested in understanding how olfactory neurons control OR gene expression and how the OR protein provides specificity for axonal projections to form discrete units in the brain.

[redacted] overall research goal is to provide novel insights into the mechanisms that regulate myelin morphology and formation in the PNS and

CNS. The [redacted] lab employs the basic understanding of the molecular machinery of myelination to explore development of new therapeutic strategies to promote remyelination in pathological conditions such as multiple sclerosis.

[redacted] is studying transcriptional regulation during T-cell development using transgenic mice as models. These models allow determination of the role of regulated chromatin structure on gene expression and the specification of the T-cell lineage in vivo. The lab is specifically investigating the function of the Locus Control Regions (LCR) in the mouse T-cell receptor. [redacted] has identified sub-elements of the LCR that may be useful in gene therapy methods to treat genetic diseases of the hematopoietic system.

[redacted] uses the songbird to study mechanisms of vocal learning. [redacted] lab studies the animal behavior and dynamics of vocal learning and sound production across different brain levels. The lab aims to uncover the specific physiological and molecular (gene expression) brain processes that underlie song learning.

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

All animals used at Hunter are enrolled in funded research projects. All but two small satellite fish labs are supported by peer-reviewed grants. Current sources of funding include NIH, NSF and DOD.

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

NA

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.

NA

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

Section 2. Description

I. Animal Care and Use Program

A. Program Management

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

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

The procedures for making recommendations to the Institutional Official regarding program needs are:
1. The AV reports directly to the IO and meets with [redacted] on a regular basis to discuss all relevant aspects of Animal Facility operation.
2. The IACUC makes written recommendations to the [redacted] on critical issues concerning the College's program of animal care and use, animal facilities, and personnel training. Typically, the IACUC chair drafts a memo which is reviewed by the IACUC at its next meeting. Occasionally the memos are written during the course of an IACUC meeting. In either case, revisions are made; the memo is approved and sent to the [redacted].
3. The IACUC semi-annual reports are sent directly to the IO. Any IACUC-approved departures from the PHS Policy and the Guide are included in the report with reasons for each.

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

i. Describe the institutional arrangement for providing adequate veterinary care. Although individual name(s) and qualifications will be described below, identify by title the veterinarian(s) responsible for the veterinary care program, including:
- a list of responsibilities
- a description of the veterinarian's involvement in monitoring the care and use of laboratory animals
- the percentage of time devoted to supporting the animal care and use program of the institution if full-time; or the frequency and duration of visits if employed part-time or as a consultant.

[redacted] is employed full time as the College Veterinarian and devotes 100% of [redacted] time to the animal care and use program. [redacted] responsibilities include oversight for: 1) Disease detection and surveillance, prevention, diagnosis, treatment, and resolution; 2) Handling and restraint; anesthetics, analgesics and tranquilizer drugs; and methods

of euthanasia; 3) Surgical and postsurgical care; 4) Promotion and monitoring of animals physical and psychological well-being; 5) Adequacy of the husbandry program; 6) Involved in the review and approval of all animalcare and use via [redacted] role on the IACUC; 7) Training of institutional staff in the care and use of laboratory animals; 8) Assists in establishment and monitoring of occupational health and safety program; 9) Monitors for zoonotic diseases; 10) Advises on and monitors biohazard control policies and procedures relevant to the animal care and use program.

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.

Veterinary care is provided exclusively by the veterinarians listed above.

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

NA

2. Personnel Management

a. Training, Education, and Continuing Educational Opportunities
Describe *how* the IACUC/OB provides *oversight* and *evaluates the effectiveness* of training programs and the assessment of personnel competencies. Describe how training is documented.
Note: Do not include details about the training program, which should be described in the following sections.

All individuals who plan to work with animals at Hunter must receive appropriate species-specific training or demonstrate previously acquired skills before embarking on an animal research project. The response to Question 8 of the IACUC PROTOCOL REVIEW FORM must include a list of all personnel who will work with animals and the details of their training status relative to proposed techniques. The IACUC evaluates the effectiveness of training and skill assessment in the context of Post Approval Monitoring.

Training records are maintained in a laboratory notebook and in an electronic Animal Information Management System (AIMS) database. The IACUC checks with the Facility Manager to confirm qualifications before personnel are

approved to begin work on a protocol. If a trainee does not begin working on a project within one year, training must be repeated.

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

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

Note: Please do not provide curriculum vitae of personnel

[redacted]

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

1) Indicate the number of animal care personnel.

2 full-time and 6 part-time

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

Four of the current animal care personnel have more than 10 years' experience in veterinary technology. All of the full-time and two of the part-time technicians are certified by AALAS. Both of the full-time and four of the part-time technicians hold Associate's degrees in Veterinary

Technology, and three are NYS licensed Veterinary Technicians. The Training Coordinator provides additional on the job training as needed. Staff members attend continuing education workshops and lectures available through the local Metro AALAS. Whenever feasible, senior staff members attend National and Regional conferences and seminars. All full time employees are included on the local AALAS institutional membership and senior staff are institutional members of National AALAS. Hunter also serves as a placement site for Vet Tech interns during the required research rotation. CUNY maintains an institutional SCAW membership and Animal Facility staff are encouraged to attend SCAW regional workshops and conferences. For the last several years, CUNY has hosted and co-sponsored the September SCAW IACUC Training Workshop.

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

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

All researchers must be trained to work with animals before they can be listed as approved personnel on a protocol. This includes faculty, laboratory staff, post-doctoral fellows, graduate and undergraduate students. Researchers who have previously received training at another institution must demonstrate species-specific skills such as restraint and injection to the Training Coordinator before employing those techniques at Hunter.

Principal investigators provide a signed certification statement that they will: follow the methodology outlined in the approved protocol, seek and obtain approval before making any substantive modifications, conduct the project in accordance with PHS policy, and report to the IACUC any significant unforeseen distress caused to the animals. Additional personnel must read the applicable protocol, discuss it with the PI and provide a signed statement (CERTIFICATION FOR PERSONNEL form) certifying that they have read the approved protocol. The individual Certification forms are reviewed by the IACUC at a convened meeting.

a) Briefly describe the content of any required training.

All personnel must complete the online Collaborative Institutional Training Initiative (CITI) Laboratory Animal Welfare course. Following successful completion of the CITI course, trainees schedule appointments for a Facility tour and orientation. Trainees

are also briefed on potential hazards and control, including personal protection. They are taught how to properly dispose of biohazardous waste. Subsequent sessions include proper handling and restraint, injection techniques, pre- and post-operative care, aseptic surgery, anesthesia monitoring and use of the isoflurane anesthesia machine, if needed.

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

To be considered qualified to work on a protocol, proficiency in all relevant techniques must be demonstrated to the Training Coordinator. There is no time limit on this training. This process may be completed in 2 or 3 one-hour sessions or may take several weeks, depending on aptitude and the number of techniques to be mastered. Trainees may not work with animals until the entire training process has been completed, and they have been added to the list of approved personnel on a particular protocol. Certification is specific to the techniques mastered and the specific protocol. Before being added to the list of approved personnel on another protocol using different methodologies, the individual must undergo additional hands-on training in these methods. The AV may require that personnel undergo retraining if problem areas are identified.

c) Describe continuing education opportunities offered.

Investigators are informed about relevant webinars presented by AALAS and OLAW and seminar rooms are often reserved for group viewings. Researchers are encouraged to attend special topic seminars offered by Charles River or JAX and hosted by local biomedical institutions. CUNY is an institutional member of SCAW and co-hosts an annual IACUC Training Workshop open to staff and researchers.

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

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

Individuals who have little or no experience, or individuals who will be performing procedures with which they are unfamiliar, receive orientation and training specific to their needs from the veterinary staff. All new investigators, technicians, or students who will handle animals

are interviewed by the AV and/or Training Coordinator who evaluate their experience and qualifications and recommend further hands-on, procedure-specific training. New surgeon investigators are required to demonstrate to the veterinary staff their knowledge of relevant anatomy, and their proficiency in the specific procedure on cadaveric specimens or non-survival surgery, prior to conducting any survival surgical procedures. New students and technicians are mentored by experienced personnel in their home laboratory.

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

All research personnel, including Principal Investigators, must complete a 3-hour hands-on training session with the Training Coordinator before embarking on a project that involves anesthesia. After successful completion of the training session, trainees are further required to arrange observation of their initial anesthetic procedure by the Training Coordinator before they are registered as "approved" to induce anesthesia on their own. This requirement pertains to administration of injectable and inhalation anesthesia.

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

Euthanasia is performed by investigators and their technicians following IACUC review of their documented experience in the techniques they intend to perform. All euthanasia techniques, including CO2 narcosis, must be demonstrated to and approved by the Training Coordinator.

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

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

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

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

Two years ago, the CUNY Animal Advisory Board was established under the auspices of the university central office of Research Administration and Compliance. The committee includes representation from Hunter and the other five senior colleges that have large laboratory animal programs. One of the initial goals of the board was to target areas of resource sharing that could enhance the effectiveness of the local OHS programs for animal users. Several significant improvements have been implemented and are included in descriptions that follow.
Hunter's Occupational Health Program is administered through the Office of [redacted] in conjunction with the Office of [redacted]. The [redacted] is a voting member of the IACUC, and the AV is a member of the Radiation Safety Committee and the Institutional Biosafety Committee (IBC). The various institutional safety offices work closely to implement the current program and redesign it as necessary.

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

Hunter has drawn from the guidelines and policies established by various federal and state agencies in establishing its policies and procedures which apply college-wide. For purposes of environmental health and safety, the animal facility is considered a laboratory and is fully incorporated into the overall applicable college safety programs. The facility endures routine inspections for chemical hazards and fire safety. Mandatory laboratory safety training is required of all animal users, facility personnel and IACUC members.
All housekeeping services are provided by dedicated animal facility staff and visitors are not permitted beyond the entry vestibule.

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

Work-related hazards are regularly reassessed in the context of the IACUC semi-annual program review. Protocol-specific hazards are re-evaluated through the Annual Update form and the triennial protocol renewal.

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

Exposure incidents are handled according procedures developed by the Safety Committee. The victim dictates or provides a full written report. The Committee, in conjunction with the victim's immediate supervisor, develops recommendations for corrective measures that will reduce the likelihood of similar incidents in the future.

ii. Standard Working Conditions and Baseline Precautions

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

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

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

All personnel complete the Confidential Medical History Questionnaire. CUNY has a contract with the Selikoff Center for Occupational Health at the Mt Sinai Hospital and Health Center that includes medical evaluation for new non-student employees. [redacted]

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

All personnel working with laboratory animals must be enrolled in the program. Animal facility access is strictly limited by card swipe which

is granted only to those who have received OHS clearance. All IACUC members who participate in facility inspections are enrolled in the program.

c) Describe provisions for assuring confidentiality of medical information.

Completed confidential medical history questionnaires are presented directly to the reviewing medical health professional who maintains full HIPAA compliance.

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

The outside contractor providing regular cage washer maintenance is shared by several neighboring institutional animal facilities and has been cleared through the OHS program of our AAALAC-accredited academic affiliates. In-house Facilities personnel are included in the college-wide OHS program. No in-house engineers or outside contractors ever work in occupied animal rooms.

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

- pre-employment/pre-assignment health evaluation,
- medical evaluations (including periodicity),
- diagnostic tests (e.g., for tuberculosis),
- precautions for working with potentially hazardous species (e.g., nonhuman primates, sheep, venomous species)
- immunization programs, and
- procedures for communicating health related issues.

New non-student employees are processed through the Center for Occupational Health and [redacted] All personnel working with laboratory animals must be current on tetanus immunization.

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

In the event of an injury, the Medical Office is contacted immediately; if outside of working hours, the office of Public Safety and Security is contacted to arrange transport to New York Hospital.

All treatment decisions are the responsibility of treating medical personnel.

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

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

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

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

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

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

The CITI online training required of all animal users includes an Occupational Health and Safety module that addresses zoonoses, personal hygiene and allergies. Facility personnel receive in-service seminars on topics such as general laboratory safety, chemical disposal, handling of sharps, ergonomics, cage wash chemicals and hand-washing. College-wide safety training is repeated and updated on an annual basis.
Research personnel are carefully educated about potential risks involved in working with laboratory animals. This is done as part of the facility orientation required before animal work can be done. Hunter has developed a policy entitled “Information for Personnel with Potential Exposure to Animal-related Allergies” which includes a section on preventive measures and interventions. New personnel must be familiar with this policy before being granted card swipe access to the Facility.

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

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

Scrubs, steel-toed shoes, lab coats, masks, gloves, disposable gowns, face shields, bonnets/caps, shoe covers

b) Describe arrangements for laundering work clothing.

The Animal Facility maintains a dedicated washer and dryer available for laundering work clothing. EHS provides access to an outside laundry service for cleaning lab coats.

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

Sinks and antibacterial soap dispensers are available in each animal room and work area. Staff members are instructed to wash their hands before and after working in the Animal Facility, and to wear gloves when handling animals. Wearing of gloves is not permitted outside of laboratories or animal rooms. Work clothes are not to be worn outside of the Facility. There is a single locker room with a separate shower area for both men and women.

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

Hunter maintains a smoke-free campus. Eating, drinking and application of cosmetics are prohibited in animal rooms, laboratories, treatment rooms, operating or 'prep' rooms. A cafeteria is available for meals and coffee breaks.

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

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

Design features and equipment that reduce potential for physical injury include:
1) non-skid epoxy flooring throughout the Facility.
2) doors open into rooms
3) ear plugs for personnel who work in high noise areas
4) heat protective gloves for handling autoclaved and newly washed items
5) eye wash stations

6) fire extinguishers and blankets, spill kit, and first aid kits
7) adjustable seating for long procedures

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

Contact with rodents, their secretions, excretions and bedding constitute the greatest potential allergen exposure. Hunter has developed a policy entitled “Information for Personnel with Potential Exposure to Animal-related Allergies” which includes a section on preventive measures and interventions. New personnel must be familiar with this policy before being granted card swipe access to the Facility. At a minimum, the use of a dust-mist respirator is required to control symptoms. Additional facility design features and equipment include:

- a downdraft bedding scraping station in Dirty Cage Wash
- Thoren ventilated racks operated under negative pressure
- N95 respirator available after respiratory fit-testing

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

All rodents are SPF and are not known to harbor zoonotic pathogens. The zebra finches are bred in-house with no new introductions in over 10 years. This closed colony is free of zoonotic pathogens. Fish are not handled directly.

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

The bedding dumping station is vented directly to the facility exhaust system. Magnehelic gauges on the ventilated racks are checked daily to insure negative pressure operation.

e) Respiratory Protection

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

Both surgical masks and dust mist respirators are available to all facility personnel and animal users.

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

The reparatory fit-testing program is managed through the Hunter Office of Environmental Health and Safety. They employ the 3M online Respirator Evaluation service with additional follow-up as required (based on the medical questionnaire review) by the Mt. Sinai Selikoff Occupational Health Center.

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

All respirator users are followed by the Environmental Health and Safety office.

f) Heavy Equipment and Motorized Vehicles

i) Provide a general list of the types of cage-processing equipment used, such as rack/cage washers, tunnel washers, robotics, and bulk autoclaves. Describe training programs, informational signage, and other program policies designed to ensure personnel safety when working with such equipment.

- Mechanical washer - BASIL (RW4600), double-door rack/cage/bottle washer
- Automatic Bottle Filler – BASIL Model BF1000 Bottle Filling Station
- Sterilizer – Environmental Tectonics Corp (ETC), hi-vacuum, pass- through, steam sterilizer
- Bedding dump station – TBJ Incorporated (BSS-1DD) downdraft bedding scrapping station

All of the animal care technicians are trained to operate the mechanical washer which was refurbished two years ago. The BASIL double door rack washer is equipped with low-incline ramps with non-skid surfaces and a quick release cord for the door latch that prevents personnel from becoming trapped inside. Prominent signage provides guidance regarding emergency escape procedures. Cage wash staff are instructed to wear heat protective gloves when handling autoclaved and newly washed items. Cage wash area safety precautions are emphasized in the new employee orientation, conducted one-on-one by the Training Coordinator.

ii) List other heavy equipment such as scrapers, tractors, and farm machinery (manufacturer name, model numbers, etc. are not necessary). Describe training programs, informational signage, and other program policies designed to ensure personnel safety when working with such equipment.

NA

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

NA

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

Volatile anesthetic waste gases (isoflurane) are exhausted from the scavenging valve into an f/air® canister that absorbs halogenated agents. The canister is considered to be saturated, and is retired, when it has increased in weight by 50 grams. Vaporizers are filled with isoflurane using a specially designed connecting tube that prevents spillage.

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

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

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

NA

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

NA

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

NA

2) Experiment-Related Hazard Use [*Guide*, pp. 18-19; See also Chapters 2 and 3 in *Occupational Health and Safety in the Care and Use of Research Animals*, NRC 1997].
Note: Written policies and standard operating procedures (SOPs) governing experimentation with hazardous biological, chemical, and physical agents should be available during the site visit.

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

The experimental use of potentially hazardous agents in animals is identified and described in the IACUC protocol form. Personnel who will use hazardous agents while working with animals are identified explicitly by name or position in the application. These protocols are referred to the appropriate safety committee or safety officer for evaluation. Before the proposal receives approval, a precise and customized plan for handling the hazard is developed by the Investigator in conjunction with a representative of the Safety Committee and the Attending Veterinarian. Special attention is given to personnel exposure and protection, and waste disposal.

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

The procedures involving animals, the plan for appropriate training, for handling of the material and the animals, and for appropriate disposal and decontamination must be approved by the appropriate Committee or Officer and by the IACUC and the Attending Veterinarian before the project is initiated.

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

Potentially infectious/hazardous waste is handled as regulated medical waste, deposited in red bag receptacles, sealed, labeled and delivered to the [redacted]

[redacted] Sharps are deposited in containers located throughout the Facility and collected with the Biohazardous Waste.
Carcasses are frozen, then sealed in red bags, boxed and delivered to the [redacted] and ultimately removed by a licensed medical waste carter.

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

NA

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

[redacted] provides oversight and maintains the file of approved SOP's for each hazardous agent.
The Manager of the Animal Facility discusses all new protocols with the staff. Any issues related to hazardous materials, or occupational health and safety are discussed and employees' concerns and questions are addressed by the manager or by a representative of the Safety Committee.

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

a) Describe locations, rooms, or facilities used to house animals exposed to hazardous agents. Identify each facility according to the hazard(s) and containment levels (if appropriate*).*

NA

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

NA

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

Currently there is one 104 sq. ft. room available for housing mice that have been treated with bio-hazardous agents. The room is equipped

with a biosafety cabinet and maintained at negative pressure relative to the corridor. The biosafety cabinet is re-certified annually by an outside contractor engaged to certify hoods college-wide.

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

The Attending Veterinarian and the Facility Manager, in conjunction with the Principal Investigator and the appropriate Safety representative, develop a customized SOP for each hazardous agent that is approved for use in live animals. The Facility supervisory staff monitors adherence to the SOP.

e) Incidental Animal Contact and Patient Areas

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

NA

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

Except for a few IACUC-approved specific circumstances, live animals do not leave the Facility. In such circumstances, personnel are instructed to use the keyed freight elevator only, and to cover the cages or containers of animals with drapes or other opaque material. Once removed, live animals maintained in breeding colonies may not return to the Facility. Recently sacrificed animals or specimens that are transported to research laboratories must be concealed in opaque containers.

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

i. Describe Committee membership appointment procedures.

IACUC members are officially appointed by the IO. Faculty members are principally recruited from the departments of Biology and Psychology. Terms of appointment are open-ended.

ii. Describe frequency of Committee meetings.

The IACUC meets as often as necessary to review proposals, usually 10 times per year. The schedule of monthly meetings for the academic year is established prior to the first meeting and posted to the IACUC website.

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

The CITI (Collaborative Institutional Training Initiative) training program for IACUC members was introduced by the City University of New York (CUNY) in June 2010 and has since become the basis for new member training. The Committee Chairman provides a general orientation that covers the underlying principles of the Guide, protocol review, and the institutional policies regarding the use of laboratory animals. All members receive copies of the Guide as well as other literature from OLAW and AWIC. Members are encouraged to work through the IACUC tutorial on the OLAW web site and view the regular OLAW webinars. Members are also encouraged to attend the SCAW annual IACUC Training Workshop hosted and co-sponsored by CUNY and the many local conferences and seminars on animal care and use issues. IACUC members are also trained through experience on the committee. Several members have more than ten years of experience. New members are mentored by a veteran member.

b. Protocol Review [*Guide*, pp. 25-27]

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

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

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

All proposals, applications, and protocols involving the use of vertebrate animals are submitted to the IACUC for review. Protocols are received by the IACUC Coordinator and are entered in a database. Initial review for completeness and consistency with established Hunter procedures is conducted by the Coordinator. An agenda listing all protocols to be reviewed and copies of the protocols are distributed by hand to affiliated members, and by express mail to unaffiliated members, in advance of the meeting. Protocols involving the use of potentially hazardous materials (biological, chemical, or radioactive) must also be reviewed by the appropriate safety committee or safety officer.
Because of the relatively small number of applications reviewed per year, Full Committee Review (FCR) is conducted on all proposals. Approval is only granted after review at a convened meeting of a quorum of the IACUC and with the approval vote of a majority of the quorum present. The Committee may invite consultants to assist in the review of complex issues; such consultants do not have the right to vote on approval or disapproval. The IACUC provides written reviews of each application to the principal investigator. If the initial application is not approved, this review includes a detailed listing of the issues to be resolved and necessary modifications to secure approval. The IACUC has the authority to withhold approval if these conditions are not met. The possible outcomes of the initial review are:

1) Approval
2) Not approved with a requirement for modifications to secure approval
    a) Additional clerical information requested:

Revision reviewed by the Committee chair; Chairman has authority to grant approval once changes are made.

    b) Additional information or modifications requested:

All IACUC members have agreed agree in advance that the quorum of members present at a convened meeting may decide by unanimous vote to use DMR subsequent to FCR when modification is needed to secure approval. However, any member of the IACUC may, at any time, request to see the revised protocol and/or request FCR of the protocol
3) Disapproval

Protocols that do not involve formal grant proposals to external agencies are held to the same standards and criteria as proposals that are accompanied by formal applications.
The Committee uses information provided in response to questions 13 and 16 to carefully perform a cost-benefit analysis in attempt to determine that the potential benefits of the proposed research outweigh the adverse effects on the animals.

Protocols that have potential to cause pain or distress to animals are carefully evaluated by the Attending Veterinarian to determine whether proposed methods of pain and stress control are appropriate and consistent with Hunter Analgesia Guidelines which emphasize pre-emptive analgesia. Within the context of the protocol form, investigators are prompted (electronic links provided) to reference and adhere to institutional guidelines or provide compelling justification for deviation. Question 23 of the form requests evidence of the investigator's familiarity with published literature in his proposed area of research and provides guidance on seeking alternatives to potentially painful procedures. Protocols that involve unrelieved pain or distress are held to an especially high standard. Before considering the protocol the Committee would be briefed by the Attending Veterinarian on perception of pain by animals and of methods for assessing and controlling pain. The investigator would be expected to demonstrate to the Committee that the value of the scientific information to be gained justifies withholding analgesia or anesthesia, and the scientist members of the Committee would be asked to make an explicit assessment of the importance of the proposed work. All animals subjected to potentially painful procedures are carefully monitored on an individual basis by both the AV and the Veterinary Technician.
The response to Question 20 of the protocol form includes justification of the number and sex of animals used in relation to the Specific Aims and Experimental Design. Investigators are prompted to reduce extraneous variables which would be expected to confound results, increase variability, and require greater animal numbers to demonstrate significant differences between groups by using inbred strains when available or using a within subjects design. Question 20 also includes a series of questions regarding specific statistical analysis that will be employed to evaluate data. The statistician who is a member of the IACUC carefully reviews the responses to Question 20 and guides the committee discussion.

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

Any modification of an "active" protocol must be submitted to the IACUC as an "AMENDMENT". The modifications must be described and justified fully. Proposed amendments (e.g. change in personnel, the addition of new surgeries, increasing the total N by more than 10%, a change in anesthetic, a change in behavioral testing paradigm or any other change in methodology) are reviewed by the full committee using the procedures described above.

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

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

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

Investigators are counseled to follow Hunter's policy regarding humane endpoints (Guidelines for Humane Endpoints), which is posted on the IACUC website, when designing new studies.

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

There are currently no approved protocols that employ alternatives to institutional policy.

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

Pain and distress in animals are monitored visually before and after procedures primarily by the veterinary staff, but also by the investigators and their research assistants. All of the animal care/veterinary technicians are either currently matriculated or graduates of a college-level veterinary technology program, and have a minimum of two years experience in laboratory animal medicine. Investigators' and their technicians' experience varies widely. As necessary, they receive assistance and training from the veterinary staff in recognizing signs of pain and distress in their animals. In general, pain is evaluated subjectively using the following criteria: increased heart rate, increased respiratory rate, abnormal/unusual vocalization, agitation, lethargy, decreased or heightened response to stimuli, self-mutilation, inappetence, and lack of grooming.

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

Since Hunter does not have a GMA production facility, all novel genetically modified animals are imported from other institutions and endure a10-week quarantine when they arrive. While in quarantine, the mice are observed daily by experienced animal care personnel and adverse/unanticipated

phenotypes are promptly detected and reported to the AV. Any other unexpected post-surgical or post-procedural morbidity or mortality that is discovered by the Veterinary Technician during routine monitoring is also reported to the AV. The monthly IACUC meetings include a post-approval monitoring report from the AV as a regular agenda item. Any unexpected outcomes that affect animal welfare are summarized and shared with the Committee in the context of the PAM report.

iii. Physical Restraint [*Guide*, pp. 29-30]

Note: This section is to include only those protocols that require prolonged restraint. Brief restraint for the purpose of performing routine clinical or experimental procedures need not be described.

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

Hunter's policy for physical restraint (Guidelines for Prolonged Restraint) is posted on the IACUC website and includes the following recommendations:

- When restraint devices are used, they should be specifically designed to accomplish research goals that are impossible or impractical to accomplish by other means or to prevent injury to animals or personnel.
- Restraint devices should not be used simply as a convenience in handling or managing animals.
- The period of restraint should be the minimum required to accomplish the research objectives.
- Animals to be placed in restraint devices should be given training to adapt to the equipment and personnel.
- Provision should be made for observation of the animal at appropriate intervals, as determined by the IACUC.

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.

Although not included in any currently approved protocols, restraint has been used as a stressor by a single investigator. The paradigm involves placing rats or mice in specially designed Plexiglas tubes for six hours/day, no more than 5 sessions per animal. Animals are acclimated

to the housing environment for two weeks before the daily restraint stress regimen begins. Individual animals are observed at least every 20 minutes during restraint sessions. There have been no observed or reported adverse events associated with this restraint regimen.

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

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

For IACUC approval to be obtained, the investigator must demonstrate to the IACUC that the goals of the experiment can only be achieved by performing sequential surgical procedures on the same animal. Financial economy alone is not sufficient justification for proposing multiple major, or minor, surgeries on a single animal.

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

A single mouse protocol involves multiple survival surgeries. Intra-cerebral labeling injection is performed during the initial surgery. The second surgery, conducted 2-4 weeks after the first, is for implanting both microelectrodes and fiber optics.

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

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

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

There are no approved protocols involving fluid restriction. Food is restricted in a few rodent protocols solely to provide motivation to perform a behavioral task. The level of restriction is typically measured as a percentage of the ad libitum daily intake or as a percentage change in an

animal's body weight. For instance, investigators may monitor and record the normal daily intake of an animal prior to beginning a restriction protocol to determine how much food/water can be safely withheld from an individual. Investigators working with young, developing animals must specifically address their use in the protocol, as these animals may have additional dietary requirements for maintaining a normal rate of growth. Investigators are encouraged to use the standard Hunter template to record daily observations including total amount of food or fluid consumed.
A member of the veterinary staff must be contacted when any of the following occur: weight drops below 15% of the baseline; the animal appears less active or depressed, has sunken eyes or abnormal posture; reduced feed or water intake (even lower than the restricted amounts) has been observed; or the animal shows signs of pain or distress. Daily weight charts that are maintained in the animal housing room are reviewed daily by the Veterinary Technician.

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

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

NA

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

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

When reviewing proposed field investigations involving vertebrate wildlife, the IACUC considers:

- where the activity will be conducted
- what procedures will be involved
- how proposed procedures are likely to affect the biology and ecology of the study animals
- permit requirements of pertinent local, state, national, and international wildlife regulations will be obtained before work begins

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

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

NA

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

NA

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

NA

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

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

The maximum term for IACUC approval of a protocol is three years. Multi-year protocols are reviewed at least once per year. This "annual update" covers animal usage, any unforeseen animal welfare issues which occurred during the past year, a search for alternative methodologies, certification that the work does not unnecessarily duplicate previous research, and prompts the researcher to add/delete personnel.

At the end of a three-year protocol, investigators must submit a new protocol application. This is the same application used for new projects, but the investigator must also describe their progress on the project in the previous 3 years. The review process is the same as that used for new protocols.

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

Issues pertaining to Hunter's current Program of Animal Care and Use are reviewed and discussed at each IACUC meeting. Discussions are summarized in the meeting minutes. When it is time to write the semiannual review of Hunter's Program of Animal Care and Use, the Committee reviews the overall program, using OLAW's Semiannual Program Review Checklist as a guide to assure that all necessary topics have been covered. The Committee uses this mechanism to evaluate the efficacy of our institutional policies and standard operating procedures.

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

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

The IACUC inspects the main Animal Facility and satellite facilities and laboratories on the main campus at least once every six months, or more frequently if recommended by the veterinarian. Semiannual inspections are conducted by at least three members of the Committee, including the veterinarian, using OLAW's Semiannual Facility Review Checklist as a guide. Any Committee member who wishes may participate.

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

Hunter is inspected once a year by a representative from the New York State Department of Health Laboratory Animal Welfare Program. No areas of non-compliance have been identified in the last 3 years.

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

Animals used in acute studies are examined by the AV and/or the Veterinary Technician after all experimental procedures to assess clinical well-being and consistency with descriptions provided in the corresponding approved IACUC protocol. The Animal Facility Training Coordinator also visits individual laboratories during conduct of new in vivo procedures as part of the Post Approval Monitoring protocol audit.

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

The IACUC is authorized to review and investigate any concerns resulting from public complaints or from reports of non-compliance received from the Hunter community. Hard copies of the policy are posted in several places in the Animal Facility and the policy is included as a tab on the IACUC website. Faculty, staff, and students are instructed that animal welfare concerns may be registered by either communicating with any member of the IACUC or with the College's Ombudsman, and that no reprisal or discrimination will result as a consequence of

making a complaint. Complainants may remain anonymous. Any complaint presented is considered by the Committee at its next scheduled meeting, or the Chair may call a special meeting. If action is deemed necessary, the Committee reports its recommendations in writing to the Provost. These recommendations may include steps to improve the quality of animal care and/or the suspension of research activities in question; or if the concerns address a specific project, the project in question may be suspended. If funded projects are involved, the appropriate funding agency is notified. If the Committee feels that its recommendations are not being implemented, it may bring the matter to the attention of the Chancellor of the City University of New York system or the President of the CUNY Research Foundation (the unit of CUNY which manages all outside research funding for member colleges).

4. **Disaster Planning and Emergency Preparedness** [*Guide* p. 35]
Briefly describe the plan for responding to a disaster potentially impacting the animal care and use program:
   - Identify those institutional components and personnel which would participate in the response.
   - Briefly describe provisions for addressing animal needs and minimizing impact to animal welfare.

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

Goals

1) To minimize the loss of animals and valuable research data during an emergency or a disaster.

2) To provide appropriate veterinary care and humane euthanasia when appropriate.

3) To enhance the ability of the Facility staff to restore and sustain its operations during an emergency.

The protection of the staff, animals and property of the college during emergencies requires the coordination and cooperation of many departments including Public Safety and Security, Environmental Health Safety (EHS) and Facilities Management and Planning.

This plan establishes procedures for the management of animals during emergencies and provides direction for campus departments that will be required to assist in the management of the Facility during emergencies and disasters.

II. Animal Environment, Housing and Management

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

A. Animal Environment

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

a. Describe the methods and frequencies of assessing, monitoring, and documenting that animal room or housing area temperature and humidity is appropriate for each species.

Outside air is warmed by pre-heating at the level of the air handler and then locally, at the room level, through the use of reheat coils. Air-conditioning is supplied by compressors in the roof-mounted HVAC units, and humidification is performed centrally and monitored in each room. A Distech Controls Lonworks Building Management System controls the rooftop units, heat exchangers, exhaust fans and individual room VAV's, VEV's and reheats. Online monitoring capability is provided through a control panel located in the Manager's office. . There is a separate boiler alarm that signals a significant decrease in steam pressure. Parameters are set for each room depending on species housed. High and low daily temperatures and relative humidity are measured with hand-held digital units, and data is recorded on daily activity logs in each animal room. Humidity measurements are periodically validated by the Facility Manager using a sling psychrometer.

b. List, by species, set-points and daily fluctuations considered acceptable for animal holding room temperature and relative humidity.

Temperature
Rodents - 72°F +/- 2°
Finches - 80°F +/- 2°
Fish – variable depending on species

Humidity
All housing rooms maintained at 30 – 70% relative humidity

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

NA

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

a. Describe the methods and frequencies of assessing, monitoring, and documenting the animal room ventilation rates and pressure gradients (with respect to adjacent areas).

The two HVAC units that serve the Facility are mounted on the roof. A Distech Controls Lonworks Building Management System (BMS) controls rooftop units, heat exchangers, exhaust fans and individual room VAV's, VEV's and reheats. The BMS can be monitored online and authorized individuals can change parameters and control key aspects of the system remotely. The BMS system issues alarms when any of the fans fail. Alarms are monitored by the College engineers on a 24/7 basis. The Animal Facility Manager also monitors the mechanical systems using a dedicated computer terminal located in [redacted] office. The BMS and boiler alarms sound in the College Engineers' Office which is manned on a 24/7 basis. All of the Watch Engineers are familiar with the Animal Facility mechanical systems and are available to respond in the event of an emergency.
Animal rooms have at least 10 air changes per hour. No air is re-circulated. Ventilation rates and pressure gradients are measured at least triennially and adjusted by a certified contractor.

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

All mice in breeding colonies are housed in Thoren ventilated racks. These provide Hepa-filtered air to the cage, and exhaust Hepa-filtered air into the room. Manometers (Magnahelic® Gauges) monitor static air pressure on both the supply and exhaust systems on each rack. Dampers can be adjusted to allow the unit to operate at either positive or negative pressure relative to the room.

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

No air is recycled.

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

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

Each of the three separate fish housing areas within the [redacted] is overseen by a tenured and funded faculty member who has used fish as a research model throughout [redacted] academic career. Two of the investigators study communication, memory and learning in weakly electric fish

and the third explores sensorimotor integration in goldfish. These investigators strive to maintain tight control over the aquatic environment.

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

Housing system design is specific to each laboratory and varies according to species and nature of the research program.

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.

There are rubber casters on racks and carts, and these are lubricated as necessary to reduce noise of squeaky wheels. Hearing protection is available for personnel working in the cage wash areas.

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

1. Primary Enclosures

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.

All animals are housed in primary enclosures that are consistent with the recommendations of the Guide, Eighth Edition.

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]

There are no space exceptions.

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

a. Environmental Enrichment

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

Finch cages are equipped with perches and nesting boxes. Fish tanks often contain cylindrical “hides”.

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).

Mouse cages maybe supplied with Nestlets®, Shepherd shacks®, plastic igloos or PVC tube tunnels. Rats often receive tissues or paper towels. Depending on the nature of the study, mice and rats may receive nutritional enrichment in the form of sunflower seeds. Finches are supplied with Sisal Fiber nesting material.

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

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

Animals are always group or pair-housed unless recovering from surgery or enrolled in a study paradigm that requires individual housing for experimental reasons.

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

The only current IACUC-approved studies that require individual housing involve treatment of mice or rats with psychoactive drugs as part of the experimental paradigm. These are acute, short-term studies that rarely last longer than a few weeks.

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

Finches maybe maintained in sound isolation for as long as 60 days. Birds in sound proof chambers are observed daily by research personnel and cages are equipped with perches, toys and mirrors.

c. Enrichment, Social and Behavioral Management Program Review [*Guide*, pp. 58, 69]
Describe how enrichment programs and exceptions to social housing of social species are regularly reviewed to ensure that they are beneficial to animal well-being and consistent with the goals of animal use.

The IACUC reviews any exceptions to social housing in the context of regular protocol review. Aspects of the enrichment program are reviewed during the semi-annual inspection.

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

All animals are vendor-derived, bred in-house or transferred from another institution. Newly arrived rodents are monitored carefully for adequate water consumption.

At least one week of stabilization or acclimation is recommended for all animals prior to initiating any experimental procedure. Additional requirements and recommendations are as follows:

- Rats - At least one week of acclimation is required for rats that will undergo survival surgeries or behavioral testing. At least one week is recommended for rats that will undergo non-survival recording or surgical procedures. Rats that will remain on study for more than a few weeks are expected to be “tamed” by routine handling.
- Mice - At least one week of acclimation is recommended for mice that will undergo any experimental procedures.

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).

NA

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

NA

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.

NA

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

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

NA

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

NA

iii. Describe how animals are captured.

NA

C. Animal Facility Management

1. Husbandry

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

i. List type and source of food stuffs.

Rodents receive either Purina LabDiet® or Harlan Teklad® feeds.

•Rats - Purina Rodent Diet #5001, Teklad #2016
•Conventional mice - Purina Rodent Diet #5001, Teklad 14% Protein Rodent Maintenance Diet #2014, Global 14% Protein Maintenance Diet #2014S
•Breeding Mice - Teklad 18% Protein Rodent Maintenance Diet #2018, Global 18% Protein Maintenance Diet #2018Sx

Finch food is supplied by AbbaBirdSeed. Birds are fed both Abba 1900 Exotic Finch Food and Abba Green 92 Nestling Food.

Mormyrid fish are fed commercially obtained black worms (Lumbriculus sp.) and dried blood worms (Mosquito larvae). Other fish are fed commercial formulations of pellet and/or flake fish food.

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

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

Fisher Feeds: The [redacted] storage warehouse is devoted exclusively to feed and bedding for laboratory animals. The 14,500 sq. ft. building is constructed of cinder and chimney block. The floor of the warehouse is three foot thick poured concrete. Stock is rotated based on a First In, First Out schedule. The facility is inspected and approved by the New Jersey Department of Health for storage and handling of specialty [redacted] r. Temperature and humidity in the warehouse are controlled by a recently installed environmental monitoring system. [redacted] employs the following pest control measures:
• Pheromone traps are placed at the perimeter and interior of the facility
• Traps are dated when installed, checked weekly and activity is noted
• Bug attractant lights are inspected and cleaned at each service
• Rodent control boards are dated and initialed at each service
• Rodent control boards are replaced monthly
• Insecticides and rodenticides are not used
• Customers are alerted if a pest infestation occurs
• All trucks are swept and vacuumed prior to loading
• All trucks are visually inspected prior to loading
• A cleaning log is maintained for each truck
• Doors to all trucks remain closed when trucks are not in use

[redacted] has supplied the following information about food storage in their warehouse: All floors and any cracks are sealed. The warehouse is inspected and cleaned on a daily basis. All spills are cleaned immediately. Delivery vehicles are cleaned after every use with Clidox-S. Temperature is maintained less than 70 degrees. Humidity does not exceed 55%. The company does not use chemical means of insect or vermin control inside the facility. An independent pest control company inspects the facility once a month.

All rodent chow and diet supplements are stored in a walk-in cold room in the main animal facility.

Food is stored in the animal rooms in rigid, plastic, vermin-proof containers with tight fitting covers. Containers are not transferred from room to room.

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

NA

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

Rodent and finch diets are offered on an ad libitum basis unless animals are assigned to an approved protocol that involves diet restriction.
• Rats and Mice - stainless steel wire-bar hoppers (cage lids) – pelleted feed
• Mice - disposable plastic petri dishes – soft food supplement
• Finches – plastic seed cups for dry seed and disposable cardboard dishes for Nestling supplement

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

Feed is ordered and delivered weekly so in-house inventory can be kept to a minimum. Feed bags are stacked with milling dates exposed, and are rotated so that older food is used before fresher food. No food is stored or used after 6 months past the milling date. Most is used within 3 months of the milling date.

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).

Water is obtained directly from the municipal water supply (i.e. tap water) and supplied to rodents in water bottles. Mice housed on ventilated racks receive water ad libitum through a hole in a metal cap. All rats and mice in static microisolators drink from glass or plastic bottles fitted with stainless steel sipper tubes. Finches have free access to water provided in plastic waterers that clip onto the side of the cage.

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

Fresh tap water samples are tested periodically, annually for bacterial and chemical contaminants. Reports are on file in the Facility.

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

NA

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

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

Rats and mice are bedded directly on either Tek-FRESH® paper bedding from Harlan Teklad or Beta-Chip contact bedding. Beta-Chip bedding is a heat-treated (kiln-dried) hardwood bedding that is produced specifically for use as laboratory animal bedding. It provides satisfactory or superior aesthetic and olfactory results compared to other beddings tested here. Beta-Chip bedding is sterilized in the bag in the pass-through steam autoclave in the cage wash area before opening. We also maintain a supply of 1/8" bed-o'cobs® corncob bedding to support the studies of a single investigator who works with a well established model of cocaine and methamphetamine toxicity and other acute mouse studies where animals are housed in static microisolators. Softwood bedding is avoided because of potential effects on metabolism.

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

NA

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

All bedding materials are obtained directly from either [redacted] or [redacted] and are produced specifically for laboratory animal use. Beta-Chip bedding is heat-treated (kiln dried) and sterilized at Hunter as described above.

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.

NA

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

• (4) laminar flow workstations for cage changing and procedures in rodent rooms
• (2) Class II type A Biosafety Cabinets
• (1) Basil automatic water bottle filler
• (1) TBJ Incorporated double downdraft Bedding Scraping Station
• (4) Park Bioservices semi-rigid isolators with flexible front

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.

Rats – cages are cleaned at least twice a week.
Mice – Thoren cages and singly-housed mice are changed at least once per week; static microisolators are changed at least twice per week unless animals are singly-housed.

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

There are no exceptions to the Guide. The frequency of bedding changes meets or exceeds those recommended. 'At least' is used to indicate that if additional changes are required to keep individual animals clean and dry, they are performed.

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

Soiled bedding is removed from the cages in the dirty cage wash area using the downdraft bedding scraping station. Clean cages are filled with bedding in the clean cage wash area.

ii. Cleaning and Disinfection of the Micro- and Macro-Environments

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

The wall-mounted finch cages are taken down and washed in the mechanical cage washer at least once a month according to written SOP. These birds are used in developmental studies and are all bred in-house. The one-month interval for complete cage sanitization is designed around the finch breeding cycle. Cage floors, waterers and feeders are sanitized weekly and dropping papers are changed twice weekly. This IACUC-approved exception is reconsidered as a regular part of semi-annual inspections.

2) Assessing the Effectiveness of Sanitation and Mechanical Washer Function

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

Temperature indicators are put on equipment washed in the rack washer daily to insure the water temperature reaches 180°F. A log book of the temperature monitoring results is maintained. When possible, the exposed temperature indicator is also placed in the log. Rodac plates are used to test for microbial growth on surfaces at least semi-annually. Rodac plate reports are graded in the following manner:

0-25 colonies – good
26-50 colonies – fair
50 and over – poor

The effectiveness of the sterilizers is monitored monthly using the Steris VERIFY system which utilizes spore ampules and a customized incubator.

b) Describe preventive maintenance programs for mechanical washers.

Hunter maintains a service contract with an outside company that performs preventative maintenance on a quarterly basis.

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

i. Soiled bedding and refuse.

Soiled bedding and regular waste material is sealed in plastic bags and placed in a transport bin in the elevator lobby. The transport bin is emptied at least once daily by College janitorial staff.

ii. Animal carcasses.

Carcasses are frozen, then sealed in red bags, boxed and delivered to the [redacted] and ultimately removed by a licensed medical waste carter.

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

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

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

Physical means of vermin control and monitoring are emphasized. Cracks and crevices are sealed, and glue traps (Catch-it®) are used in all animal rooms and the feed room. Live rodent traps (ketch-all's®) are installed in numerous locations throughout the facility. Floor drains are cleaned flushed with dilute bleach on a regular basis.

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

NA

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

There is no direct or indirect exposure of laboratory animals to pesticides.

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

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

The regular Animal Facility technicians provide weekend and holiday animal care.

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

NA

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

The facility manager and veterinarian are on-call by cell phone on a 24/7 basis and available to respond to emergencies. When the veterinarian is out of town, [redacted] arranges for appropriate coverage by the back-up veterinarian. A list of emergency contact numbers is prominently displayed outside the [redacted] office.

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).

- Rats: cage cards, metal ear tags. All cage cards must show the investigator's name, protocol number, source, date of receipt and date of birth and/or weight at time of arrival.
- Mice: cage cards +/- ear punch +/- ear tags +/- dye markings +/- transponders. All cage cards must show the investigator's name, protocol number, source, date of receipt and date of birth, and additional breeding information for mice bred in the Facility.
- Finches: cage cards and leg bands
- Fish: tank cards

b. Breeding, Genetics, and Nomenclature

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

Information on heritable traits and on animal models is available in the Animal Facility Library. Additional information on selection of animals with appropriate genetic characteristics is provided to investigators upon request during the protocol preparation or the protocol review process.

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.

The Animal Facility staff prepares cage cards and proper strain designations are included on the card. As necessary, information (International Guidelines for Genetic Nomenclature in Mice) is provided to investigators in the protocol review process. Whenever possible, names that are published in Mouse Genome or in Jackson's Genome Database

are used. Some of the transgenic and targeted mutant strains have not been published yet.

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

Investigators are prohibited from breeding strains that are readily available commercially. Each investigator who maintains breeding colonies of genetically modified strains is responsible for monitoring genetic authenticity by genotyping individual animals. Records are kept through a combination of standardized "breeding" cage cards and electronic data bases.

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

Since Hunter does not have an in-house transgenic production facility, all new genotypes are generated at other institutions and undergo a 10-week importation quarantine upon arrival. The quarantine facility is managed by the Mouse Breeding Colony Supervisor who inspects the mice for general condition and emerging phenotypes several times weekly. All pertinent observations are reported directly to the AV.

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

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

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

1. Animal Procurement

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

All animal vendors regularly provide information that describes the genetic and pathogen status of their colonies or individual animals.
- Rats - only SPF, virus antibody negative rats, purpose bred for research, are purchased.
- Mice - only SPF, virus antibody negative mice, purpose bred for research, are purchased. Investigators who wish to obtain mice from other sources must

present a formal, written request. The Animal Facility Manager then coordinates with the sending institution. In order to document the SPF, virus antibody negative, ecto and endoparasite-negative status of the colony of origin, the manager requests health monitoring reports for the previous year, the most recent within a month of the proposed shipping date. The veterinarian reviews and approves the health reports before final arrangements are made for the shipment.

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 research animals are transported between the vendor and the institution by commercial vehicles including trucks, vans, and airplanes in commercial shipping containers. The commercial carriers must meet all regulatory requirements governing the shipment of animals. Mice from non-vendor sources are shipped by commercial couriers, in commercially available transport containers, and provided with a nutrient/water source such as Transgel. Crates containing live animals are delivered directly to the Animal Facility and unpacked by trained laboratory animal technicians.

Except for few IACUC-approved specific circumstances, live animals do not leave the Facility. In such circumstances, personnel are instructed to use the keyed freight elevator only, and to cover the cages or containers of animals with drapes or other opaque material. Once removed, live animals maintained in breeding colonies may not return to the Facility. Recently sacrificed animals or specimens that are transported to specific laboratories must be concealed in opaque containers.

B. Preventive Medicine

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

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

The Attending Veterinarian reviews health surveillance reports from all approved vendors on a regular basis. Rodents and fish arriving from an academic institution or other noncommercial source are placed in quarantine. Fish are isolated in a quarantine tank for at least one week. Mice are housed in semi-rigid isolators with sentinel animals for at least nine weeks. Before the incoming mouse shipment is approved, the veterinarian reviews health monitoring reports for the previous year from the source institution. At the

conclusion of the quarantine period, the veterinarian directs the transfer to permanent housing space based on analysis of the sentinel data.

The in vivo use of biological materials, as well as screening methods employed to ensure that they are free from contamination, must be described in the IACUC protocol. Murine-derived cell lines must be MAP or PCR tested for infectious agents included in the regular health monitoring profile.

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

All mice in breeding colonies are housed in individually ventilated cages (IVC's) and cages are changed in clean-air change stations. Animals that leave the breeding colony to participate in an acute experiment may not return.

Caging materials for immunocompromised rodents are sterilized before use and the animals are fed irradiated chow. Live-caught feral mice are subjected to the same diagnostic testing employed in the regular health monitoring program.

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

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

Shipping containers are checked for integrity before they are accepted into the facility. Individual animals are unpacked and examined by an experienced technician soon after arrival. Shipments are checked against the animal order form specifications for sex, weight and strain. Any problems are reported immediately to the vendor.

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

Incoming animals from approved commercial sources are incorporated directly into an appropriate existing housing room. Large cohorts of animals that will be enrolled in acute studies are typically housed as a solitary group in a single room for the duration of the study.

Fish are quarantined in a dedicated holding tank for one week before introduction to other resident fish.

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

• Rats - At least one week of acclimation is required for rats that will undergo survival surgeries or behavioral testing. At least one week is recommended for rats that will undergo non-survival recording or surgical procedures.
• Mice - At least one week of acclimation is recommended for mice that will undergo any experimental procedures.
• Fish – At least one week of acclimation.

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

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

There are no separate facilities for separation of animals by health status. Only rodents with documented SPF status are permitted into the Facility.

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

All animals are separated by species.

c. Describe isolation procedures and related facilities for animals.

There are no separate facilities for isolation of ill animals. Necessarily this animal health program stresses prevention. [redacted] examines all sick animals. The nature of the intervention to be undertaken is determined in consultation with the Investigator. If there were evidence of infectious disease that could affect other animals of any species in the Facility, the investigator would be notified and euthanasia would be administered. Animals that become ill unexpectedly and are euthanized, or animals that die unexpectedly, receive post mortem gross examination (necropsy), and if warranted, microbiologic evaluation or histopathologic evaluation also. Appropriate blood samples would be collected and submitted for hematologic evaluation, serum chemistry profiles, or serum antibody profiles.

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

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

a. Describe the procedure(s) for daily observation of animals for illness or abnormal behavior, including:
- the observers' training for this responsibility
- method(s) for reporting observations (written or verbal)

- method(s) for ensuring that reported cases are appropriately managed in a timely manner.

All animals are cared for or observed daily by the animal care technicians, and also are observed regularly by the investigators. Any signs of disease or abnormal behavior are reported to the Veterinary Technician or directly to the Veterinarian, usually immediately and verbally. All of the animal care/veterinary technicians are either currently matriculated or graduates of a college-level veterinary technology program, and have a minimum of two years experience in laboratory animal medicine. Investigators' and their technicians' experience varies widely. As necessary, they receive assistance and training from the veterinary staff in recognizing signs of illness in their animals.

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

When a sick or otherwise abnormal animal is discovered, the investigator is promptly notified by telephone or e-mail, and a plan is made to treat or sacrifice the animal. In a situation where pain or distress is apparent, or if the investigator cannot be reached, the decision to treat or sacrifice is the veterinarian's.

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

• Rats, birds, fish and mice enrolled in acute studies - Observed, handled or examined at least once daily by animal care/veterinary or research technicians. Usually rats are involved in short-term studies of less than one month, and since they are purchased from reliable SPF sources, additional diagnostic health monitoring is not routinely performed.
• Mice in breeding colonies – Sentinel outbred, 4-week old, female mice are purchased from an approved vendor and initially housed 4/cage. At each cage change, a sample of soiled bedding is collected from every cage and contributed to the appropriate sentinel cage. Sentinel cages contain half the regular amount of clean bedding. The remainder of the bedding is provided from a pooled sample of soiled material collected from the cages of associated resident animals. In moderately or densely populated rooms, one sentinel cage is positioned on each side of occupied racks. In minimally populated rooms, one sentinel cage may serve an entire rack.

DIAGNOSTIC TESTING:
SEROLOGY - TRACKING PANEL: performed three times annually
Agents: Sendai virus(Send), Mouse Hepatitis virus (MHV), Minute Virus of Mice (MVM), Theiler's Meningoencephalomyelitis Virus (GD 7), Epizootic Diarrhea

of Infant Mice (EDIM), Pneumonia virus of Mice (PVM), Reo 3, Mouse Parvovirus (MPV), Mycoplasma pulmonis(MYCO), Mouse Norovirus(MNV)
ASSESSMENT PANEL: performed once annually
Agents: all of the above plus: Lymphocytic Choriomeningitis of Mice Virus(LCMV), Ectromelia(Ectro), Polyoma virus(Poly), K virus(KV), Mouse adenovirus (MAD)
PARASITOLOGY - A pelt specimen is obtained for examination for the presence of arthropod ectoparasites. Anal tapes and a sample of cecal contents are examined for the presence of helminthic and protozoan endoparasites. Fecal pellets are collected from each sentinel cage and a fecal flotation is performed.

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

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

The facility manager and veterinarian are on-call by cell phone on a 24/7 basis, and available to respond to emergencies. When the veterinarian is out of town, [redacted] arranges for appropriate coverage by the back-up veterinarian. A list of emergency contact numbers is prominently displayed outside the [redacted] office.

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

In case of an emergency, the investigator is notified by telephone, text or e-mail, and a plan is made to treat or sacrifice the animal. In a situation where pain or distress is apparent, or if the investigator cannot be reached, the decision to treat or sacrifice is the veterinarian's.

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

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

Rodents and Birds – specially designed cage cards serve as medical records.

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

The VT maintains a treatment log and lists clinical observations and interventions on special cage cards. Investigators and their technicians are responsible for making appropriate entries on the cards with regard to experimental treatments.

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

The AV routinely checks active treatment cards during the course of daily clinical rounds.

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

a. In-house diagnostic laboratory capabilities.

The only clinical diagnostic laboratory procedures performed in the Facility are fecal monitoring, and dipstick-type, quick assessment tests. Available equipment includes: a microcentrifuge, dissecting and binocular microscopes, a water bath and balances.

b. Commercially provided diagnostic laboratory services.

The [redacted] is used for routine serology and PCR screening. The [redacted] is used for serum chemistries, hematology, bacteriology and histopathology.

c. Necropsy facilities and histopathology capabilities.

Gross examinations (necropsies) are performed in room 1579.

d. Radiology and other imaging capabilities.

There is no on-site radiological equipment currently available for use with live animals.

5. **Drug Storage and Control**

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

- Controlled drugs including ketamine are stored in [redacted]; working quantities in a wall-mounted, double locked narcotics cabinet and larger amounts in a safe set into the floor. Access is restricted to the veterinary staff. The [redacted] is locked during non-working hours.

- Noncontrolled drugs are maintained in locked cabinets in [redacted]. Access is restricted to the veterinary staff. The[redacted] is locked during non-working hours.

b. Describe record keeping procedures for controlled substances.

- The records of all controlled drugs are maintained in the [redacted]. The log contains a section for each controlled drug with entry columns for investigator, species, received amount, dispensed amount, balance, and signature of person(s) dispensing the drugs.
- The Manager and Senior Technician are primarily responsible for maintaining a list of all drugs and supplies which have expiration dates, and perform monthly date checks and disposal. Inventory of dated drugs and supplies is limited, and all are stored in [redacted] to facilitate timely and appropriate removal and disposal.

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

1. Pre-Surgical Planning [*Guide*, p. 116]

Describe the process(es) used to ensure adequate pre-surgical planning, including: identifying personnel; locating equipment, supplies, veterinary involvement for selecting analgesic and anesthetic agents and facilities; planning; and pre- and post-operative care.

Investigators are encouraged to consult with [redacted] during preparation of the IACUC protocol. The IACUC evaluates proposed surgical procedures for detailed descriptions of preoperative, intraoperative, and postoperative methods and care; and for appropriate training, or plans for training, of personnel. Following IACUC approval of a surgical protocol and prior to beginning the study, the surgeons meet with the veterinary staff to discuss all preoperative, intraoperative, and postoperative plans.

All surgeons and assistants must demonstrate their proficiency to the veterinary staff prior to performing surgery on live animals. In cases of new investigators or entirely new procedures, supervised practice on cadaveric specimens is mandatory prior to surgery on live animals.

2. Surgical Facilities [*Guide*, pp. 116-117, 144-145]

List building name(s) and room number(s) or other locations (coded, if confidential) where surgical procedures are performed. For each, describe:

- the type of species (including rodents, fish, agricultural species, etc.)
- nature of procedure(s) (major/minor/emergency, survival and non-survival, etc.)
- the amount of use [heavy (daily), moderate (weekly), or light]
- major surgical support equipment available (gas anesthesia machines, respirators, surgical lights, etc.)

- facilities for aseptic surgery, surgical support, animal preparation, surgeon's scrub, operating room, and postoperative recovery
- construction features of the operating room(s), including interior surfaces, ventilation, lighting, and fixed equipment used to support surgical procedures and other means of enhancing contamination control

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

Survival rodent surgeries are conducted in either of two dedicated rooms within the main animal facility. Use of these rooms is sporadic and light.
All survival surgery suites are equipped with isoflurane anesthesia machines, glass bead sterilizers and surgical microscopes. Rat and mouse stereotaxic frames are also available in the rodent areas.
The design of all surgical rooms includes separate areas for prep and recovery.
A single investigator is approved to perform optogenetic implant surgery in mice in [redacted] laboratory.

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).

The definitions provided in the Guide are used as the basis for differentiating major from minor procedures. Major survival surgery penetrates and exposes a body cavity or produces substantial impairment of physical or physiologic functions. "Minor survival surgery does not expose a body cavity and causes little or no physical impairment." (page 117, Guide). Here, all 'Major' procedures are performed under stringent conditions of strict asepsis and concern for analgesia and postoperative care.

b. How is non-survival surgery defined?

"In nonsurvival surgery, an animal is euthanatized before recovery from anesthesia." (page 118, Guide) There are currently no active protocols involving nonsurvival surgery.

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

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

Aseptic surgical technique is utilized for survival procedures in all species and includes sterile instruments, gowns, masks and surgical gloves, and antiseptic preparation (clipping and scrubbing) of the surgical site.

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

Instruments are cleaned manually with soap and water, and then packed and autoclaved by one of the veterinary technicians. Indicator tape is used to close the outer wrapping and a temperature indicator and/or spore ampule is included in each pack.

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

Generally instruments are cleaned and autoclaved between procedures. When multiple animals are operated on during the same surgical session, instruments are cleaned and heat-sterilized in a glass bead sterilizer (**Inotech Steri 350**) between individuals.

d. Indicate how effectiveness of sterilization is monitored.

The effectiveness of the sterilizers is monitored monthly using the **Steris VERIFY®** system which utilizes spore ampules and a customized incubator.

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

Training and support are provided principally by the Training Coordinator who has more than [redacted] years experience as an instructor in a college level veterinary technology program. [redacted] is an adept anesthetist and skilled in many minor surgical techniques. [redacted] offers customized instruction to all novice surgeons and is available to provide surgical services for research projects on a fee-for-service basis.

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.

Standard intraoperative monitoring includes assessment of respiratory and heart rate, capillary refill time and reflexes (eye blink, toe pinch) to check depth of anesthesia.

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.

[redacted] are responsible for overseeing postsurgical care. When surgeries are scheduled, arrangements are made to have post-op care administered by the VT or specific members of the research staff. Postsurgical observations and treatments are recorded on special cage cards that are maintained in front of the regular cage card for the duration of the postoperative period, typically at least one week.

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

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

Pain and distress in animals are monitored visually before and after procedures primarily by the veterinary staff, but also by the investigators and their research assistants. In general, pain is evaluated subjectively using the following criteria: increased heart rate, increased respiratory rate, abnormal/unusual vocalization, agitation, lethargy, decreased or heightened response to stimuli, self-mutilation, inappetance, and lack of grooming.

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

All of the animal care/veterinary technicians are either currently matriculated or graduates of a college-level veterinary technology program, and have a minimum of two years experience in laboratory animal medicine. Investigators' and their technicians' experience varies widely. As necessary, they receive assistance and training from the veterinary staff in recognizing abnormal behavior in their animals. The Training Coordinator has compiled a library of short videos depicting abnormal behavior and signs of illness in rodents and small birds. These videos are reviewed during the mandatory in-person training sessions.

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

1. List the agents used for each species..

Rodent anesthetics: Ketamine/Xylazine , Isoflurane
Rodent analgesics: Buprenorphine, Carprofen, Ketoprofen, Meloxicam
Fish anesthetics: MS-222

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

General guidelines are issued by the veterinarian and maintained by the facility veterinary technician. Detailed descriptions of anesthetic regimens and of use of

analgesics are requested in questions #25 and #28 of the IACUC protocol proposal form. Investigators prepare responses to these questions after consultation with the veterinarian.
Standard post operative nursing care for non-aquatic species includes: subcutaneous fluid therapy, increased ambient warmth from a heating pad, paper bedding or other appropriate substrate substituted for regular contact bedding, and diet supplementation with a high calorie soft food slurry.

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

The need for and proposed use of anesthetics and analgesics is reviewed by the IACUC. Anesthetics, analgesics, tranquilizers, and anxiolytics are typically administered by experienced members of the research staff. Record of post-procedure pain assessment and analgesic administration is included on color-coded cage cards. Post-surgical animals are individually examined at least once daily by the VT and/or AV for the duration of the post-operative period. During the semiannual inspection, cage cards for surgical protocols are audited for appropriate use of analgesics.

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 include compelling justification which is carefully scrutinized by the IACUC. If anesthetized animals will be paralyzed, the appropriate level of anesthetic for the proposed procedure without neuromuscular blockade must first be determined.

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

Anesthesia machines are inspected and serviced by an outside contractor on a triennial basis.

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

1. Describe approved methods of euthanasia, including humane slaughter (for additional guidance, see pertinent AAALAC Reference Resources). Include:
   - consideration of species, age, condition (e.g., gestational period, or neonatal) and
   - location(s) for the conduct of the procedure.

• Rodents - Carbon dioxide inhalation (Animal Facility Euthanasia Room): rats and mice older than 10 days of age are placed gently in the specially

designed chamber that is supplied with CO_2 from a compressed gas cylinder; flow of CO_2 into the chamber is controlled by a flowmeter and continued until the animals are dead. Animals are examined to confirm death before they are frozen or tissue is obtained. Neonatal rodents are typically euthanized by decapitation with sharp scissors. Decapitation after isoflurane or carbon dioxide anesthesia is approved for use in several rat protocols. Exsanguination/perfusion after deep anesthesia is also permitted.

- Birds – CO_2 narcosis.
- Fish – decapitation while under MS-222 anesthesia and MS-222 overdose.

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

All CO_2 euthanasia is performed in the Animal Facility Euthanasia Room and equipment is checked weekly by the Veterinary Technician.

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

Death is confirmed after CO_2 narcosis or anesthesia by creating a pneumothorax, decapitation, cervical dislocation or observation for cessation of breathing for more than 2 minutes.

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

A. Facilities Overview

Provide a brief introduction to the animal housing and use facilities

The main Animal Facility occupies approximately 6,300 square fe[redacted] The main facility is managed by the Animal Facility Manager who reports to the College Veterinarian. Four separate rooms specifically designed for animal housing are located in the [redacted] Oversight for each of the satellite rooms is provided by a responsible faculty member.

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

In this section, describe each centralized or centrally-managed animal housing and use facility. Note that a separate section for describing “satellite housing areas” is included below.

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

1. General arrangement of the animal facilities (conventional, clean/dirty corridor, etc.).

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

1. The main facility is of a single-corridor design (conventional), served by a cage wash area that is divided by a wall into clean and dirty sections.
2. All of Hunter’s research laboratories are located in the [redacted]
3. Animal housing rooms are of uniform design and varying dimensions. [redacted] is equipped with semi-rigid isolators and located beyond an air-lock. It is used as a quarantine area for rodents arriving from non-vendor sources.
4. Floors - Floors and molded cove bases, 4 inches high, extending 1 inch from the wall, are poured-in-place concrete surfaced with Hallemite epoxy. The floors are in generally good condition, and provide a nonporous, monolithic surface that facilitates sanitizing.
Walls - Walls are epoxy-painted concrete masonry units with applied stainless steel corner guards.
Ceilings – Ceilings are epoxy painted gypsum board.
Doors – hollow metal, epoxy-painted with stainless steel hardware, reinforced glass viewing windows and retractable door sweeps.
5. The current variable-volume HVAC system was installed 9 years ago as part of a renovation project that was funded by a NCRR Facilities Improvement Grant. There are two roof mounted units that provide complete redundancy. Outside air is warmed by pre-heating at the level of the air handler and then locally, at the room level, through the use of reheat coils. Air-conditioning is supplied by compressors also installed on the roof. Humidification is performed centrally and monitored in each room.
6. Entry into the [redacted] is controlled by card-swipe turnstiles with a manned security post adjacent to each set of turnstiles. The main entrance to the Animal

Facility is additionally protected by a card-swipe security system which releases magnetic contacts on the entry door. Individual Hunter identification cards are programmed to permit access to the Facility only after appropriate training is completed. Security Officers patrol regularly after 5pm. Engineers and other repairmen work in the Facility by appointment during normal business hours. Watch Engineers use card-swipe access when performing regular checks and responding to emergencies.
7. There are no exterior windows.
8. A very small inventory of disinfectants and cage-washing chemicals is stored in the cage wash area. Carcasses are stored in a freezer in [redacted]. Compressed gas tanks are maintained in storage racks in [redacted].

C. Satellite Animal Housing Facilities

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

A "satellite" laboratory animal facility is any containment area outside of the main facility in which animals are housed for more than 12 hours.

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

There are four separate rooms specifically designed for animal housing in the [redacted] One room is dedicated to maintaining zebra finches in specialized sound proof chambers. Finches reside in the sound proof chambers for the duration of the experiment for a period of up to 3 months. Three rooms are dedicated to aquatic species and are located within or adjacent to an associated research laboratory suite.
The IACUC inspects these areas at least semi-annually and the AV has full access to each of the satellite housing rooms which are kept locked at all times.

D. Emergency Power and Life Support Systems

1. Power [*Guide*, p. 141]
For each Location, Centralized Animal Facility, and Satellite Housing Facility, provide a brief description of the following:

- Availability of emergency power and if so, what electrical services and equipment are maintained in the event the primary power source fails.
- History of power failures, noting frequency, duration, and, if emergency power was not available, steps taken to ensure the comfort and well-being of the animals present and the temperature extremes reached in animal rooms during

the failure.

Main: There are two in-house backup generators that provide emergency power. Emergency outlets serve all ventilated racks. The backup generator also serves one of the HVAC units, selected lighting and the security system. We have an adequate number of portable air conditioners and space heaters, and emergency outlets to supply them, to maintain appropriate ambient temperature in the event of fan failure.
Satellite: Emergency power is available for the fish tank pumps and heaters.

The last power outage was in August of 2003 when an electrical “black-out” lasting several days affected much of the northeast. The conversion to emergency power was smooth and immediate, and no housing areas experienced temperatures higher than 78°F.

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

There is no history of animal loss or health problems resulting from power or mechanical system failures.

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

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

NA

2. **Other Animal Program Support Facilities**
Describe other facilities providing animal care and use support, such as feedmills, diagnostic laboratories, abattoirs, etc.

NA

Appendix 1: Glossary of Abbreviations and Acronyms

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

Abbreviation/Acronym	Definition
HCAF	Hunter College Animal Facility
CUNY	City University of New York
VT	Veterinary Technician
HIPAA	Health Insurance Portability and Accountability Act
EHS	Environmental Health and Safety
BMS	Building Management System
CITI	Collaborative Institutional Training Initiative

Appendix 2: Summary of Animal Housing and Support Sites

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

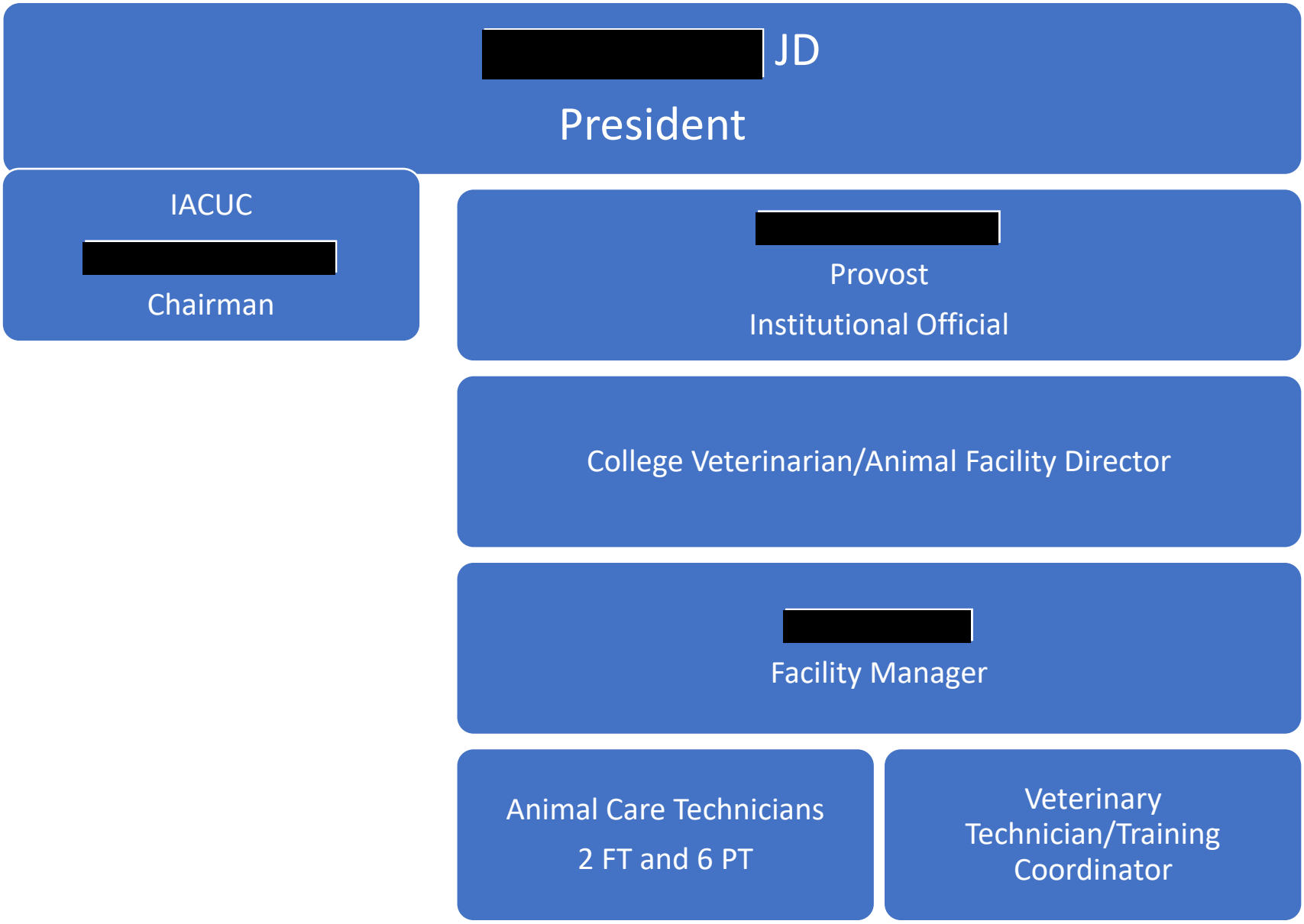
Animal Housing and Support Sites						
Location (building, site, farm name, etc.[a])	**Distance from main facility[b]**	**Approx. ft², m², or acreage for animal housing**	**Approx. ft², m², or acreage for support or procedures**	**Species housed**	**Approx. Daily Animal Census by species**	**Person in charge of site**
Main Animal Facility	0	1,775 sq. ft.	3,662 sq. ft.	mice	1,400 cages	[redacted]
		183 sq. ft.		rats	50 cages	
		300 sq. ft.		finches	250 birds	
Satellite Housing Facilities Total (Expand in Table 17)		480 sq. ft.				

Totals:	2,738 sq. ft.	3,662 sq. ft.	
Total animal housing and support space:	6,400 sq. ft.		
	(please specify ft² or m²)		

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

[Type here]

Appendix 3: Organizational Chart(s)



Appendix 4: Animal Usage

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

Animal Type or Species	Approximate Annual Use	Daily Average Census
mice	5100	3500
rats	220	75
fish	130	210
birds	185	270

Appendix 5: Personnel Medical Evaluation Form

Hunter College

HUNTER COLLEGE

OCCUPATIONAL HEALTH AND SAFETY SURVEY

Information for Personnel with Potential Exposure to Laboratory Animals

Name: _____ Date: _____

Phone Number: _____ Date of Birth: _____

Job Title: _____

Person to Notify in Emergency:

Name: _____ Phone Number: _____
Address: _____ Relation to You: _____
_____

Date of Last Tetanus Booster: _____

Do you have any physical or mental conditions which might affect your ability to work with animals or other laboratory hazards? Yes/No
If yes, list below:

Condition	Date(s) and Details
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Have you been told by a physician that you have an immune compromising medical condition? Yes/No If yes, explain:
_____
_____

List Medications You are Currently Taking	For What Condition(s)
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

If you have no direct contact with research animals, please stop here.

Appendix 6: IACUC/OB Membership Roster

Institutional Animal Care and Use Committee

[redacted]	PhD	[redacted]	Chairman
Member AV	DVM	College Veterinarian	Veterinarian
Member 1	BS	Graduate student in Biology	Scientist
Member EHS	MS	EHS Officer	Affiliated
Member 2	PhD	Professor of Psychology	Scientist
Member 3	BS	Retired university administrator	Nonaffiliated, Nonscientist
Member 4	MS	Assistant Provost	Nonscientist
Member AF	BS	Animal Facility Manager	Affiliated

Appendix 7: IACUC/OB Protocol Form

Revised September 2018

HUNTER COLLEGE
INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE
PROTOCOL REVIEW FORM

Provide a response to every question, using NA (Not Applicable) where appropriate. Format your text so that the responses to each question are printed using a typeface (e.g., bold, italics) that produces good contrast between the questions and responses.

PART I: PROJECT IDENTIFICATION

1 Project Title (Do not exceed 56 spaces.):

2 Faculty member responsible for project

3 Department:

4 College telephone number:

5 Emergency telephone number:

6. Other individuals to be notified in emergencies:

7 For all personnel indicate the following:
A. Name:
B. Phone Number
C. E-mail address: _____
D. Status: (Faculty, technician, undergraduate, graduate student, postdoc, etc).
E. Animal care certified at Hunter? Yes No
F. Qualifications/experience relevant to the procedures proposed in this protocol:
G. Specific role on protocol--procedures which he/she will carry out (e.g., which specific behavioral tests, surgeries):

H. If the individual has not carried out these procedures before, who is responsible for training him/her?

8 Cooperating Institution (Please attach a copy of its protocol form and the notification you received).

9. Proposed duration (maximum of 36 months):

Appendix 7: IACUC/OB Protocol Form

10. This project is: __New; ___Renewal of Protocol #_____; Revision of Protocol # _____.
Note: If a revision, please highlight the revised information.
11. Purpose of application:
a. A grant from or application to (Please provide your grant # or the name of the funding agency to which you applied):

b. An undergraduate student project

c. A course activity (Provide course number). If you wish students to handle the animals at any time: 1) they must receive appropriate preparatory training and 2) this training and students' role in handling the animals must be described in your protocol).

d. A graduate student project

e. An approved Doctoral Dissertation project. Indicate Program, Supervisor's name and Department

f. Other

Part II: Project Justification
Questions 12-19 are designed to elicit an account of the project, written in terms understandable to a non-specialist colleague or lay member of IACUC. Define all scientific terms at first use. Please try to confine this section to no more than 2 single-spaced pages.

12. Introduction and rationale: In one or two brief paragraphs, provide background information describing the general nature and significance of the project.

13. Specific Aims: Describe, in a series of brief, numbered statements, the scientific goals of your project.

14. If this is a continuation of previous work in your lab, please provide a brief summary of the scientific progress you have made on this project. Please include a description of any unforeseen animal welfare issues which you encountered.

15. Justification of animal use. Explain why animals must be used for these studies, and why non-animal models cannot be used. Justify the choice of species.

16. Animal Use/Methodology: Provide a complete description of how the animals will be used at all stages of the project, including all experimental and surgical procedures. These should be specified in sufficient detail so that the committee can understand what the animals will experience. If these methods are stressful or painful, please respond fully to the questions in Part IV of the form.

Appendix 7: IACUC/OB Protocol Form

17. Explain how these procedures will help provide answers to the questions raised by the Specific Aims of this project.

18 Experimental Design: **Summarize in tabular form** the Experimental Design of the project, indicating treatment groups and maximal numbers of animals per group. (Please do not include methodological detail here**; it should be provided in 16**.)

19.
a. Justify the number (and sex) of animals used in relation to the Specific Aims and Experimental Design. If you are using only males or only females as experimental subjects, please justify. Please list any measures you are using to reduce animal numbers. (This can include such things as reducing extraneous variables which would be expected to confound results, increase variability, and require greater animal numbers to demonstrate significant differences between groups, using inbred strains when available, or using a within subjects design.)

(19.a.1)Provide total number and number per group **(include table)**

(19.a.2) Statistical Programs that will be used to analyze data from this study (e.g. Student t test, analysis of variance, regression, etc.):

(19.a.3) Provide the power analysis to indicate how the number of animals was determined:

Alpha level:

Beta or power level:

Primary outcome variable:

Effect size or change expected:

Resulting number per group:

Total number:

Appendix 7: IACUC/OB Protocol Form

(19.a.4) If you will not use statistics or you did not perform a power analysis, please justify and describe how the number of animals was determined:

(19.a.5) If you consulted a statistician, please provide name:_____.

20. Scientific or Biomedical Contribution: Describe, in a brief paragraph, the contribution of the project to human or animal health, to the advancement of knowledge or the good of society.

21. Assurance of non-duplication of research (If you check c, d, or e, please also supply the requested information):
   a. These experiments or observations have not been done previously in any species.
   b. These experiments or observations have not been done previously in this species.
   c. Previous experiments were inconclusive. (Explain why these experiments should provide conclusive results.)
   d. Although similar to previous experiments, the present research is designed to provide additional data. (Describe new data)
   e. The animals are being used for teaching/training purposes.
   f. Other (Provide an explanation)

22. Please provide evidence of your familiarity with the current literature in this area by summarizing a recent literature search. Your description should include: 1) keywords used, 2) databases searched, 3) period of literature covered, 4) date of search and/or experts consulted, 5) number of "hits" or list of pertinent articles.

The goal of the literature search is to provide evidence that your proposal does not unnecessarily duplicate previous work and document that you have considered alternatives to the use of animals. The theory of alternatives is based on the concept of the three R's first described by Russell and Burch in their 1959 book The Principles of Humane Experimental Technique. The three R's are Reduction in animal numbers; Refinement of methods to minimize pain and distress to the animals; and Replacement of the animal model with a non-animal model or a phylogenetically lower species. Your keywords should suggest the search for all three types of alternatives as well as the search for prior research. A good internet site for information on alternatives is the Alternatives to Animal Testing Web Site (http://altweb.jhsph.edu/) which was created to serve as a gateway to alternatives news, information, and resources on the Internet and beyond. Another useful site is the Animal Welfare Information Center (AWIC) (http://awic.nal.usda.gov/about-awic). AWIC is mandated by the Animal Welfare Act (AWA) to provide information for improved animal care and use in research, testing, teaching, and exhibition. Databases vary widely in their coverage and complimentary sources should be sought. For additional assistance or advice on performing electronic database searches, you can contact the Science Reference Librarian.

[Type here]

Appendix 7: IACUC/OB Protocol Form

Part III: ANIMAL TREATMENT INFORMATION

23 Species:

a. Strain:

b. Sex: Males Females

c. Average weight:

d. Age/s:

e. Maximum number of animals to be housed at one time. Males (N=); Females (N=) Location: ____Central Facility; _____Satellite

f. If animals are to be taken from their animal room at any time for testing or other procedures, where will they be taken _____ and for how long _____?

g. Special housing required: Describe (discuss with the facility manager before submitting protocol).

h. Maximum number of research animals in protocol year:

i. Maximum number of associated animals: (e.g., unused littermates; breeding stock used to provide research animals).

j. Vendor or animal source (Any change in approved source must be approved by veterinarian and Facility Manager.):

24.

a. Drugs/Hormones/Medications to be used in the course of the research.

DRUGS/ MEDICATION
DOSAGE
ROUTE OF ADMINISTRATION
RESPONSIBLE INDIVIDUAL

1) Controlled Substances

a. Any DEA controlled substance needs approval from the Hunter College Environmental and Safety Officer, Room 1211A, 212 772-4462. A Standard Operating Procedure statement (SOP) is required. Please attach a copy of the approval letter.

b. Biological materials (For cell lines, please provide source species and strain, vendor, purity checks, potential hazards, etc.)

25. Euthanasia:

a. Even if animals are not normally euthanized in the course of the proposed work, all protocols must provide a method of euthanasia to be used in case animals become sick or injured during the course of the research.

1) List method(s) to be used and person(s) responsible. Public Health Service Policy requires that methods of euthanasia conform to the most recent A.V.M.A. recommendations (http://www.avma.org/issues/animal_welfare/euthanasia.pdf).

2) If drugs are used describe dosage and route of administration.

3) If animals are euthanized by cervical dislocation or decapitation without prior anesthetization, provide a scientific justification for withholding anesthesia.

4) If alternative methods (e.g., not listed are used, the method must be fully described and its need justified. Please consult with the facilities manager or veterinarian if you have any questions.

b. What criteria will you use to determine that the animal is dead if decapitation or exsanguination is not used (e.g., cessation of heartbeat or respiration for a suitable period of time)?

26. Disposition other than euthanasia. Check as many as applicable and indicate species if this protocol involves more than one.

a. Transfer to another investigator, organization or person. Briefly describe subsequent treatment of the animal:

b. If animals must be permitted to die of experimentally induced conditions, including genetic abnormalities, justify the need for this requirement:

c. If the research involves the use of animals which have serious natural or experimental disease or deficit, the state of which would be maintained for an extended period, please justify:

Part IV: CONSIDERATIONS RELATED TO PAIN OR DISTRESS

27. Check the category which best describes the proposed research, and the number of animals in each category. For complex projects it may be desirable to provide the data for each experiment, if their classification varies. If animals are receiving multiple treatments, list them only once in the highest category which applies. For example, if 24 rats will be observed foraging for food, and 12 of those rats will be castrated, then 12 would be listed as (a) and 12 as (b).

a. Involves little or no pain, distress or discomfort (e.g., injections, blood sampling, blood pressure measurement, anesthetizing without recovery for organ removal, etc.

b. Involves short-term pain, pain, discomfort or distress which will be treated with appropriate anesthetics/analgesics (minor survival surgery with anesthesia and without significant postoperative pain, e.g. biopsy, implantation of peripheral chronic catheters, male gonadectomy in mammals.

c. Involves chronic maintenance of animals with a disease/functional deficit and/or procedures potentially inducing moderate pain, discomfort or distress which will be treated with appropriate anesthetics/analgesics (e.g. surgical procedures involving a body cavity; use of immunological adjuvants).

Appendix 7: IACUC/OB Protocol Form

d. Potentially involves pain, discomfort or distress which cannot/will not be alleviated through the administration of appropriate anesthetic/analgesic or tranquilizing drugs.

28. For any treatments which may cause more than momentary or slight pain or distress, describe in sufficient detail for the Committee to understand what the animal will experience. Indicate how long the condition will be maintained, what agents will be used and who will be responsible. Justify the treatment in the context of the project. This requirement applies to all experiments involving pain, distress, and/or discomfort regardless of whether drugs are other methods are being used to attempt to alleviate the pain or distress.

29 Please indicate any of the following conditions applicable to your project.

a. Imposition of abnormal environmental conditions:

b. Nutritional stress. If food or water deprivation is involved, describe 1) the deprivation regimen used to bring the animal down to its goal weight, 2) the maintenance regime used to sustain that weight and 3) the procedures designed to monitor the general health and condition of the animal. Attach a copy of the record-keeping chart which will be posted in your animal room.

c. Use of:

☐ radioisotopes [Proposals that need radiation safety approval must be sent to Dr. Lynn Francesconi, Chairperson of the Radiation Safety Committee, Mr. Peter Capitelli, Radiation Specialist, and to Ricardo Franco of Environmental Health and Safety (EHS)]

☐ infectious agents, recombinant DNA [Proposals that need bio-safety approval must be sent to the Chairperson of the Institutional Biosafety Committee, and to Ricardo Franco of Environmental Health and Safety (EHS)]

☐ carcinogens, toxins or other hazardous materials [Proposals that need environmental and occupational safety approval must be sent to Ricardo Franco, Director of EHS.]

If yes to any check box please attach a copy of the approval from the appropriate committee or College official.

d. Single or multiple survival surgery. All survival surgery must be performed using aseptic procedures. This includes, in part, surgical gloves, masks, sterile instruments, and aseptic technique. Responses to sections 3 and 5 below must conform to institutional guidelines (http://research.hunter.cuny.edu/iacuc_guidlines.htm) unless compelling justification for deviation is provided.

1) Who will perform surgery?
2) In what room?
3) Pre-operative treatment (fasting, premedication including pre-emptive analgesics, anesthesia, preparation of surgical site)
4) Describe the surgical procedure (including individual responsible, site of incision, operative manipulations, method of closure, length of procedure, etc.)

[Type here]

Appendix 7: IACUC/OB Protocol Form

5) Describe postoperative care (Individual responsible, monitoring recovery from anesthesia, use of analgesics, antibiotics, etc., fluids, suture removal, and monitoring for postoperative complications)
6) Potential postsurgical complications and how they will be addressed?
7) Should Facility staff notify the PI prior to emergency treatment?
8) Justify need to perform multiple survival surgery.

e. Non-survival surgery.

f. Other.

30. Pain and distress. (a) How will pain and distress be monitored (i.e., what criteria will be used to judge the presence and degree of pain and distress)? (b) What procedures are proposed for its alleviation?

To the researcher: Have you answered every question? Are your responses printed in a typeface which differentiates them from the questions? Do the numbers of animals per **group listed in 16, 18, and 23 agree?**

CERTIFICATION

I certify that the above information concerning procedures to be taken for the humane use of animals is, to the best of my knowledge, correct. I will seek and obtain prior approval for substantive modification of this protocol and will report promptly to the Institutional Animal Care and Use Committee any significant unanticipated distress caused to the animals.

I am familiar with the NIH Guide for the Care and Use of Laboratory Animals and the Public Health Service Policy on Humane Care and Use of Laboratory Animals by Awardee Institutions. I will conduct my activities, whether of a research or instructional nature, in conformance with these regulations, policies, and principles.

Approval of this protocol is given subject to space in the animal facilities and personnel availability. It is my responsibility to contact the Manager of Animal Facilities concerning the timing of my project and the use of responsible vendors.

Finally, I understand that the protocol is subject to ongoing review, and a complete review is required within one year from the date of the previous approval.

Faculty Member Responsible Signature Date

Chair or Dean (Print) Signature Date

[Type here]

Appendix 7: IACUC/OB Protocol Form

If this protocol covers an application for funding, I certify that the experimental design (i.e., number of experiments, precise experimental treatments, etc.) and methodology (e.g., how the treatments will be administered, drug doses, number of animals per group, numbers of pilot animals, etc.) of the protocol and the grant application agree in every detail.

Faculty Member Responsible Signature Date

[Type here]

Appendix 8: Heating, Ventilation and Air Conditioning (HVAC) System Summary

Location/Building/Facility:	**Main Facility**

The current variable-volume HVAC system was installed 8 years ago as part of a renovation project that was funded by a NCRR Facilities Improvement Grant. There are two roof mounted units that provide complete redundancy and no air is re-circulated. Intake air is filtered (90% pleated and bagged), warmed by pre-heating at the level of the air handler and then locally, at the room level, through the use of reheat coils. Air-conditioning is supplied by compressors also installed on the roof. Humidification is performed centrally and monitored in each room. A Distech Controls Lonworks Building Management System (BMS) controls rooftop units, heat exchangers, exhaust fans and individual room VAV's, VEV's and reheats. Individual room VAV boxes and reheats are equipped with high-temperature cut-off systems. The BMS can be monitored online and authorized individuals can change parameters and control key aspects of the system remotely. The BMS system issues alarms when the discharge air temperature deviates from set parameters or when any of the fans fail. There is a separate boiler alarm that signals a significant decrease in steam pressure. Alarms are monitored by the College engineers on a 24/7 basis. The Animal Facility Manager also monitors the mechanical systems using a dedicated computer terminal located in her office. Ventilation rates and pressure gradients are measured at least triennially and adjusted by a certified contractor.

Location/Building/Facility:	[redacted]

The finch housing area and associated research laboratory were built 7 years ago and are equipped with a dedicated HVAC system that provides 100% fresh air. The fish housing rooms were all constructed within the last 6 years. The largest room, and most recently constructed, is served by an independent HVAC system. The other two fish rooms use building heat and through-the-wall air conditioning units. High and low daily temperatures are measured with hand-held digital units. Animals and environmental conditions are monitored daily. The College Watch Engineer is promptly notified in the event of mechanical system failure.

Room No.	**Specific Use**	**Temperature Set-Point** (define units)	**Electronic Monitoring of Temperatures** (Y/N)	**Humidity Control** (Y/N)	**Relative Pressure**	**Air Exchange Rate** (per hour)	**Date Verified / Measured**
	Animal Housing Room – Mouse IVCS	72°F	Y	Y	-	16	2/2019
	Animal Housing Room – Mouse IVCS	72°F	Y	Y	-	16	2/2019

Appendix 8: Heating, Ventilation and Air Conditioning (HVAC) System Summary

Room No.	Specific Use	Temperature Set-Point (define units)	Electronic Monitoring of Temperatures (Y/N)	Humidity Control (Y/N)	Relative Pressure	Air Exchange Rate (per hour)	Date Verified / Measured
	Animal Housing Room – Mouse IVCS	72°F	Y	Y	-	14	2/2019
	Procedure Room	72°F	Y	Y	+	10	2/2019
	Animal Housing Room – Mouse Conventional	72°F	Y	Y	-	21	2/2019
	Animal Housing Room – Rat Conventional	72°F	N	Y	-	19	2/2019
	Finch housing	78°F	N	Y	+	15	2/2019
	Dirty Cage Wash	68°F	N	N	-	15	2/2019
	Clean Cage Wash	68°F	N	N	+	10	2/2019
	Animal Housing Room – Rodent Conventional	72°F	N	Y	+	20	2/2019
	Animal Housing Room – Rodent Conventional	72°F	N	Y	+	27	2/2019
	Animal Housing Room – Mouse IVCS	72°F	N	Y	-	12	2/2019
	Animal Housing Room – Rodent Conventional	72°F	N	Y	-	22	2/2019
	Animal Housing Room – Mouse IVCS	72°F	N	Y	-	17	2/2019
	Animal Housing Room – Rodent Conventional	72°F	N	Y	-	19	2/2019
	Animal Housing Room – Mouse IVCS	72°F	N	Y	-	11	2/2019
	Animal Housing Room – Rodent Conventional	72°F	N	Y	+	24	2/2019
	Finch housing	78°F	N	Y	-	19	2/2019

Appendix 8: Heating, Ventilation and Air Conditioning (HVAC) System Summary

Room No.	**Specific Use**	**Temperature Set-Point** (define units)	**Electronic Monitoring of Temperatures** (Y/N)	**Humidity Control** (Y/N)	**Relative Pressure**	**Air Exchange Rate** (per hour)	**Date Verified / Measured**
	Animal Housing Room – Rodent Conventional	72°F	N	N	-	20	2/2019

[Create additional rows by pressing TAB in the bottom-right box.]

Appendix 9: Aquatic Systems Summary – Part I

Please summarize water management and monitoring information programs for each animal facility, including all satellite facilities, rooms, enclosures. The following key will assist you in completing the form:

(1) List location of aquaria, including outdoor enclosures (ponds or outdoor tanks). If indoors, list building and room number. Note that all species housed at the same location and maintained via the same design and monitoring may be listed in the same row.
(2) Please indicate if embryonic (E), larval (L), juvenile (J) or Adult (A)
(3) Group tanks (ponds, outdoor tanks, multiple aquaria) are arranged as arrays with shared water supply; individual aquaria have exclusive water handling systems.
(4) Indicate water type, e.g., fresh, brackish, or marine.
(5) Indicate water pre-treatment, e.g., dechlorination, rough filters.
(6) Indicate water circulation, e.g., static, re-circulated, constant flow, or some combination of these. If applicable, indicate water exchange frequency and amount (percentage).
(7) Provide a key word for filtration employed, e.g., biological, chemical, mechanical, and type (e.g., mechanical-bead filter). A diagram may be provided showing the flow of water, filtration, source of "make-up" water and amount replaced daily.

Part I

Location (1)	Species (2)	System Design					
		Group / Individual (3)	Water Type (4)	Pre-treatment (5)	Circulation (6)	Filtration (7)	Disinfection (e.g., UV, ozone)
[redacted]	Multiple, L/J/A	I	Fresh	Amquel, Aeration	Recirculating (30% change monthly)	mechanical and biological	na
[redacted]	*Mormyrus rume*	G/I-A,E,L,J	fresh	Aeration	Re-circ	mechanical	na
[redacted]	*Gnathonemus petersii*	G/A	fresh	Aeration	Re-circ	mechanical	na
[redacted]	*Brienomyrus niger*	G/A	fresh	Aeration	Re-circ	mechanical	na
[redacted]	*Malapterurus electricus*	I/A	fresh	Aeration	Re-circ	mechanical	na
[redacted]	*Gnathonemus petersii*	I/A	fresh	Aeration	Re-circ	mechanical	na
[redacted]	*Gnathonemus petersii*	G/A	fresh	Aeration	Re-circ	mechanical	na
[redacted]	*Mormyrus rume*	G	fresh	Aeration	Re-circ	mechanical	na

Appendix 9: Aquatic Systems Summary – Part I

Location (1)	Species (2)	System Design					
		Group / Individual (3)	Water Type (4)	Pre-treatment (5)	Circulation (6)	Filtration (7)	Disinfection (e.g., UV, ozone)
[redacted]	*Astatotilapia burtoni*	I	brackish	RO, Aeration	constant flow (3-5% daily)	mechanical	na
[redacted]	*Carassius auratus*	I	fresh	RO, Aeration	Re-circ	mechanical and biological	na

Note: Records of equipment maintenance (filter changes, UV bulb changes, probe changes, calibrations, *etc*.) should be available for review.

Appendix 10: Aquatic Systems Summary – Part II

The following key will assist you in completing this form:

(1) In these columns, please indicate monitoring frequency, e.g. daily, weekly, monthly or other point sampling frequency; continuous/real time, or none, if applicable. Also indicate method of control (heaters versus room HVAC, hand versus auto dosing, etc.).

(2) Indicate other parameters and their monitoring frequency, e.g., alkalinity, total hardness, conductivity, chlorine/chloramine.

Part II

Monitoring *Indicate in the boxes below the frequency of monitoring and method of control for the following parameters. (1)*									
Location (from Part I)	**Temperature**	**Salinity**	**pH**	**NH_4**	**NO_2**	**NO_3**	**Dissolved O_2**	**Total Dissolved Gases**	**Other. Please List (2):**
[redacted]	daily	na	weekly	weekly	weekly	weekly	na	na	Conductivity Checked Weekly
[redacted]	daily	daily	daily	na	na	na	na	na	Food residue
[redacted]	daily	daily	daily	na	na	na	na	na	Food residue
[redacted]	daily	daily	daily	na	na	na	na	na	Food residue
[redacted]	daily	daily	daily	na	na	na	na	na	Food residue
[redacted]	daily	daily	daily	na	na	na	na	na	Food residue
[redacted]	daily	daily	daily	na	na	na	na	na	Food residue
[redacted]	real time	weekly	weekly	weekly	weekly	weekly	constant air supply	na	total hardness, conductivity weekly
[redacted]	real time	weekly	weekly	weekly	weekly	weekly	constant air supply	real time	total hardness, conductivity weekly

Note: This information may be provided in another format, provided that all requested data is included.

Appendix 11: 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	Enclosure Composition & Description**
mouse	7.70" x 12.17" x 5.25" 7.70" x 12.17" x 5.88" 7.50” x 11.50” x 5.0”	4 mice up to 25 gm body weight or no more than 1 Male + 1 Female + 1 Litter	Guide	IVCS and polycarbonate static microisolators
rat	10.5” x 19” x 8.0”	4 rats up to 200 gm body weight	Guide	polycarbonate open-topped and static microisolators
finch	25" wide X 11.5" deep X 12.5" high	8 post-adolescent birds	Guide	baked-on enamel coated metal and welded wire
fish	1 gallon – 250 gallons	varies widely according to species and experimental protocol	Guide	glass tanks

*For aquatic species, provide tank volume.
**Include descriptors such as open-topped, static microisolator, individually-ventilated cage systems (IVCS).

[Type here]

Appendix 11: Primary Enclosures and Animal Space Provisions

Appendix 12: Cleaning and Disinfection of the Micro- and Macro-Environment

Please describe the cleaning and disinfection methods in the Table below. Note the washing/sanitizing frequency and method for each of the following:

Area	Washing/Sanitizing Method (mechanical washer, hand washing, high-pressure sprayers, etc.)	Washing/ Sanitizing Frequency	Chemical(s) Used*	Other Comments (e.g., autoclaved)
Micro-environment				
Solid-bottom cages (static)	mechanical washer	two or three times weekly	low alkaline detergent	
Solid-bottom cages (IVC)	mechanical washer	once weekly	low alkaline detergent	
Suspended bird cages	mechanical washer	at least once monthly	low alkaline detergent	Dropping paper changed twice weekly
Cage lids	mechanical washer	every two weeks	low alkaline detergent	
Filter tops	mechanical washer	monthly	low alkaline detergent	
Cage racks and shelves	mechanical washer	every six weeks	low alkaline detergent	
Aquatic, amphibian, and reptile tanks and enclosures	by hand	frequency varies widely	varies according to laboratory and species	
Bird Feeders	by hand	once weekly	household detergent	
Watering devices	mechanical washer	once weekly	low alkaline detergent	
Exercise devices and manipulanda used in environmental enrichment programs	mechanical washer	at least once weekly	low alkaline detergent	

Appendix 12: Cleaning and Disinfection of the Micro- and Macro-Environment

Area	Washing/Sanitizing Method (mechanical washer, hand washing, high-pressure sprayers, etc.)	Washing/ Sanitizing Frequency	Chemical(s) Used*	Other Comments (e.g., autoclaved)
Transport cages	na			
Operant conditioning & recording chambers, mechanical restraint	by hand	after each use	Quaternary ammonia	
Euthanasia chambers	mechanical washer	after each use	low alkaline detergent	
Macro-Environment				
Animal Housing Rooms:				
Floors	mop	at least twice weekly	Quaternary ammonia	
Walls	sponge mop	monthly	Quaternary ammonia	
Ceilings	mop	quarterly	Quaternary ammonia	
Ducts/Pipes	mop	quarterly	Quaternary ammonia	
Fixtures	mop	quarterly	Quaternary ammonia	
Corridors:				
Floors	mop	daily	Quaternary ammonia	

Appendix 12: Cleaning and Disinfection of the Micro- and Macro-Environment

Area	Washing/Sanitizing Method (mechanical washer, hand washing, high-pressure sprayers, etc.)	Washing/ Sanitizing Frequency	Chemical(s) Used*	Other Comments (e.g., autoclaved)
Walls	sponge mop	semi-annually	Quaternary ammonia	
Ceilings	sponge mop	semi-annually	Quaternary ammonia	
Ducts/Pipes	sponge mop	semi-annually	Quaternary ammonia	
Fixtures	sponge mop	semi-annually	Quaternary ammonia	
Support Areas (e.g., surgery, procedure rooms, etc.); complete for each area:				
Floors	mop	after each use	Quaternary ammonia	
Walls	sponge mop	semi-annually	Quaternary ammonia	
Ceilings	sponge mop	semi-annually	Quaternary ammonia	
Ducts/Pipes	sponge mop	semi-annually	Quaternary ammonia	
Fixtures	sponge mop	semi-annually	Quaternary ammonia	
Implements (note whether or not shared):				
Mop heads	washing machine	weekly	household detergent	
Mop buckets	by hand cage washer	after each use monthly	Quaternary ammonia	
Other				

*Please provide chemical, not trade name.

Appendix 12: Cleaning and Disinfection of the Micro- and Macro-Environment

Appendix 13: Facilities and Equipment for Sanitizing Materials

In the Tables below, summarize the facilities and equipment used to sanitize animal related equipment (tunnel washer, bottle washer, rack washer, bulk autoclave, hand-washing area, bedding dispensing unit, *etc*.). Note that some descriptions may be combined if all share identical features (e.g., all rack washers).

[*Note*: Please remove the examples provided in the Table below.]

Building	Room No.	Equipment Type	Safety Feature(s)	Methods of Monitoring Effectiveness
		Rack washer	Emergency “off” button; labeled exit door, de-energizing cord on both sides, instructional signage	Guarantee 180-degree hot water rinse; temperature-sensitive tape used weekly; RODAC plates of caging tested quarterly
		Bulk autoclave	Emergency “off” button; lock-out key	temperature-sensitive tape in every load; spore ampules (Steris VERIFY) monthly

Appendix 14: Lighting Summary

Species	Light Intensity	Photo-period (L:D)	Water-resistant light fixtures (yes/no)	Automatic control (yes/no)	Timer override (yes/no)
rodents, birds	305 – 319 lux	12 hr : 12 hr	yes	yes	yes
fish	310 - 450 lux	12 hr : 12 hr	yes	yes	yes

Appendix 15: Satellite Housing Facilities

Note: In the Program Description Section 2. IV. (Physical Plant), item C., describe the criteria used to determine a "Satellite Animal Holding Area." In the Table below, summarize these animal housing areas. Note that the total square footage for all each of these must also be included in the Summary of Animal Housing and Support Sites and applicable information regarding these areas included in the Heating, Ventilation, and Air Conditioning (HVAC) Summary and Lighting Systems Summary.

Building	Room(s)	Person Responsible	Species Used	Approximate Area (ft^2 or m^2) Devoted to Housing	Maximum Period of Stay	Purpose / Rationale / Justification
		[redacted]	finches	150 sq. ft.	60 days	Sound isolation and recording
		[redacted]	fish	110 sq. ft.	permanent housing	aquatic
		[redacted]	fish	125 sq. ft.	permanent housing	aquatic
		[redacted]	fish	95 sq. ft.	permanent housing	aquatic