OCCUPATIONAL HEALTH PROGRAM FOR ANIMAL HANDLERS

DECEMBER 2017

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1 POLICY AND SCOPE

The “Occupational Health Program for Animal Handlers” applies to all areas and departments at MBL which handle animals including: research departments, educational courses, Marine Resource Services (MRS), Animal Care Facility (ACF), and National Xenopus Resource (NXR). Departments and Centers at MBL will provide facilities and equipment that meet Federal, State, and Local health, safety, and environmental laws and regulations, and will promulgate appropriate policies, standards, and procedures for governing MBL’s health and safety programs.

Under guidelines outlined in the publication *Occupational Health and Safety in the Care and Use of Research Animals*, the occupational health and safety program components should include: hazard identification and risk assessment; personnel training; personal hygiene; facilities, procedures, and monitoring; personal protection; and medical evaluation and preventive medicine.

For information on MBL’s IACUC Committee and submitting application (protocol) for approval, please refer to the following link: http://www.mbl.edu/services/iacuc/

The goal of this program is to establish the responsibilities and methods to identify the hazards associated with the care and use of animals, assess the risks associated with those hazards, and eliminate or manage those risks.

2 AUTHORITY AND RESPONSIBILITY

The overall management of the Animal Care and Use Program at MBL is the responsibility of the Institutional Animal Care and Use Committee (IACUC). Fulfillment of the occupational health and safety administrative requirements are the shared responsibility of Environmental Health & Safety Manager (EHS) and Human Resources (HR). The responsibility for handling animals in a safe manner is the responsibility of the every individual in the program.

2.1 MRS Director/ACF Coordinator / NXR Director

- Ensure that adequate facilities, ventilation, and equipment are provided based on the hazards associated with the work being conducted;
- Ensure employees are instructed on and follow proper procedures and utilize protective equipment provided during their work as detailed in written procedures;
• Implement and document appropriate safety policies and procedures in accordance with the Chemical Hygiene Plan;
• Implement procedures in accordance with this Program, including the disclosure of hazardous materials in animal protocols for EHS review;
• As applicable, ensure department staff with direct contact with animals have taken part in a medical evaluation;
• Ensure that staff is trained in proper safety procedures and provided with equipment and methods to control hazards;
• Ensure animal handler personnel complete training as required in the Biosafety Manual and Chemical Hygiene Plan by EHS provided training courses;
• Implement corrective measures to eliminate identified hazards including but not limited to submitting work orders to repair facility deficiencies, acquiring the proper protective equipment, and re-educating staff on proper procedures when deficiencies are identified; and
• As applicable, report work related injuries and illnesses (including animal bites) to Human Resources office within 48 hours by completing MBL Accident/Injury Report Form.

2.2 Animal Handler Personnel

• Complete training courses provided by EHS as applicable;
• Inform Primary Care Physician that job responsibilities involve working with animals;
• Wear appropriate PPE;
• Follow Standard Operating Procedures (SOPs) and guidance documents; and
• Report injuries, illnesses, and allergy symptoms when working with animals.

2.3 Environmental Health and Safety Manager is responsible for:

• Perform annual review of Program;
• Coordinate appropriate training for all animal users at MBL;
• Record training and maintain roster on file;
• Perform annual internal laboratory inspection;
• Investigate accident / injuries;
• Recommending corrective action and control measures; and
• Conduct risk assessment.
2.4 **Principal Investigators (PI)/Course Directors are responsible for:**

- Providing specific training, when needed, to all responsible personnel listed on IACUC Protocol;
- Verify personnel partake in required safety training by EHS;
- Ensures all personnel involved in procedures and handling of animals are listed as responsible personnel on IACUC protocol;
- Ensures compliance within department to adhere to policies; and
- Implementing corrective action plans.

2.5 **IACUC**

- Coordinate, manage and evaluate the Animal Care and Use Program. Ensure compliance with all applicable laws, regulations, and standards as well as the proper care of all research animals;
- Ensure a risk assessment has been performed for any new protocol or new animal species at MBL; and
- Receives reports from EHS regarding inspections, protocol reviews and risk assessments, and address concerns as needed.

3 **GENERAL RISK ASSESSMENT AND PREVENTATIVE MEASURES**

The program provides guidelines designed to protect employees from the hazards associated with the care and use of research animals. However, the primary responsibility for maintaining good health and safety lies with each individual. Personnel should always follow safety guidelines and exercise good judgement. The following basic safety guidelines apply to all work situations, regardless of specific hazards present:

3.1 **Risk Assessment**

- Learn about the animals which are handled;
- Review work tasks for potential hazards;
- Understand components of MBL’s Occupational Health and Safety Program; and
- Notify manager/supervisor with questions, need additional training, or have concerns about workplace hazards.
3.2 Preventive Measures

- Complete required training;
- Only work with animals for which individuals has received adequate training in safe handling techniques;
- Review protocols and/or exposure control plans;
- Understand potential health and safety hazards;
- Read and follow all safety signs and instructions in lab and animal areas;
- Use engineering controls whenever possible (biosafety cabinets, downdraft tables, ventilated hoods, etc.);
- Use appropriate protective clothing which may include gloves, laboratory coats, shoe covers, eye protection, and respirators masks;
- Launder laboratory coats by a professional service or use disposable coats;
- Wash hands after removing gloves. Wash hands frequently and avoid touching face while working with animals;
- No food or drinks in areas where animals, their wastes or body products are present;
- Use extreme care when using needles or other sharps;
- Know basic first aid measures for animal bites and scratches;
- Know how to report exposures, accidents, injuries and illnesses;
- Know emergency, spill, and evacuation procedures;
- Follow proper work practices for disinfection and waste disposal; and
- Notify manager/supervisor of any questions, safety concerns, work exposures or incidents, or need for additional training.

4 HAZARD IDENTIFICATION

The assessment of hazards and risks with working with animals often starts with an IACUC review of the animal use procedures (protocol) where hazard prevention strategies are formulated between veterinary services, Environmental Health and Safety (EHS), MBL's Institutional Biosafety Committee (IBC), and the specific requirements of the Guide. The common animal associated hazards are described below.

4.1 Bites and Scratches

Bites and scratches are ever-present hazards associated with research animal contact and work with related equipment. Employees should be properly trained in animal handling, general restraint techniques, and environmental factors for the
species they will work with. In addition, all staff should be familiar with first aid procedures specific to each species and the incident reporting process.

4.2 Allergens

One of the most common health risks in the research animal setting is allergic reaction to research animals. The risk of developing an allergy depends on many factors such as animal species contact, facility and ventilation design, and the employee’s personal health status. Symptoms of allergic reaction may vary and can include any of the following:

- Contact hives with symptoms such as skin redness, itchiness or welts;
- Allergic conjunctivitis with symptoms such as sneezing, eye itchiness, clear nasal drainage, or nasal congestion;
- Allergic rhinitis with symptoms such as sneezing, nose itchiness, clear nasal drainage, nasal congestion;
- Asthma with symptoms such as cough, wheezing, chest tightness, or shortness of breath; or
- Anaphylaxis with symptoms such as generalized itching, hives, throat tightness, eye or lip swelling, difficulty swallowing, hoarseness, shortness of breath, dizziness, fainting, nausea, vomiting, abdominal cramps, diarrhea.

The allergens are proteins that are excreted in animals’ saliva, urine, and from various glands associated with the skin. The allergens are unique to each species of animal, so it is possible to be allergic to one species but not another. The most effective way to control and prevent allergies is to minimize exposure to the allergens by the use of:

- Engineering controls, such as biosafety cabinets or downdraft tables;
- Personal protective equipment, such as gloves, laboratory coats, shoe covers, N95 respirator masks, and safety glasses; and
- Work practices, such as opening cages in biosafety cabinets, handwashing after handling animals, and keeping cages/work area clean.

4.3 Zoonoses

Zoonoses are any infectious diseases that can be transmitted from animals to humans. Reverse Zoonosis is the transmission of disease from humans to animals. The transmission of zoonotic disease in the research environment is
uncommon because many laboratory species are bred to be free of zoonosis. However, laboratory animals still can be infected with zoonotic agents, some of which can be life-threatening to humans. Field research with wild species remains an important source of exposure to zoonotic agents.

Infectious agents may be present in body fluids and secretions such as blood, saliva, urine, feces, respiratory secretions and in animal tissues. Exposure routes include:

- Inhalation;
- Ingestion;
- Mucous membrane (eyes, nose, mouth); and
- Breaks in the skin by cuts, bites, scratches, and needle sticks.

If exposed through a bite, scratch, needle stick, aerosol droplet, mucosal secretion, feces or urine, immediately notify a manager/supervisor and seek medical evaluation.

### 4.4 Protocol Related Hazards

Research protocols can introduce chemicals, biologic agents, or radioactive materials into animals, which then can enter the hazardous waste stream of the animal facility. Protocol-related hazards are reviewed by appropriate committees, such as the Institutional Biological Committee (IBC) and Institutional Animal Care and Use Committee (IACUC), and/or EHS to identify hazards prior to the approval of protocols. When significant hazards are identified, the PI/Course Director is required to provide staff/students who will be handling animals with specific protocol training.

### 4.5 General Safety Hazards

There are general physical hazards that can be present in any work environment, including animal research work areas. The general safety hazards include:

- Ergonomic hazards caused by tasks that require repetitive motion, lifting, or awkward body postures;
- Slip, trip and fall hazards caused by various work processes, lighting requirements, housekeeping practices;
- Sharp injury hazards caused by needles, broken glass, pipettes, scalpels;
● Flammable material hazards caused by improper use or storage of flammable hazards;
● Pressure vessel hazards related to compressed gas cylinders, autoclaves, high-pressure washing equipment;
● Electrical hazards related to the use of various electrical equipment can be minimized by proper maintenance, engineering controls (ground-fault interrupters), and operational procedures such as lock-out/tag-out procedures;
● Ultraviolet radiation and laser hazards require appropriate engineering controls (e.g., shielding, interlocking devices) and/or personal protective equipment;
● Machinery hazards may include pinch, nip or crush points related to moving parts; and
● Chemical hazards related to the use of disinfectants, pesticides, anesthetic gases, and tissue preservatives, as well as protocol-related use of chemicals.

5  FACILITIES AND HANDLING

To ensure a safe and healthy work environment for both the employee and research animals, MBL maintains appropriate animal facilities, handling procedures, and housekeeping measures.

5.1 Animal Care Facilities

Animal care facility inspections will be performed semi-annually by IACUC. These inspections are designed to verify that all laws and regulations outlined by state and federal organizations are followed. This includes the use of adequate facilities and proper maintenance of these facilities. In addition, training records, waste disposal records and other documentation will be reviewed.

Facilities and equipment will be regularly assessed and monitored. This includes review by the MRS Director for the Marine Resource Center (MRC), the Animal Care Facility Coordinator for the ACF, and the National Xenopus Resource Director for the NXR. Biosafety cabinets and all HEPA filtered equipment must have a valid performance certificate attached to verify current testing. Certification of biosafety cabinets is coordinated through EHS.
Access to animal use areas at the MBL is restricted and only to be used by authorized trained personnel.

5.2 Animal Handling

In experiments involving physical or chemical hazards, the animal user should give full consideration not only to ensuring human safety but also to avoiding stress or injury to the animals. The comfort of the animals shall be a prime concern.

No research using live vertebrate animals is allowed unless the animals are obtained from a reliable source and the following conditions can be assured:

- Appropriate sized housing;
- Adequate food and water;
- Humane treatment and gentle handling; and
- Care provided at all times including weekends and holidays.

Before interacting with vertebrate animals and/or cages, individuals must wear a laboratory coat and gloves. All procedures must be performed in the ACF procedure room, or at designated laboratory area. Animal user must follow handling restraint procedures as provided during training.

If an individual is uncomfortable in any way with the handling of any animals, in relation to the animal’s behavior or the procedure being performed, then based on the animal species contact either the MRS Director, ACF Coordinator, NXR Director, or Veterinarian for assistance.

5.3 Housekeeping

Upon finishing handling animals, the work areas should be appropriately cleaned. Cleaning is performed by decontamination of the work surfaces which typically include use of a bleach solution (requires appropriate contact time) and/or dilute ethanol solution. Refer to provided procedures specific to the department.

When finished with a cage (no more animals), bedding will be bagged for disposal as biological waste, when required. All dirty cage materials will be processed through standard cleaning protocols, and autoclaved prior to standard cleaning when required.
All bedding is dumped using cage dumping systems, which are designed to minimize exposure of particulates by filtering airborne particles through HEPA filtration.

Animal carcasses must be placed in a sealed plastic bag and the bag labeled with users name, quantity and type of animal, Course or Building/Room Number and Date. The bags are then transferring to the biological freezer in Loeb G11 or Rowe 107.

5.4 Animal Concerns

The MBL advocates the humane care and use of research animals in compliance with all applicable local, State and Federal laws and regulations and MBL IACUC policy. Please report any concerns to the MBL Veterinarian (vet@mbl.edu or x 7522), or the IACUC Chair (iacuc@mbl.edu or x7627).

6 EXPOSURE CONTROLS

Once risks are identified, measures are planned and implemented to minimize or eliminate the risks of exposure to hazardous materials. Laboratory areas and animal holding areas must protect the health of personnel exposed to the animals or surrounding environment, and protect the health of animals maintained at the MBL. EHS, in coordination with the IACUC, will review and approve animal use locations to ensure that the location has the proper engineering controls and safety measures available. To minimize exposure the following controls must be in place:

6.1 Signage

All personnel entering an animal housing containment room with potential exposure to a hazardous material are notified by signage on the entrance door. This signage will include any special requirements for entering that room including personal protective equipment. In addition, individual cages will be labeled on the cage card with the specific hazard administered.

6.2 Ventilation

At MBL the animal facilities are negatively pressurized with respect to the hallway. A biological safety cabinet and isolation cages are maintained within the facilities to provide additional containment as necessary.
The HVAC systems are maintained by Plant Operations and Maintenance (POM) personnel who perform ventilation surveys to balance systems where appropriate. If POM or EHS requires the research be stopped for safety reasons, the Department Manager/Course Director will be notified. Once repairs are completed by POM, operations can resume as normal.

6.3 **Autoclave**

The facilities are either equipped with an autoclave or have access to an autoclave for decontaminating infectious wastes. Alternatively, materials may be collected into double bagged biological waste bags and disposed as biological waste by and external vendor, which is coordinated by EHS. All hazardous substances waste must be appropriately discarded.

6.4 **Anesthetic Gases**

Individuals who use volatile anesthetic gases for animal anesthesia and/or euthanasia are required to utilize local exhaust ventilation (scavenging devices, fume hoods, or snorkel hoods) to prevent personnel exposure, unless otherwise determined by EHS risk assessment. For anesthetic machines, waste gases are vented passively through an activated charcoal filter (provided by the ACF).

6.5 **Biosafety Cabinets**

Biosafety cabinets and chemical fume hoods are inspected and tested or certified annually by EHS staff or outside vendor. The biosafety cabinets and chemical fume hoods will be certified for use of hazardous chemicals or biological agents. Because of the rigid standards for certification, not all systems can be used for hazardous material operations. Every individual working in the area with a ventilation system is responsible to know the approved use of the system and to not use hazardous materials in a system not designed to control the hazard. Any questions on appropriate operation must be addressed to the Department Manager/Course Director or EHS.

6.6 **Emergency Eyewash and Showers**

All emergency eyewash and showers are inspected by the EHS on an annual basis. The inspection criteria are based on manufacturer’s recommendations and
ANSI guidelines. The inspection tags attached to the equipment are initialed and dated following each annual inspection.

6.7 Sharps Disposal

Sharps are commonly encountered in research involving animals. Needles, glass, pipettes, and scalpels are all used in animal facilities and laboratories. Puncture-resistant and leak proof containers for sharps disposal are available in the animal housing rooms and in laboratories.

7 ANIMAL RELATED INJURIES

The definition of an animal bite or exposure is when one’s skin is pierced or abraded by animal’s teeth or claws, or by an animal’s tissue or saliva coming into contact with abraded skin, eyes, or mucous membranes. Bites and scratches have the potential of contracting zoonotic disease or allergic reactions, so proper care must be taken in the event of any injury or exposure.

7.1 Prevention

- Proper PPE should always be worn when handling animals at all locations at the MBL which includes the Animal Care Facility (ACF) or Marine Resource Center (MRC). The proper PPE for rodents are laboratory coats provided by the ACF, and latex or nitrile gloves. If other PPE are required, then that will be outlined in the IACUC protocol.
- All personnel with access to the ACF must be experienced, or have received training, for species-specific handling or restraint required with the animal(s) being used for experimentation.
- It is the PI/Course Director’s responsibility to ensure that all personnel working under an IACUC protocol are experienced, and if not, that they receive the proper training necessary for the animal procedures outlined in the IACUC protocol.
- As applicable, the MRS Director, ACF Coordinator, NXR Director, or the MBL Veterinarian can also provide any species-specific animal handling techniques.

7.2 Aggressive Animals

- If you are uncomfortable in any way with the handling of any animals, in relation to the animal’s behavior or the procedure being performed, then contact the MRC Director, ACF Coordinator, or MBL Veterinarian for assistance.
7.3 Bite and Scratch First Aid Treatment

- First Aid treatment must be administered immediately after the injury. For any injury that might be serious or life-threatening, call 911 immediately.
- Let the wound bleed slightly under running water and gently scrub with antibacterial soap for 15 minutes.
- Wash the wound until all visible dirt and debris are gone.
- Apply gauze and firm pressure to control bleeding, and until bleeding stops. Then apply antibiotic ointment and clean bandage.
- Report to the Falmouth Hospital Emergency Department for treatment.

7.4 Mucous Membrane Exposure Treatment

- Rinse the exposed mucous membranes under running water or by using an eye wash station for 15 minutes.
- Report to the Falmouth Hospital Emergency Department for treatment.

7.5 Reporting Incident

- Notify PI/Course Director, the MRS Director or ACF Coordinator, and the MBL Veterinarian immediately after first aid is administered.
- The injured individual or supervisor must fill out the Accident/Injury form within 24 hours of the incident.
- The original Accident/Injury form is to be submitted, by the supervisor, to Human Resources, a copy must also be submitted to EHS, the department director of the facility the animal is housed in, and if different, the department director of the person injured. This all must be done within 48 hours of the injury.

7.5 Incident Investigation

- Along with Environmental Health and Safety, the supervisors are responsible for investigating all accidents, determining the cause of the accident, implementing corrective measures, and following up to ensure corrective measures are adequate.
8 MEDICAL EVALUATION AND PREVENTATIVE MEDICINE

Medical evaluation and preventive medicine strategies for personnel is provided through contracted services with occupational medicine provider. For employees handling animals, medical evaluation will include allergen screening and tetanus vaccinations through the MBL’s contract provider or as provided with evidence through their health care provider. Tetanus vaccination is among the immunization requirements for all individuals handling live animals. Medical clearance records are kept on file by Human Resources. All medical records are confidential.

All laboratory personnel who have been or believe they may have been exposed to a hazardous chemical have the right to receive an employer provided medical examination. This examination is at no cost to the employee or student.

9 TRAINING

Any required occupational health and safety training will be provided to personnel prior to commencing with applicable work; before working with newly introduced hazards; before use on new or altered equipment; and when any changes are made to department specific Standard Operating Procedures (SOPs) or MBL policies and programs.

All new Animal Care Facility users, including Principal Investigators, students and technicians report to the ACF Coordinator for an initial training session. Training includes education in humane care and use of laboratory animals, how to recognize pain and distress in laboratory animals, and employee health and safety per Public Health Service guidelines (Guide). Animal facilities training also encompasses safety procedures, equipment operation, animal handling, treating and reporting injuries, zoonosis, allergies and hazards. Training is documented and stored on file by the ACF Coordinator of the Animal Care Facility.

Animal handlers of non-rodents (such as squid, fish, frogs, crabs) will be provided training by the Manager/Supervisor in the respective departments with appropriate procedures and technics to minimize stress with the animal and prevent injury with the handler. MBL employed animal handlers are provided training with direct oversight upon hire.

In addition, the MBL Veterinarian, who is an IACUC member, will provide a required training course to all employees, faculty and students which will use animals. This training meets the federal (USDA, OLAW) requirements for basic training in the humane care and use of animals in research and teaching. Training will include: concept of the "Three Rs" (replacement, reduction and refinement) and the various alternatives, the use of experimental designs that minimize the numbers of animals required and to use and procedures that limit pain and/or distress in laboratory animals.