Boston College

Occupational Health Program for Exposure to Research Animals

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Introduction

This Manual is written to ensure that all Principal Investigators, student animal handlers, and employees (hereafter referred to as "handlers") understand and comply with the requirements of the Occupational Health Program for the Animal Care Facility (ACF).

Requirements:

All handlers working with laboratory animals must:

- Read this *Occupational Health Program for Animal Handlers*. Please seek clarification from the ACF Manager for any items or issues that are not clearly understood.

- A copy of this manual must be maintained in each Principal Investigator's laboratory and the ACF, and its contents made readily available to all individuals working with laboratory animals.

- Each Principal Investigator (PI) must make sure all faculty and student handlers working on their protocols read this *Occupational Health Program for Animal Handlers*.

- Principal Investigators must complete a Health Service Registration Letter for each handler (including themselves) working on their protocols and give it to each handler to take to the Occupational Health Center (OHC) designated in Attachment 1. The Animal Facility Manager will complete the Health Service Registration Letter for all Animal Facility employees. Handlers must visit OHC before having any animal contact. The Principal Investigator and Animal Facility Manager, as appropriate, will review the tables on the Animal Exposure Risk Assessment form to determine which services should be requested on the Registration Letter. Each handler must return the Registration Letter to the Animal Facility Manager signed by an OHC representative as proof of compliance with this part of the program. The letters and exposure risk tables should be reviewed annually to ensure that all animal handlers are current with their testing and counseling.

- The Animal Facility Manager must make sure all handlers complete and sign an entry in the table on the Signature Log. The log must be completed or updated before a new handler begins working under a protocol and at each annual review of the protocols it covers.

- A copy of the First Aid Instructions included in this manual must be posted prominently in the Animal Facility.

- All handlers should inform their personal physicians that they work with animals and remind them of this fact when they are making a diagnosis of any illness.

Program Overview

This document constitutes the Boston College (BC) Occupational Health Program for Exposure to Research Animals. The BC Institutional Animal Care and Use Committee (IACUC) is responsible for the design and enforcement of the program.

All persons who have contact with animals must be made aware of the potential hazards of working with animals and of the procedures available at the University to prevent and treat such hazards. It is the responsibility of the PI of each IACUC approved protocol to assure the IACUC that all handlers under his or her supervision (co-investigators, staff, students and volunteers) who have contact with animals have been informed of the potential dangers involved and are aware of the procedures available to prevent and treat such hazards. Completing the tasks laid out in this program will fulfill that responsibility.

All handlers must be informed of the availability of occupational health services at the Occupational Health Center (OHC). There handlers can receive appropriate counseling about the availability of pre-exposure vaccines, have routine tuberculosis testing where appropriate, have pre-contact and post-employment serum samples collected as reference materials where appropriate, and receive treatment for exposure to animal allergens, bites, scratches, etc.

Any individual who has been bitten or scratched while working with an animal, or who has a known exposure to a zoonotic disease must report the incident to the PI, ACF Manager, and to the appropriate health officials. The handlers must fill out an Accident Report and give it to the ACF Manager within 24 hours of the incident. Handlers receiving bites, scratches, or needle-sticks, or those who have experienced eye splashes with animal urine, feces, blood, or secretions should proceed immediately to the St. Elizabeth's Hospital emergency room. Any handler having a known exposure to a zoonotic disease should contact the OHC and, at the determination of the OHC, make an appointment to receive the appropriate information and/or treatment.

While an IACUC protocol may be approved before all the requirements of this program are fulfilled, no animals may be ordered for use with the protocol until the PI is in full compliance with the provisions of the program. Furthermore, at each annual review of a protocol, PIs will certify that, to the best of their knowledge, all animal handlers working under that protocol are in compliance with the provisions of this program.

Occupational Health Considerations for Animal Handlers At Boston College

Background

Personnel working with animals in research or educational programs are at risk to zoonotic diseases, i.e., diseases capable of being transmitted between humans and animals. Over 150 diseases may be classified as zoonotic. Many are of paramount concern; e.g., Rabies, Monkey B-Virus, Cat Scratch Fever, Rat Bite Fever, Pasteurellosis, Tuberculosis, etc. Furthermore, exposure of personnel to animals may involve hazards other than zoonotic diseases, e.g., animal bites and scratches, human pathogens introduced into the animals, toxin, carcinogen, or radioisotope use. The presence of immune-compromised animals or personnel in the workplace is also a concern. Brief descriptions of a few of the important zoonotic diseases are given below.

Allergies: Since at present the ACF houses mice, rats, and frogs, the primary occupational health concern pertains to allergies. Those coming in contact with ACF-housed animals should report any suspected allergic reactions to the animals or environmental factors present in the ACF (e.g., chemicals, cleaning agents, etc.) to the ACF Manager. Careful notation should be made as to when and under what conditions such reactions appear. Appropriate testing for allergies will be coordinated with the OHC.

Rat Bite Fever: The disease in humans is a flu-like disease with fever and migratory arthralgia and myalgia. Transmission is nearly always via a rat bite, although infection via scratches inflicted by rats occurs in rare cases. The disease is usually controlled by appropriate antibiotics.

The following items are not presently of concern, but they are presented in the event the ACF houses the species mentioned below:

Rabies: Although human rabies is rare in the USA, cases in animals are on the rise. The disease is usually acquired by an animal bite and is nearly always fatal if not treated before clinical signs appear. Both preventative vaccination and prophylactic active and/or passive immunization after exposure are available.

Monkey B-Virus: Monkey B-Virus (Herpesvirus simiae) is a rare, but fatal, disease in humans. The virus causes minor clinical disease in its natural hosts, which includes rhesus (Macaca mulatta) and cynomolgus (M. fasicularis) monkeys, but may remain latent in an animal and reactivate spontaneously. The disease is usually thought to be transmitted by bites or scratches, but may be transmitted by other means. One case of human-to-human transmission has been reported. The anti-viral drug Acyclovir has been used in treatment of infected people. The efficacy of the treatment, however, is not known.

Toxoplasmosis: Young (pre-menopausal) women should avoid contact with cat feces and litter

boxes because of the risk to the fetus of a woman who is infected during pregnancy. The protozoan parasite Toxoplasma gondii can be transmitted by swallowing something contaminated with infected cat feces or undercooked meat. Humans are commonly infected asymptomatically and become immune as a result, and there is no risk to a fetus unless the primary infection of the mother occurs during that pregnancy. It rarely causes disease except in persons who are immune-compromised, when infection may reactivate and cause encephalitis. In the rare case of clinical disease from postnatal infection, symptoms may include fever, rash, muscle or joint pain, or lymph node swelling. Those who are at risk should practice careful sanitation, especially hand washing, and avoidance of cat feces. Women who anticipate pregnancy should be tested serologically.

Tuberculosis: Tuberculosis is of particular concern to people working with non-human primates. The disease is usually transmitted to non-human primates by humans, but then may be transmitted back to uninfected humans. Every effort should be made to prevent the spread of the disease from human to animal and vice versa. The disease in man is generally treatable. However, drug resistant strains are becoming more prevalent.

Cat Scratch Fever: The causative agent is thought to be a bacterium, Bartonella henselae. The disease is characterized by lymphadenopathy without lymphangitis and signs of systemic infection including a mild fever. Usually there is a history of recent exposure to a cat scratch or bite, or trauma from inanimate objects potentially exposed to cats (e.g., splinters from a litter box).

Pasteurellosis: Pasteurellosis (Pasteurella multocida) in humans is due usually to dog or cat bites and/or scratches. Cases are characterized by severe pain and swelling within a few hours or up to a week post-exposure. Abscesses and bone and joint involvement may occur. Antibiotic treatment is usually effective.

Prevention

All new employees are referred to OHC for medical and work history, tuberculosis testing and routine vaccinations and physical examination, if required. For personnel working with certain animals, pre-contact, periodic and post-employment serum specimens should be collected for future reference. Every employee should receive appropriate vaccinations.

Once employed, personnel must always wear protective clothing when working with animals. Such clothing minimally includes a lab coat, shoe covers, bonnet, and gloves. Additionally, surgical type face masks should be worn when working with diseases that may be airborne or in areas that are subject to a high allergy producing atmosphere. Sometimes more specific preventive measures should be considered. Personnel working with dogs or cats should consider receiving pre-exposure vaccination for rabies. Pre-exposure immunizations for hepatitis B and other prophylactic vaccinations for individuals conducting research on specific diseases can also be administered.

Personal Hygiene

There are a number of personal hygiene issues that apply to all handlers who are exposed to animals.

- There should be no eating, drinking, smoking or application of cosmetics in areas where animals are used. Food should be stored in a separate refrigerator maintained for this purpose only and located outside of the area where animals are used or housed.

- No animals should be kept overnight outside of the designated animal housing rooms. Exceptions may be granted to this rule only by the BC IACUC.

- Appropriate gloves should be worn at all times when handling animals.

- All contaminated or infectious substances should be handled in such a manner as to minimize the formation of aerosols.

- There are numerous requirements for handling large animals. Investigators contemplating their use should contact Dr. James Fox, Consulting Veterinarian (617-253-1757) for an update on disease risks before ordering animals.

- Laboratory coats must be worn over street clothes when animals are handled. This will decrease the contamination of the street clothes. The laboratory clothes should be left in the locker area and should not be worn while eating.

- Additional specific precautions are necessary when handling biohazardous agents. Guidelines for their use must be obtained from the BC Office of Environmental Health and Safety (EHS) (2-0307).

- Mechanical pipetting should be used. Mouth pipetting is not allowed.

- All work surfaces should be decontaminated daily and after any animal use.

- Careful hand washing must be done after handling animals and prior to leaving the ACF for any reason. One of the most effective disease preventative methods available when treating any injury that breaks the skin is *immediate* and *thorough washing* of the injury with soap and warm water. See First Aid Procedures in this manual for more details about treating injuries.

- Contaminated materials that will not be decontaminated in the laboratory itself should be placed in containers that are both leak proof and durable before they are removed from the ACF. Specific procedures from EHS should be in place for the disposal of these materials.

Laboratory Animal Allergy

Laboratory Animal Allergy (LAA) is a significant occupational health concern for many animal attendants, staff, scientists, and technicians engaged in the care and use of laboratory animals. It is advantageous to identify susceptible individuals prior to exposure and to implement strict codes of good laboratory practice to reduce their contact with allergens.

LAA is a hypersensitivity reaction upon exposure to a laboratory animal, its fur or dander, its urine, saliva, or other body tissues. Symptoms range from mild (with little effect on the ability to work) to severely debilitating (preventing further work near the causative allergens). Death can result from severe allergic reactions. LAA often exhibits upper respiratory symptoms like sneezing and itchy or running nose and eyes. Lower respiratory symptoms may include wheezing, shortness of breath, and asthma or a feeling of chest tightness. Skin symptoms may include the appearance of red, raised, itchy wheals after contact with animals, their tissues, their urine, saliva, skin flakes, or even dusts contaminated with their waste products. People who have a prior personal history or family history of asthma, hay fever, or eczema will be more likely to develop asthma after contact with animals, but these people do not seem any more likely to develop rhinitis and conjunctivitis than do people without such personal or family history. Because of these broad symptoms, it is necessary that everyone exercise precautions to prevent LAA.

Animal allergy is common in workers exposed to small animals such as mice, rats, gerbils and guinea pigs. Most of these allergies may be caused by dander and debris from the skin and fur of an animal, but there is evidence that exposure to animal urine, saliva and fecal matter may be equally or more important. There is also evidence that pre-albumin from mouse urine and albumin from skin are allergens. Urine from female rodents contains lower quantities of allergenic proteins than urine from male rodents. Concentration of airborne allergens depends on the level of proteins in the rodent environment and how many particles from bedding, food, and water are suspended in the working environment. Countermeasures have been proposed for the reduction of mouse skin antigens and airborne allergens by using only female mice, wearing masks and disposable gloves, covering the cages with filter caps, and using dust-free bedding to obtain reduction of suspended particulates. High levels of airborne allergens occur in animal rooms, even when animals are undisturbed.

LAA symptoms can develop from months to years after a person begins working with laboratory animals. In the past the most common way to handle employees who became allergic to laboratory animals was to reassign them to areas where contact with the species was lower. However, since reassignment is not always feasible, certain procedures should be routinely followed in order to prevent the development of animal allergy.

- Animals should be worked with in extremely well-ventilated areas to dilute allergenic particles at the source.
- Workers should always wear gloves, masks and lab coats to prevent direct exposure to the

animals and their products.

- Cages should be changed frequently to reduce build up of animal allergens in the environment.
- Any method that will reduce allergen contact and/or reduce the opportunities for contaminated dusts to become aerosolized should be employed.
- Educational programs and good laboratory practice for all staff members working with laboratory animals could significantly reduce the incidence and severity of LAA.

Despite the best preventive techniques, some individuals will develop allergies to laboratory animals. Knowing the risks in specific areas or tasks is the first step toward reducing exposure.

Adapted from an article by Hunskaar S., Fosse R. T., Lab Animal, 1993 Jul; 206 - 21.

Occupational Health Program
Signature Log

Principal Investigator's name: _____

IACUC protocol numbers covered by this log: _____

The animal-handling individuals working under the protocols listed above certify by their signature that they have received the appropriate procedures and counseling as required by the Animal Exposure Risk Assessment tables and have read, understand, and are in compliance with the other Occupational Health Program for Animal Handlers requirements.

Print: 1) Name 2) Faculty / Staff / Student / Volunteer	Name each species used.	Signature & date *I have read, understand & am in compliance with the Occupational Health Program for Animal Handlers requirements.*

This log must be completed or updated before ordering animals for a new protocol, before a new animal handler begins working under protocols listed above and also at each annual review of these protocols. This log must be available for inspection at all times.

Animal Exposure Risk Assessment

The information requested in this questionnaire about your health status will be used only to determine your level of risk and need to undergo medical examination. Your responses to this questionnaire are considered confidential; they will be reviewed by a physician, and stored in an off-campus medical office to ensure the security of your confidential information. This risk assessment questionnaire must be re-submitted anytime there is a substantial change in health status.

Today's date:	Name:			
Email Address:	Date of Birth	Age	Female Male	☐ ☐
Mailing Address (BC or Home):	City:	State:	Zip Code:	
Job Title/BC Student Status:	Work Phone:			
PI/Supervisor:	BC Department:			

	NO	YES	**PLEASE ANSWER THE FOLLOWING QUESTIONS TO THE BEST OF YOUR KNOWLEDGE.**
1.	☐	☐	Is animal husbandry (i.e., providing food and water, cleaning cages, grooming animals, etc.) an essential part of your duties?
2.	☐	☐	Do you work with or in proximity to non-human primates or their blood, fluids, or tissues?
3.	☐	☐	Will you be performing or assisting in the performance of invasive procedures on live animals (e.g., injections, surgery, catheterizations, gavage feedings, etc.) or necropsies?
3.	☐	☐	Do you work with or in proximity to pregnant mammals (not including rodents)?
4.	☐	☐	Do you work with or in proximity to wild-caught mammals or wild-caught birds?
5.	☐	☐	Do you work with or in proximity to venomous animals?
6.	☐	☐	Does your work require you to use infectious agents in animals?
7.	Check the box that best describes your work.		How much do you predict you will work with or in proximity to laboratory animals? ☐ no direct contact (i.e., you will only enter rooms/areas not used for animal confinement) ☐ less than eight hours per week ☐ more than eight hours a week
8.	☐	☐	Do you have any of the following medical conditions: ☐ Known allergies or suspected allergies to animals? ☐ Chronic health problems such as diabetes? ☐ Serious kidney or liver disease? ☐ Valvular heart disease? ☐ Immune system deficiencies or other limitations to your ability to fight off disease? ☐ Current therapy with oral corticosteroids, radiation therapy or cancer therapies? ☐ History of problems with your spleen or absence of your spleen? ☐ Pregnant or planning to get pregnant? ☐ Asthma?

Find the species in Table 1 with which you have contact. Complete the procedures for the applicable codes as detailed in Table 2. For those procedures to be performed by OHC, the Principal Investigator will complete a copy of the Health Service Registration Letter for you using this information. Make an appointment with the OHC and take the Registration Letter to the appointment for signature by a health service representative.

Table 1

Species	Applicable Codes
Rabbits, Rodents, Birds	1, 3, 9
Dogs, Cats, Wild-caught mammals	1, 2, 3, 5, 7, 9
Primates	1, 2, 3, 4, 7, 8, 9, 10
Farm Animals	1, 3, 6, 9
Amphibians, Reptiles, Fish	1, 3, 9

Table 2

Code Number	Required Procedure	Frequency	Provided by
1	Pre-contact physical exam with allergy history	Once, before contact with animals	OHC†
2	Pre-contact serum banking	Once, before contact with animals	OHC
3	Tetanus immunization	Every seven years or following known injury	OHC
4	TB evaluation	Annually	OHC
5	Evaluation for rabies immunization	Annually	OHC
6	Special education on large animal diseases	Once, before contact with animals	IACUC‡
7	Post-employment physical (including serum for banking)	Once	OHC
8	Annual serum banking	Annually	OHC
9	Familiarity with and completion of all applicable components of the BC Occupational Health Program for Animal Handlers.	Annually	Animal handler responsibility
10	Pre-contact measles evaluation	Once, before contact with animals	OHC

† Occupational Health Center ‡ Arranged through the Committee on Animal Care *Table 2*

Occupational Health Service Registration Letter

Hand Deliver To: Newton Wellesley Hospital, Health at Work Program

From (PI): _____

Protocol #(s): _____

Re: Registration for Occupational Health Program for Animal Handlers

Because of work in my lab with *(specify species)*_____, the animal handler named below may need special counseling or services from the Occupational Health Center (OHC) regarding species specific zoonotic morbidity/mortality risks. Please register the listed individual for the Boston College (BC) Occupational Health Program for Exposure to Research Animals. As an animal handler at BC, he/she will require the following services according to the Animal Exposure Risk Assessment Table (*check all that apply*):

- [ ] Pre-contact physical exam with allergy history or certification of such exam within the previous 6 months
- [ ] Pre-contact serum banking
- [ ] Tetanus immunization
- [ ] TB evaluation
- [ ] Evaluation for rabies immunization
- [ ] Special education on large animal diseases
- [ ] Post-employment physical (including serum for banking)
- [ ] Annual serum banking
- [ ] Pre-contact measles evaluation

Please Note: Persons immune-suppressed due to chemotherapy, radiation therapy or steroid therapy or as a result of conditions such as pregnancy, insulin dependent diabetes, AIDS, Hodgkin's disease, leukemia, lymphoma, general malignancy, lupus, etc. should ask for counseling about their special needs during this appointment.

Please print

Name: _____ Date: _____

Department: _____

OHC use only

The person named above has been seen and registered as an animal handler.

OHC Rep. Signature_____ Date:_____

Principal Investigator's Notice of Understanding and Compliance with the Occupational Health Program for Animal Handlers

MEMORANDUM

To: Institutional Animal Care and Use Committee, c/o Director, Office for Research Protections, Waul House

Re: Principal Investigator's Notice of Understanding and Compliance with Occupational Health Program for Animal Handlers

I understand that it is my responsibility to notify personnel of the potential hazards involved in working with animals and measures that should be taken in case of an exposure incident. ALL animal-handling individuals working on my protocol have:

1. Been informed of health risks and precautions which affect them. Part of each animal handler's overall orientation and job training has been to read and comprehend the Occupational Health Program for Exposure to Research Animals.

2. Been to the Occupational Health Center (OHC) designated by the University in accordance with the recommendations of the Animal Exposure Risk Assessment tables. A current copy of the Health Service Registration Letter signed by an OHC representative is on file with the Animal Care Facility Manager for all animal handlers.

3. Signed the Signature Log.

_____

Protocol #

_____

Principal Investigator's Name

_____ _____

Principal Investigator's Signature Date

FIRST AID PROCEDURES

Animal Bite, Scratch, or Needle-stick

1. Massage and apply gentle pressure to the wound to make it bleed. (Use discretion if a major vessel is pierced.)

2. Immediately massage the wound with soap and warm water for 3 to 5 minutes. **This is very important!** Rinse periodically.

3. Dry and cover the wound.

4. Proceed immediately to the St. Elizabeth's Hospital Emergency Room.

5. Complete the Accident/Injury Report and submit it to the Animal Facility Manager within 24 hours of injury.

Eye Splash with Animal Urine, Feces, Blood or Secretions

1. Rinse eye(s) immediately with eye wash solution or water for 5 minutes.

2. Proceed immediately to the St. Elizabeth's Hospital Emergency Room.

3. Complete the Accident/Injury Report and submit it to the Animal Facility Manager (2-8476).

Adapted from AALAS Bulletin, Vol. 30, No. 6, November, 1991.

Boston College

ANIMAL HANDLER'S FIRST REPORT OF INJURY STATEMENT
SUPERVISOR'S DETAILED DESCRIPTION OF INJURY / ILLNESS AND ACCIDENT SCENE

Handler's Supervisor Must Complete This Form Unless the Injured Person is the Principal Investigator

Injured Employee:

Date of Injury: Time of Injury: ☐ AM ☐ PM Job Title:

Injury Location:

Building	Room Number	Area

1. Describe the type of work area where the accident occurred (stairs, dock, office, hallway, street, etc.)
Please explain any unusual conditions that were present at the time of the injury.

2. Based on your inquires, explain how and why this injury occurred:

Putative Cause of injury (fall, tool, machine, ground, wet floor, etc.)

3. Was employee doing his/her regular job? ☐ Yes ☐ No

4. Was there physical evidence of injury to the body part in question? ☐ Yes ☐ No

If yes, please describe (swelling, bruising, laceration, etc.)

5. Does the employee speak English? ☐ Yes ☐ No If no, what language?

6. Injured employee's date of hire: Occupation of Injured Worker:

Length of service in current position: _____ Length of service in Occupation: _____

7. Was the employee wearing personal protection equipment? ☐ Yes ☐ No ☐ Not Applicable

8. Was the employee advised of safety policies and procedures to prevent further occurrences? ☐ Yes ☐ No

9. Was medical treatment given to the employee? ☐ Yes ☐ No

10. Was the employee given the opportunity to choose a treating physician? ☐ Yes ☐ No

11. If taken for medical treatment, name of facility:

12. Did a department representative accompany the employee to the medical facility? ☐ Yes ☐ No

If yes, please provide the representative's name:

13. Has the employee lost time from work due to this injury? ☐ Yes ☐ No If yes, date lost time began:

13a. Has the employee returned to work? ☐ Yes ☐ No If yes, date returned to work:

The above statement is true and accurate to the best of my knowledge.

Supervisor Name: _____ Supervisor Signature: _____

Date: _____ Campus Ph. #: _____

SUBMIT COMPLETED FORM TO THE OFFICE FOR RESEARCH PROTECTIONS, WAUL HOUSE, CHESTNUT HILL CAMPUS

Boston College
Office for Research Protections
140 Commonwealth Ave., Waul House
Chestnut Hill, MA 02467
(617) 552-4778 Fax: (617) 552-0498 E-mail: iacuc@bc.edu

Report a Safety Concern or Hazard

Instructions: Use the form below to report a safety concern or hazard and drop it in the campus mail to the address above. THIS REPORT IS COMPLETELY CONFIDENTIAL. If you would like to be contacted about this concern and its resolution you may provide contact information- **this is completely voluntary and confidential**. You may also use email, iacuc@bc.edu . You are also welcome to call us at 617-552-4778.While calls will remain confidential, we cannot guarantee anonymity since the University uses caller identification in its telephone system.

Date:		Describe Hazard:	

Department:		Building/Area where hazard was seen:	

Would you like the Director, Office for Research Protections or the Animal Care Facility Manager to contact You? ☐ Yes* ☐ No
* IF yes please provide contact information (Name and phone or e-mail)
: