



Gregory School of Pharmacy  
& the Office of Academic Research  
Gregory Hall, room 456  
PO Box 24708  
West Palm Beach, FL 33416-4708  
(561) 803-2463

# **PALM BEACH ATLANTIC UNIVERSITY**

## **ANIMAL RESEARCH FACILITY**

### **STANDARD OPERATING PROCEDURES**

**Palm Beach Atlantic University**  
**PO Box 24708**  
**West Palm Beach, FL 33401**

Revised 28.11.2010

## Standard Operating Procedure

### I. General Information

A. It is the responsibility of all individuals working in and conducting research in the Palm Beach Atlantic University animal facility to be familiar with the contents of this Standard Operating Procedure (SOP). Any actions that occur that are in violation of these procedures will subject the individual animal care program involved to an Animal Research Facility SOP violation. **It is important to read and be familiar with the document in Appendix I pertaining to SOP violations.**

B. The Palm Beach Atlantic University Animal Research Facility (ARF) is designed to accommodate small laboratory animals (e.g., mice, rats, hamsters, gerbils) for use by investigators in the Gregory School of Pharmacy as well as other academic units of the PBA community. Non-Gregory faculty, students, and staff must first seek approval from the Dean of the Gregory School of Pharmacy before access is granted for research and/or animal husbandry purposes. All primary investigators are assigned space on a cooperative basis for studies of pharmacology, pharmacokinetics, nutrition, genetics, physiology, endocrinology, toxicology, or behavioral research. Space in the facility is limited to requirements for conventional, germ free or Biosafety Level 1.

C. Operation of the Palm Beach Atlantic University ARF is the responsibility of all primary investigators, co-investigators, student co-investigators, and relevant employees of Palm Beach Atlantic University. All individuals using the facility are required to maintain clean environment, humane treat animals humanely, maintain appropriate records as required, and show proper respect for the rights of all personnel. Investigators are required to provide the animals with proper housing, handling, feed and water while in the facility. The health monitoring will be done daily, including weekends and holidays.

D. The **Palm Beach Atlantic University ARF SOP** serves as a guideline for the housing and care of laboratory animals in the ARF and serves the following functions:

1. Provide assurance that all personnel follow the same procedures.
2. Serve as a training document for new personnel and reinforcement of procedures for established personnel.
3. Serve as a reference source for information about standard procedures.

E. It is the responsibility of the Facility Manager to oversee the daily operations of the animal facility and assure compliance with the standard operating procedures.

F. Individual rack assignments will be made on a monthly or short-term basis. Investigators must have a current Animal Use Protocol on file with the Office of Academic Research.

G. Joint-use rooms are available for all investigators. They must be kept clean and neat for use by the next person.

H. In order to reduce the risk of spreading disease, it is the facility policy that animals may not be returned to the facility after leaving the building and transported where they have been exposed to other animals or disease causing agents.

I. **Security--**Access to the ARF will be limited to **authorized personnel only**. Authorized personnel must accompany all visitors to the facility.

J. **Housing**--Colony population density is recommended to not exceed 4 rodent racks. The density may need to be reduced further if the number of animals per cage is increased or if the room air handling system is inadequate.

1. All animals are to be comfortably caged. Cage size should allow for the normal postural adjustments of the species involved. Standard stainless steel cages and plastic tubs are available for housing.

2. The *Guide for the Care and Use of Laboratory Animals* sets limits on the maximum number of animals that can be housed in any primary enclosure. This number varies with the size of the cage and the weight of the individual animals, and is not to be exceeded. See the SOP for specific animals for additional details or consult the "*Guide...*".

3. Animals should be segregated by sex and caged accordingly, unless experimental procedure dictates otherwise.

4. Albino mice must not be housed on the top shelf of the rack due to the possibility of eye damage from high illumination.

K. **Watering**--All animals must have ad lib access to clean, potable water unless it is part of an approved experimental protocol.

1. Water bottles are replaced at least once per week, or more often if necessary to assure cleanliness. Water bottles are sanitized in the cage washer. Sipper tubes and stoppers are sanitized in the cage before being reused.

2. Animals using the automatic water system will be checked daily to assure that they are receiving water.

L. **Feeding**--All animals must have ad lib access to food at all times unless it is part of an approved experimental protocol. All food must be clean and free from contaminants.

1. Remove feed that is molded, wet, or otherwise soiled.

2. Storage of diets in animal rooms must be in approved portable containers with lids.

a. Feed containers must be sanitized in cage washer once a month.

b. The feed milling date, located on the bottom of the feed bag, must be recorded on the lid of the feed barrel when the new feed is placed in the container. Mouse, rat, hamster, or gerbil feed should be used within 90 days of opening.

3. Feed should be used in a manner to prevent excessive storage. Unopened bags with a printed milling date of over 6 months should be discarded.

## II. Personnel

A. Treatment and handling of animals must be conducted in a humane manner at all times.

B. It is the responsibility of the investigator to provide adequate personnel to properly maintain his/her animals during both the week and weekend hours. This includes holidays. Proper maintenance includes feeding, watering, cage changing, cage washing and room sanitation.

C. The ARF has a one-on-one training program that is mandatory for all individuals that are new to working in the animal facility. Upon assignment to the ARM, new students and staff should report to the ARM Facility Manager to make arrangements for taking the training.

1. Individuals working with animals or equipment within the ARM are required to complete the training prior to receiving security access to facility and before beginning work unsupervised in the facility.

2. Gloves and lab coats must be worn in the animal rooms and cage wash area at all times. Eye protection should be worn while pre-washing cages.

3. Eating, drinking, and smoking are not permitted in animal or service rooms.

A break room is provided on the second floor of Gregory Hall for eating and drinking.

4. All persons in contact with animals must wash their hands thoroughly upon entering and leaving animal rooms. Individuals must be careful to practice good hygiene when working in a succession of rooms. This is for the protection of the employees as well as the animals.

D. Any employee bitten by an animal or injured on the job should report immediately to their supervisor who will arrange for medical attention and completion of accident reports.

E. Individuals conducting activities in the ARF are required to receive all required inoculations prior to working in the facility.

#### **IV. Procurement of Animals for Research or Husbandry**

##### **A. Animal Procurement**

1. Unless instructed otherwise, the ARF Manager places all orders for animals to be housed in the ARF.

2. Investigators wishing to initiate a protocol using animals are required to fill out a new Animal Care and Use Protocol Review Form. These forms can be obtained

by downloading them from the Office of Academic Research (OAR) website:  
[www.callisto-science.org/OAR/](http://www.callisto-science.org/OAR/)

3. An original protocol must be on file in the OAR office. This protocol must include special information pertinent to the management, health care and use of the research animals. This form establishes the records required by regulatory and granting agencies. In addition, it establishes a permanent protocol number, which will remain assigned to that project until its completion. Protocols using carcinogens, toxins, radioactive materials or biohazardous material must establish a project safety protocol with the head of National Plant Services.

4. A request must be completed and approved by the ARF Manager before animals are placed in the facility. In addition, all animals must have health certification before the animals are housed in the facility. Animals with contagious diseases will not be allowed into the facility.

5. All animals used in the ARF must be from approved sources (see below). Animals will be procured only when adequate cages and space are available.

The following are sources of laboratory animals routinely used by the ARF. Other sources are used at the investigator's discretion, provided that the Attending Veterinarian and ARF Manager can verify the health status of the animals. Arrangements to accommodate animals, which pose a risk to the health of other animals in the facility must be made with the Office of the Dean, The Lloyd L.

Gregory School of Pharmacy. The investigator will be responsible for all costs incurred while the animals are housed outside of the ARF.

**Approved Vender List:**

**Rodents (General)**

Harlan Laboratories, Inc.  
8520 Allison Pointe Blvd., Ste. 400  
Indianapolis, IN 46250 US  
Phone: (317) 806-6080  
Fax: (317) 806-6068  
Toll Free: (800) 793-7287  
E-Mail: [harlan@harlan.com](mailto:harlan@harlan.com)  
Web: <http://www.harlan.com>

Charles River Laboratories  
251 Ballardvale St.  
Wilmington, MA 01887 US  
Phone: (978) 658-6000  
Fax: (978) 988-9236  
Toll Free: (800) 522-7287  
E-Mail: [comments@crl.com](mailto:comments@crl.com)  
Web: <http://www.criver.com>

Jackson Laboratories, Inc.  
Bar Harbor ME 04609  
(207) 288-3371; (207) 288-5845  
(800) 422-MICE (For orders only)  
FAX: (207) 288-3398  
Taconic Farms, Inc.  
273 Hover Avenue  
Germantown, NY 125 26  
(518) 537-6208 or (888) TACONIC  
FAX: (518) 537-7287

Hilltop Lab Animals  
PO Box 183, 131 Hilltop Dr.  
Scottsdale, PA 15683 US  
Phone: (724) 887-8480  
Fax: (724) 887-3582  
Toll Free: (800) 245-6921  
E-Mail: [clientserve@hilltoplabs.com](mailto:clientserve@hilltoplabs.com)  
Web: <http://hilltoplabs.com>

**Mice**

Harlan Sprague Dawley, Inc.

P.O. Box 29176  
Indianapolis, IN 46229  
(317) 894-7521  
FAX: (317) 894-1840

Jackson Laboratories, Inc.  
Bar Harbor ME 04609  
(207) 288-3371; (207) 288-5845  
(800) 422-MICE (For orders only)  
FAX: (207) 288-3398

Taconic Farms, Inc.  
273 Hover Avenue  
Germantown, NY 125 26  
(518) 537-6208 or (888) TACONIC  
FAX: (518) 537-7287

### **Hamsters**

Sasco, Inc  
Charles River Breeding Laboratories, Inc.  
251 Ballardale St.  
Wilmington, MA 01887  
(508) 658-6000  
(800) 228-4919  
FAX:(800) 255-8964

Harlan Sprague Dawley, Inc.  
P.O. Box 29176  
Indianapolis,IN 46229  
(317) 894-7521  
FAX:(317) 894-1840

### **Gerbils**

Tumblebrook Farm Inc.  
P.O. Box 719  
West Brookfield, MA 01585  
(508) 867-2390  
FAX:(508) 867-2561

- B. Supply Procurement
1. Unless required by the primary investigator, feed and bedding will be ordered and purchased by the ARF Director and stored in the joint-use feed and bedding room.
  2. Joint-use supplies such as cleaning supplies, paper towels, trash bags, and air filters will be ordered and purchased by the ARF Director and stored in the

multi-purpose section of the facility. The ARF Director is available to assist with special orders.

C. Equipment Procurement

1. The initial inventory of caging and equipment in the Small Animal Facility was accumulated through purchases with qualitative initiative money, the Gregory School of Pharmacy, and gifts from faculty.

2. The ARF policy is that any caging used in the facility, regardless of its source, becomes property of the facility and is made available for shared use, unless special arrangements have been made in advance. An example of an exception might be equipment borrowed from other facilities on campus.

V. **Animal Health Monitoring**

A. The single most important activity associated with animal health monitoring is frequent observation of all animals. The condition and welfare of all animals should be monitored daily and noted on the Animal Care Log located on the main computer in the animal room. While the conditions of bedding and food, availability of water, and health of the animals are to be considered the primary duties of the animal care personnel, all individuals who utilize the facility are required to be active participants in the maintenance of animal health.

1. Any animal found to have escaped from a cage is to be captured and placed in a new (i.e., clean) cage. The principal investigator (PI) must be notified.

2. Any animal showing any abnormality, such as obviously sick, injured, lame, circling, head tilt, or loss of appetite must be noted in the Animal Care Log.

a. In the event a health problem is observed during the monitoring, the Principal Investigator or the ARF Director is to be notified.

b. The ARF Veterinarian on veterinary care rotation will be called if treatment of the animal is necessary.

c. Contact Procedure: During normal business hours (8 am-5 pm) use the cell number (561) 531-9270. During evenings, weekends, and holidays use the cell number (561) 531-9270 or phone number (561) 693-2860.

d. Report all abnormalities, even those that may seem to be of minimal significance, and regardless of whether the abnormalities are experimentally-induced or spontaneous.

3. Any animal found dead will be recorded on the Animal Care Log. Dead animals are to be taken to the freezer in room 456. All animals put into freezer are required to have a tag affixed to the bag with appropriate information.

4. Animals should be observed daily, before 5:00 pm, with the Animal Care Log completed and signed. A Laboratory Animal Clinical Record (Red Card) should be initiated for each sick animal.

Cards are available outside the office of the ARF Director (LLG 456).

The following information should be filled out on the red card:

- Species or Strain
- Animal/cage number of the ill or injured animal.
- Number of animals observed to be ill or injured.
- Sex of the animal
- Age of the animal - if the age is unknown, state whether the animal is a pup, juvenile or adult.

- Protocol number to which the animal is assigned.
- Investigator Name and Phone #
- Date and observed abnormality

## VI. **General Animal Care Procedures**

A. **General**--The purpose of this SOP is to describe general procedures applicable to the routine husbandry of animals housed at the ARF. The animal care staff should become familiar with this SOP.

B. **Animal Care**--All animals housed in the facility are to be comfortably housed in safe, secure quarters and have adequate quantities of wholesome feed and clean, fresh water. Sanitation of all animal caging and rooms is a primary goal in establishing and maintaining animal health and comfort. The sanitation measures prescribed will be rigorously followed. Observations of animal health and housing conditions are of critical importance and should always receive a high management priority. In order to minimize stress and discomfort, and maximize safety to both the animals and the handler, all animals will be handled only by prescribed methods.

C. **Cage card information**--All cages housing animals will display a cage card containing the following information: species, number of animals in cage, investigator's name and phone number, source from which animals were obtained, date of arrival or birth and USDA number (if applicable).

D. **Shipments**--All shipments for the ARF are to be checked in with the ARF Director upon arrival.

E. **Radioactive Materials and Biohazards**--Use of radioactive materials in the ARF must be carried out under the supervision of Environmental Health and Safety (National).

1. Animal care personnel must be familiar with proper handling procedure.
2. Rooms in which these materials are used must be properly identified.

## VII. **Procedures for Incoming Animals**

A. The ARF Director will place all orders for animals needed in research projects at the ARF. A commercial supplier with known clean health status must supply any animals entering the facility.

B. Health monitoring reports for all rodents from non-approved vendors are reviewed by the attending veterinarian and /or diagnostic samples are submitted. These animals are elsewhere at Pam Beach Atlantic University until satisfactory animal health reports are obtained.

C. All rodent shipping boxes must be checked by the animal care personnel for damage and dead or sick animals. Dead and sick animals must be removed from shipping boxes and the Primary Investigator and ARF Director notified as soon as possible. Ordinarily, rodents should be housed upon arrival, as soon as possible. If this is not possible, they should be placed in their shipping containers, in the room to which they are assigned. Water must be provided by placing a clean water bottle on the top and pushing the sipper tube through the screening on the box.

D. **Quarantine and Conditioning**: It is strongly recommended that new animals are permitted a minimum period of two weeks for conditioning and health status evaluation before beginning an experiment. Incoming animals suspected of being sick are to be removed from the group and isolated from other animals. The ARF Director is to be notified of this condition and a blue card will be initiated and the attending veterinarian contacted if required.



### **VIII. Cage Changing Procedure for Contact Bedding**

- A. Bedding in direct contact with animals is to be changed once a week. Heavily soiled cages will be changed more often if necessary. DO NOT house animals on top shelf of cage rack.
- B. The following procedure is recommended for changing cages with contact bedding:
1. Count number of cages that need to be changed.
  2. Take desired number of cages from the clean storage area and place them on a clean cart.
  3. Fill cages with bedding (if tubs or shoe boxes) of a sufficient quantity to ensure comfort of the animals and provide adequate absorbance of animal waste. As a guide, it is recommended to cover the entire cage bottom to a minimum depth of 1 cm for cob-type bedding and 2 cm for wood shavings.
  4. Place an enrichment device in the cage of all singly housed animals.
  5. Transfer cage cards, food hoppers (if any), water bottles (if any), and animals into clean cage, one at a time and replace cage at the same location on the rack.
  6. Wire-bar lid should be changed every two weeks.
  7. Micro-isolator tops, if used, should be changed when visibly dirty.
  8. Racks should be changed every two weeks. If extra racks are not available, the rack in use should be wiped down with a sponge and disinfectant solution while changing cages.
  9. Record what was changed in the Animal Care Log.
- C. Remove dirty cages and equipment to dirty cage wash area. Do not leave dirty cages in halls or in the animal colony.
- D. Dump bedding in a bag-lined dumpster. Any food, bedding, or excreta remaining in the cage must be thoroughly scraped free. Seal liner and remove to the dumpster located on the South side of the building.
- E. Remove all tape and cage cards and pre-wash all cages and equipment.
- F. Stack equipment neatly in dirty cage wash area.

### **IX. Cage Changing Procedure for Non-Contact Bedding**

- A. The following procedure is recommended for changing the caging used with indirect bedding:
1. Count the number of pans that need to be changed.
  2. Take the desired number of pans from the clean storage area and place them on a clean cart.
  3. Fill pan with bedding of a sufficient quantity to provide adequate absorbance of animal waste. Excessive amounts of bedding in pans are unnecessary and costly.
  4. Take out the soiled pans and replace them with the clean ones.
  5. Litter and trays under suspended wire caging are to be changed twice a week.
  6. The entire rack and cages are to be changed once every two weeks.
  7. If used, food hoppers should be changed once every two weeks.
  8. Record what was changed in the Animal Care Log.
- B. Transport soiled pans to the dirty cage area.

1. Dump bedding in a bag-lined dumpster. Any food, bedding, or excreta remaining in the pan must be thoroughly scraped free. Seal liner and remove to the dumpster located on the South side of the building.
2. Remove all tape and cage cards and pre-wash all pans and equipment.
3. Load pans on to rack used to wash pans in cage washer or stack neatly in cage washing area.

**X. Room Maintenance**

- A. Floor cleaning schedule
  1. All floors in animal rooms are to be swept daily with brooms provided.
  2. All floors in animal rooms are mopped with a disinfectant solution when cages are changed. Make sure the proper dilution is used. Pour mop water down drain once a week to keep drain trap from becoming dry.
  4. All floor cleaning equipment is to be stored in a clean condition in the cage wash area.
- B. Sink cleaning schedule
  1. Sink and counter area are to be cleaned each time they are used with detergent solution and kept free of clutter.
  2. Scale remover may be used as needed to remove scale around faucet.
  3. Hand soap and paper towels should be placed in dispensers as needed.
- C. Walls, Ceilings, Etc. cleaning schedule
  1. Walls, ceilings, doors, light fixtures, etc., will be sanitized once a month with a disinfectant solution.
  2. A hand sprayer is available for spraying these areas.
- D. Any environmental problems in any rooms, i.e., temperature, humidity, leaking faucet, etc., will be reported to the National personnel.
  1. Electronic timers are used to provide automatic light control. Users are to contact the ARF Director for setting. Do not set or operate the timers unless instructed to do so.
  2. Light bulbs will be replaced by National after being reported to them via the portal through myPBA.
- E. Air filters should be changed once a month or more often if necessary. National performs this task.

**XI. Cage Washing Procedures**

- A. Pre-washing equipment
  1. DO NOT bang cages on the side of the trash bins. Use scrapers to remove bedding from dirty cages.
  2. All equipment needs to be thoroughly pre-washed before being run through the cage washer. The cage washer is built to sanitize but not to remove Excessive soil and dirt. All tape must be removed from equipment during prewashing procedure.
  3. There will be a charge for any equipment left in dirty cage wash area for over 48 hours without being pre-washed.
  4. Do not wash large particles of bedding or fur into the drain of the pre-wash area. This could clog the drain.
- B. Protective clothing

1. Eye goggles, gloves, lab coat, and boots must be worn during any acid-cleaning activities.
  2. Lab coats are available in Gregory Hall, room 210.
- C. Sanitization of Equipment - The cage washer is to be operated by ARF personnel only unless prior arrangements have been made and training has been provided.
1. Loading cages & racks
    - Shoebox style cages need to be loaded on cage washing rack so they are positioned for maximum exposure to spray from the water jets in the cage washer.
    - Rack-mounted automatic watering systems must be capped prior to sanitation procedures.
  2. Cage accessories, bottles, sipper tubes, food containers, etc.,
    - All cage accessories must be washed in a manner that prevents small items from falling on floor of cage washer.
    - The baskets used for washing water bottles can hold small items.
    - Carts and trashcans should be washed daily.
  3. Cage Storage
    - Clean cages, racks, and accessory equipment are to be stored in the clean cage area.
    - Never store dirty cages, accessories, or room cleaning equipment in the clean cage storage room.
    - Do not enter clean cage room with a cart from dirty cage room or animal room.

## **XII. Summary of Animal Care and Cleaning Schedules**

- A. Daily Responsibilities
1. Check condition and welfare of animals. Complete the Animal Care Log.
  2. Record temperature and humidity.
  3. Check all cages for adequate feed.
  4. Check watering system to insure animals are receiving water. Depress valve with finger to see if water is being delivered. Water bottles should be clean and contain sufficient potable water.
  5. Sweep floor of all debris.
  6. Clean sink and counter.
  7. Complete the Animal Care Log for the cleaning completed for that calendar day.
- B. Twice a Week
1. Change direct contact bedding cages on high density cages (litters).
- C. Once a Week
1. Change and wash water bottles.
  2. Change direct contact cages.
  3. Empty trashcan.
  4. Mop floors with disinfectant.
  5. Take dirty cages, lids, old feed, and accessories to the dirty side of the cage washer for processing.
- D. On an "As Needed" basis but typically twice per month
1. Wash racks.
  2. Wash hanging wire cages.

3. Change and wash wire-bar cage lids.
- E. Once a Month
1. Make sure National changes all air filters.
  2. Sanitize food storage containers.
  3. Clean walls, ceiling, light fixtures, etc.

### **XIII. Euthanasia and Anesthesia**

- A. Animal termination will be carried out in a humane manner by the principal investigator or others designated by the principal investigator.
1. Nembutal is available from the ARF Director for euthanasia of animals. Parvo positive animals should be euthanized in Room 424 only.  
Note: After euthanasia is performed, death should be assured by bilateral pneumothorax, aortic transection, cervical dislocation, or some other physical means, as appropriate.
  2. Euthanized animals are to be placed in a plastic bag and placed in the freezer in Room 430. Transgenic and treated animals should be placed in the red biohazard container.
- B. Where possible, Palm Beach Atlantic University makes every attempt to follow the NIH guidelines for the care and use of animals and the recommendations of AAALAC. Briefly, this requires that anesthetics, analgesics, and tranquilizers be used whenever experimentation would otherwise cause pain, discomfort, or distress to laboratory animals. The use of these three classes of drugs must be in accordance with the currently accepted veterinary medical practice and must produce in the animal a high level of anesthesia, analgesia, or tranquilization consistent with the protocol or design of the experiment.
- C. ARF personnel are available to assist in the selection of anesthetic, analgesic, and tranquilizing agents and to assist in the development of protocols for the use of these drugs in experimentation. A good primary source for information is: C. T. Hawk, & S. L. Lear, (1995). *Formulary for laboratory animals*, Ames, IA, ISU Press.

### **XIV. Animal Space Requirements and Handling Procedures**

Minimum space recommendations for Laboratory Animals (from the *Guide for the Care and Use of Laboratory Animals*, 1996)

#### **Rats**

##### **A. Caging**

Each rat housed in a primary enclosure must be allotted a specific amount of floor area. This requirement will vary with the cage size and weight of the individual. The following information should be used as a guide to caging rats.

Weight Range of Individual Floor Area Required Height Required

< 100 g 17 sq. in./rat 7 in.

100-200 g 23 sq. in./rat 7 in.

200-300 g 29 sq. in./rat 7 in.

300-400 g 40 sq. in./rat 7 in.

400-500 g 60 sq. in./rat 7 in.

> 500 g 70 sq. in./rat 7 in.

For example, if you have a cage with inside floor dimensions of 25 X 9 1/2, the floor space is determined by multiplying the length times the width.

$$25 \frac{1}{2} \times 9 \frac{1}{2} = 242 \text{ sq. in.}$$

If you are housing rats that weight between 200-300 g, divide the floor area required for that weight group into the floor area of the cage.

$$242 \text{ sq. in. (cage)}/29 \text{ sq. in. (space required/animal)} = 8$$

Eight rats can be housed in a cage 25 1/2 X 9 1/2 X 7.

Remember, as animals gain weight, they may have to be redistributed in order to comply with standards.

Cages available in the ARF are:

small plastic cages - - 68 sq. in.

large plastic cages - - 155 sq. in.

small wire - - 66.5 sq. in.

large wire - - 38 sq. in.

#### B. Handling

1. Never pick rats up by the tail. The skin on the tail is not strong enough to support the weight of the rat and it can strip off if the animal struggles. Rats are best handled if they are picked up and held firmly with the thumb and forefinger behind the front legs.

2. Rats kept in rooms where the temperature is between 65-85°F, and the humidity is under 20%, have a high incidence of ringtail. Therefore, it is important to monitor the environment of rat rooms to maintain optimum conditions.

#### C. Environment

Light cycle: 12 hours on / 12 hours off

Humidity: 30-70%

Temperature: 64-79 degrees F (70-74 ideal)

#### D. Cage Cards

Each cage must be identified with a cage card. Cage cards are to be attached to the front of each cage with a cardholder. The following information is recommended to be on each card:

1. Investigator's name
2. Strain
3. Protocol #
4. Number of Animals in cage (if applicable)
5. Source

#### E. Breeding

1. Rats reach breeding age at approximately 70 days.

2. Rats are best bred non-intensively using one male for every five females.

3. The gestation period runs an average of 22 days and the young can be weaned at 21 days.

#### F. Health Problems

It is responsibility of all animal care personnel to watch for symptoms of illness of disease. Common symptoms of diseases in rats include:

1. Weight loss/loss of appetite

2. Unthrifty coat
3. Inactivity
4. Raised, inflamed, concentric ridges on tail
5. Respiratory infection

Record any evidence of health problems in the Animal Care Log and report it to the ARF Director immediately.

G. Obtaining Biological Samples

1. Blood may be obtained from anesthetized rats by heart puncture and should be euthanized after the procedure. Small amounts of blood may be collected from the lateral orbital vein and by nicking the tail vein.
2. Intravenous injections may be administered via the tail vein.

## Mice

A. Caging

Each mouse housed in a primary enclosure must be allotted a specific amount of floor area. This requirement will vary with the cage size and weight of the individual. The following information should be used as a guide to caging mice.

Weight Range of Individual Floor Area Required Height Required

- < 10 g 6 sq. in./mouse 5 in.
- 10-15 g 8 sq. in./mouse 5 in.
- 16-25 g 12 sq. in./mouse 5 in.
- > 25 g 15 sq. in./mouse 5 in.

For example, if you have a cage with inside floor dimensions of 10 1/2 X 6 1/2, the floor space is determined by multiplying the length times the width.

$$10\frac{1}{2} \times 6\frac{1}{2} = 68 \text{ sq. in.}$$

If you are housing mice that weigh between 10-15 g, divide the floor area required for that weight group into the floor area of the cage.

$$68 \text{ sq. in. (cage)} / 8 \text{ sq. in. (space required/animal)} = 8$$

Eight mice can be housed in a cage 10 1/2 X 6 1/2 X 5.

\*Remember, as animals gain weight, they may have to be redistributed in order to comply with standards.

Cages available in the ARF are:

- small plastic cages - - 68 sq. in.
- large plastic cages - - 155 sq. in.
- small wire - - 66.5 sq. in.
- large wire - - 38 sq. in.

Therefore, the housing density for mice in small and large plastic cages is:

Small cage: 4 adult mice

Large cage: 10 adult mice

B. Environment

Light cycle: 12 hours on / 12 hours off (14 / 10 is also acceptable)

Humidity: 30-70%

Temperature: 64-79 degrees F (70-74 ideal)

C. Cage Cards

Each cage must be identified with a cage card. Cage cards are to be attached to

the front of each cage with a cardholder. The following information is recommended to be on each card:

1. Investigator's name
  2. Strain
  3. Protocol #
  4. Number of Animals in cage (if required)
  5. Source
- D. Handling
1. Mice may be easily transferred from cage to cage by gently lifting them by the base of their tails.
  2. Mice can be restrained by gently but firmly pinching the skin on the back of their necks and wrapping the tail around a finger.
- E. Breeding
1. Mice reach breeding age at approximately 35-40 days of age.
  2. Females may be bred either intensively, i.e., immediately after parturition, or non-intensively. If successive mating is desired, the mated pair should be left together, as the female has a postpartum estrus. Gestation period of the mouse is about 20 days and the young are ready to be weaned at 21 days.
    - Polygamous mating can also be used in reproducing mice as a means to economize the number of available males. If breeding is to be polygamous, only one male in each breeding cage should be utilized. Adult male mice will fight and may kill one another if housed together with females.
- F. Health Problems

**It is the responsibility of the animal care personnel to watch for symptoms of illness or disease.**

Common symptoms of health problems in mice include:

1. Weight loss/loss of appetite
2. Unthrifty coat
3. Inactivity
4. Diarrhea-especially in infant mice
5. Labored breathing
6. Scabby wounds or abscesses

Record any evidence of health problems in the Laboratory Care Log and report it to the Facility Manager immediately.

- G. Obtaining Biological Samples
1. Blood may be obtained from anesthetized mice by heart puncture or by infraorbital puncture using heparinized capillary tubes. Mice bled by heart puncture should be euthanized after blood collection.
  2. Small amounts can be obtained by nicking the tail veins.
  3. Intravenous injections may be given through tail veins.

## Hamsters

### A. Caging

Each hamster housed in a primary enclosure must be allotted a specific amount of floor area. The following chart should be used as a guide in caging hamsters. This requirement will vary with cage size and weight of the individual. Food pellets for

hamsters should be placed on the floor of the cage and not in wire bar lid. Please note that *Hamsters* are covered under the Animal Welfare Act and are subject to USDA inspection.

Weight Range of Individual Floor Area Required Height Required

< 60 g 10 sq. in./hamster 6 in.

60-80 g 13 sq. in./hamster 6 in.

80-100 g 16 sq. in./hamster 6 in.

> 100 g 19 sq. in./hamster 6 in.

For example, if you have a cage with inside floor dimensions of 17 X 8 1/2, the floor space is determined by multiplying the length times the width.

$17 \times 8 \frac{1}{2} = 144.5$  sq. in.

If you wish to house hamsters weighing over 100 g, divide the floor area required for that weight group into the floor area of the cage.

$144.5$  (cage)/ $19$  (space required/animal) = 7

Seven hamsters can be housed in a cage 17 X 8 1/2 X 6 if they weigh > 100 g.

\*Remember, as animals gain weight, they may have to be re-distributed in order to comply with standards. Cage changing frequency may need to be readjusted for animals housed with large numbers.

#### B. Environment

Light cycle: 12 hours on / 12 hours off (14 / 10 is also acceptable)

Humidity: 30-70%

Temperature: 64-79 degrees F (70-74 ideal)

#### C. Cage Cards

Each cage must be identified with a cage card. Cage cards are to be attached to the front of each cage with a cardholder. The following information is recommended to be on each card:

1. Investigator's name
2. Strain
3. Protocol #
4. Number of Animals in cage (if applicable)
5. Source

#### C. Handling

Some strains of hamsters are often difficult to handle and will bite readily. It is best not to pick up a hamster while it is sleeping. First, wake it up and make sure it sees you approaching it before picking it up by the scruff of the neck.

#### D. Breeding

1. Hamsters reach breeding age at approximately 30 days.
2. Hamsters breed best when mated non-intensively and monogamously. The females are very aggressive and will often harm or kill their mates. Close observation is necessary to insure the welfare of the male. Gestation period of the hamster is 16 days. Young can be weaned at 21 days.

#### E. Health Problems

**It is the responsibility of the animal care personnel to watch for symptoms of illness or disease.**

Common symptoms of disease in hamsters include:



1. Weight loss/loss of appetite
2. Unthrifty coat
3. Inactivity
4. Diarrhea-soiling of the entire hind end is an indication of "wet tail"
5. Discharge from eyes or nose
6. Bite wounds

Record any evidence of health problems in the Animal Care Log and report it to the ARF Director immediately.

F. Obtaining Biological Samples

1. Blood samples may be obtained from anesthetized hamsters by heart puncture or by the saphenous vein located on the rear leg. Hamsters should be euthanized after blood collection by heart puncture.
2. Intravenous injections may be given through the saphenous vein.

## **Appendix I**

### **Guidelines for Handling S.O.P. violations in the ASRC**

Rev.: 11/29/2010

#### **Section I: Introduction**

The ARF is operated under the supervision of the Gregory School of pharmacy and the Office of Academic Research. Personnel in the ARF strive to provide high quality facilities for housing research and teaching animals. In order to maintain a high quality animal care program it is essential that users follow our Standard Operational Procedures (SOP). Individuals who fail to follow the SOPs place at risk the health and well-being of workers and animals, as well as the biosecurity of the facility. Consequences for violating the SOPs may include charges for Unit support staff to provide unmet animal husbandry needs and loss of privilege to use the facility. The following guidelines will be used for handling violations of SOPs.

#### **Section II: Definition of Violations**

**ARF** (Small Animal Facility)

##### **Levels of Violations-**

- A. **Level “I” violations** are generally considered minor violations in procedure that do not significantly impact the health and well-being of animals or personnel. Examples of such violations include:
1. Failure to sign the health check sheet on the door by 5:00 pm.
  2. Failure to record the milling date on the exterior of the feed container.
  3. Failure to change racks or cage lids according to the schedule required by the SOP.
  4. Not filling out an Animal Health “Red Card” despite doing what is needed to assure that appropriate care has been provided to a sick animal.
  5. Not recording cage changing in the Animal Care Log.
- B. **Level “II” violations** are generally considered to have the potential to put the health and well-being of animals or personnel at some increased risk or may compromise the biosecurity of the facility. Examples of such violations include:
1. Failure to conduct a daily health check.
  2. Use of diets beyond the six months after the milling date on the bag.
  3. Not changing cages or trays as scheduled.
  4. Movement into the “clean” room after being in the dirty room; wearing gloves in the clean room.
  5. Leaving dirty cages in the animal colony after leaving the facility.
  6. Failure to wear a lab coat or some protective outer clothing during any work that involves direct contact with animals or waste-contaminated products.
  7. Failure to use the footbaths upon leaving the Dirty room area.
  8. Failure to clean a joint-use space following surgery, sample collection or animal kill.
  9. Propping doors open during any activity that is likely to generate aerosols of waste contaminated products (e.g., bedding or hair).
  10. Bringing animals into the facility without informing the ARF Director beforehand.
- C. **Level “III” violations** are the most serious and are considered those departures from SOPs or IACUC protocols that may clearly result in adverse effects on the health

and well-being of animals or personnel in the facility or clearly compromise the biosecurity of the facility. Examples of such violations include:

1. Failure to adequately monitor animals following surgery or other invasive procedure.
2. Failure to provide appropriate veterinary care for a sick animal.
3. Failure to provide animals with adequate food and water such that clinical signs of distress are noted, unless such restriction is part of the approved IACUC protocol.
4. Failure to euthanize an animal that is clearly in pain and distress, unless specific exceptions have been described in the IACUC protocol.
5. Bringing an animal into the facility from a non-approved source without going through a standard quarantine.
6. Bringing animals into the facility without an approved IACUC protocol.
7. Bringing animal into the facility from another location (i.e., animal room) on campus that has a confirmed case of any infectious pathogen.

### **Section III. Appeals-**

- A. If a PI wishes to appeal a specific violation, then they should do so in writing to the ARF Director within 7 days of the violation;
- B. If the Unit Supervisor was directly involved in the incident, then the Dean of the Gregory School of Pharmacy shall conduct the investigation and appoint an interim chair to oversee the appeals process;
- C. Depending on the nature of the violation, an appeal may require nothing more than interviewing the parties involved to initiating an IACUC investigation into the incident.

### **Section IV: Consequences of Violations**

#### **I. Administration of Violations-**

- A. Violations can only be given out by the ARF Director or Attending Veterinarian.
- B. Personnel responsible for level I violations will be given a verbal warning initially, followed by a written warning for a second violation with e-mail to the PI and the departmental chair.
- C. All level II violations will result in a written warning with the PI and the departmental chair receiving copies of all written warnings;
- D. All level III violations must be reported to the Office of Academic Research, the Dean of the Gregory School of Pharmacy and the PI as soon as possible.

#### **II. Probation**

- A. Anyone who receives three or more written warnings for level I violations or two or more level II violations will be placed on probation.
- B. Level III violations will be handled on a case-by-case basis by a committee consisting of the appropriate ARF Director, the Dean of the Gregory School of Pharmacy and the Attending Veterinarian, unless one of those individuals has a conflict of interest, in which case that person will be replaced by the Provost or designee.
  1. Probation will last for no less than a month and will mean that the individual on probation will not have any privileges associated with working with animals in the Unit, unless directly supervised by someone else qualified to work with the animals.

2. After the second week of probation the employee may conduct all of their work without supervision, if it is conducted during standard working hours (e.g., 8-5 pm, M-F only).
3. The probationary period will end at the discretion of the Unit Supervisor after receiving a written request by the PI. A successful petition will clearly describe the additional training that the individual received to assure that no further violations should be expected.
4. Additional level A or B violations by someone who is on probation will extend their probation and may result in the loss of space in the Unit for the PI.

### **III. Loss of Assigned Space:**

#### **PIs may lose their assigned housing space in the ARF for repeated SOP violations.**

- A. A PI whose research program has a track record of multiple individuals being placed on probation or that has received two or more level III violations within a 12-month period will be subject to revocation of their assigned space in the ARF for the remainder of their assignment and will not be assigned space in the ARF for a period of no less than a year.
- B. Decisions regarding revocation of assigned space for non-compliance to SOPs will be made by the Dean of the Gregory School of Pharmacy after consultation with the ARF Director;
- C. If a PI wishes to **appeal** a space revocation decision, then they should do so in writing to the Dean of the Gregory School of Pharmacy within 30 days of the revocation decision.