



**Division of Research  
Comparative Medicine**

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**SOP #506**

**Aquatic Salamander Husbandry and Care**

**SCOPE:** This SOP is applicable to all Comparative Medicine (CM) personnel responsible for the husbandry of the aquatic salamanders.

**SOP OWNER:** Facilities Manager

**PURPOSE:** To outline the general husbandry for aquatic salamanders.

**LOCATION:** Vivaria

Approved by: Sylvia Gografe, DVM, PhD Director Comparative Medicine

**References**

1. *Guide for the Care and Use of Laboratory Animals*. National Research Council; National Academy Press, Washington, D.C., 2011
2. Public Health Service Policy on Humane Care and Use of Laboratory Animals. OLAW (NIH) 2015

**A. RESPONSIBILITIES**

- a. Attending Veterinarian (AV) and Director
  - i. Directs CM personnel regarding personal protective equipment.
  - ii. Assures that CM personnel is appropriately trained and adhere to procedures as outlined in this SOP.
- b. Training Coordinator/Administrative Assistant
  - i. Assures that CM personnel is appropriately trained and adhere to procedures as outlined in this SOP.
- c. Facilities Manager (FM)
  - i. Assures that responsible Animal Care Technicians are appropriately trained and implement procedures as delineated in this SOP.
- d. Laboratory Animal Technician (LAT)
  - i. Adhere to procedures as outlined in this SOP or as directed by Facility Manager and/or AV.

- ii. Document all activities as outlined below in section Recordkeeping.

## B. GENERAL

### a. Handling:

- i. Always wear gloves and wash your hands thoroughly after handling the salamanders or tanks.
- ii. In the event of a bite or scratch, wash the wound thoroughly, and dress the wound with the first aid kit, seek medical attention if necessary, and alert supervisor.
- iii. Handle the salamanders carefully using a net with small, soft mesh.
- iv. Each tank will have an identification card with the following information: Tank Number, Principal Investigator, IACUC Protocol Number, Date of Arrival, Species, Approximate Size or Age at arrival, and Source of Animals.
- v. All housing materials are impermeable, easily sanitized, and able to withstand multiple washings.

### b. Cleaning

- i. **NOTE:** do not use any detergents or soaps in or around the salamander tanks.
- ii. Approved disinfectants for the aquatic rooms are: 10% bleach solution, 3% peroxide solution, or 1:50 chlorhexidine solution. All disinfectants must be rinsed thoroughly prior to contact with the salamanders or salamander tanks. Bleach solution must be mixed daily (the shelf-life of diluted bleach is 24 hours).
- iii. Sani-plex solution can be used **only** to mop the floor but not on any items that will come in contact with the tanks or the salamanders.
- iv. All designated nets, brushes, etc. will be soaked in an appropriate disinfectant (such as Netsoak) and rinsed thoroughly prior to use.

### c. Environment monitored by handheld thermometer and FAU Facilities

- i. Room temperature is kept between 60-68 degrees Fahrenheit. The absolute max is 72 degrees.
- ii. Humidity should be 30-70%
- iii. Lighting: the room lights are on a 12:12 light cycle.

### d. Tanks

- i. One conventional rat cage with lid (filled with 3.5 gallons of water) can hold up to 4 medium-sized salamanders.
- ii. No substrate is necessary, but aquarium –grade sand can be used. Do not use pebbles or rocks.
- iii. Tap water will be used for the tanks. The water will need sit in the housing room for 24 hours before use to release the chlorine and to adjust to the appropriate temperature.
- iv. Keep several gallons of extra water in the room for water changes and to increase tank water levels when there has been evaporation.

- v. Add 1 teaspoon of aquarium salt to each tank at the initial set up.

### C. PROCEDURE

#### a. Daily Checks

##### i. Health Checks

1. Animals will be checked daily by CM personnel prior to 10am. Any exceptions must be approved by AV or FM.
2. All animals will be checked for injuries or illness. All illnesses and injuries need to be reported to the Principal Investigator (PI), appropriate lab personnel, the AV, the FM, and CM animal care staff.

##### a. Common health issues to look out for

- i. "wasting disease" (reduction of tail fins and gills)
- ii. Peeling skin on head and back

##### ii. Environment

1. Check the room temperature. It should be between 60 and 68 Fahrenheit. Alert supervisor if the temperature is out of range.
2. Inspect the tank water. Remove any debris with designated net. If the water has dropped below the water line, add dechlorinated water to the tank.
3. If the water is discolored, smelly, or parameters are out of range then conduct a water change.
  - a. Full changes every 10-14 days or
  - b. 10-20% change once a week or every two weeks as needed
4. Inspect the filters. If there is a detritus build-up or the water flow appears restricted, unplug the filter, remove it, clean the media and place the filter back in the tank. **NOTE: do not let the filter pump run dry**

#### b. Feeding

- i. Pull mealworms out of the refrigerator 24 hours prior to feeding
- ii. Salamanders will be fed live mealworms or frozen bloodworms two times per week. Offer the worms directly to the salamanders with forceps or tweezers.
  1. Mealworm care
    - a. Mealworms can be kept in a large plastic container, with air holes in the top. You should cover the mealworms with a thick layer of mealworm bedding from the vendor to provide bedding and a food source.
    - b. Upon arrival place them in a refrigerator, set at 45F, until ready for use. When you are ready to use them, remove the desired amount and leave at room temperature until they become active, roughly 24 hours before feeding to your animal.

- c. If you plan to keep the mealworms for longer than two weeks, remove them from the refrigerator, and let them become active. Once they become active, place a slice of potato on the top of the bedding to provide moisture, and let them sit for twenty-four hours. Then, place them back in the refrigerator.
  - iii. If a salamander won't eat, note it in the Progress Notes, and alert the AV if the same salamander goes without eating for two feedings.
- c. Environmental Enrichment
  - i. Feeding live worms
  - ii. PVC pipes can be provided for hiding, but they're not necessary.
- d. Water Testing
  - i. During the initial tank set-up, testing will be done daily until it's confirmed the results are stable.
  - ii. Once stable, Water (kit) Testing should be performed early in the week to leave time for adjustments.
  - iii. See the water testing kit for parameters (similar to fish). If the parameters become too high, conduct a partial (10-20%) water change.
- e. Sanitation
  - i. Daily
    - 1. Keep all room surfaces clear of debris and fingerprints
    - 2. Keep room stocked with gloves, paper towels, Wypalls, hand soap, and hand sanitizer for general use
    - 3. Squeegee any water on the floor down the drain.
    - 4. Scoop tank of any debris.
  - ii. Weekly or more often:
    - 1. Mop floors
    - 2. Sanitize all counters, sinks, shelves, door handles, etc.
    - 3. Empty trash.
  - iii. Between Animal Orders:
    - 1. All tanks and PVC tubes need to be rinsed off, scrubbed, rinsed, then soaked with nets in 10% bleach for at least three hours. All items need to be rinsed three times prior to any contact (direct or indirect) with the salamanders.
    - 2. All filter media needs to be replaced and the filter housing wiped with 10% bleach.

#### D. RECORDKEEPING

- a. Complete daily check sheet and sign the task calendar.

Review Date	Revision Date	Revision Number	Description of Revision