Guidelines on Zebrafish Care and Veterinary Oversight

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1. Purpose

This document defines the minimum standards of care for zebrafish. It also outlines the veterinary oversight of aquatic species at the University of Michigan. Laboratories may exceed these minimum standards of care, but cannot do less than what is described unless the deviations are described in their IACUC-approved protocol(s).

2. Procedures

1. Required Documentation
   1. Logs with the following parameters must be maintained in the animal housing room by caretakers:
      1. Health checks
      2. Death logs
      3. Water quality measurements
      4. Feeding logs
   2. Room logs must always include the date and initials or name of the person(s) conducting the assessment. Actual values should be recorded where applicable, check marks or an “X” can be used when a range of normal is available for reference. While ULAM Room Log templates are preferred, the laboratory can use other versions as long as it includes the following information:
      1. Animal health status
      2. Deaths
      3. Feeding
      4. Temperature of system/tank water
      5. Water quality parameters (ammonia, nitrites, nitrates, conductivity, pH)
      6. Water change if applicable (for static systems)
      7. Tank change/cleaning
      8. Equipment cleaning/disinfection
      9. Floor mopping/disinfection
      10. Room parameters (temperature, humidity, pressure)
2. Details for Required Documentation:
   1. Health Checks
      1. Are recorded at least once a day.
      2. This includes a visual inspection of each tank to identify sick or dead fish.
      3. This is typically conducted concurrently with feeding times.
      4. Health concerns are reported to veterinary staff as detailed below (see section 2.e).
   2. Death Logs
      1. Are recorded daily.
      2. This includes animals found dead or euthanized due to health concerns, but does not include animals that were euthanized for experimental purposes or excess progeny not needed for studies.
      3. The following information is recorded:
         1. The system and tank location of animal(s)
         2. The animal condition or clinical signs (if applicable)
         3. The number affected if multiple in a tank or system
         4. The date of assessment and initials of responsible party
      4. Deaths or morbidity exceeding 5% of the system or colony within 1 month are reported to veterinary staff as detailed below.
   3. Feeding
      1. Fish are fed a minimum of once daily, unless otherwise stated in the approved animal protocol.
      2. The date, time, and initials of the responsible person is recorded on the room log.
   4. Temperature and Water Quality
      1. Temperature is validated to be within acceptable ranges daily for each system.
      2. pH, ammonia, nitrites, nitrates, and conductivity is recorded at least weekly. This is done according to laboratory-specific SOPs.
3. Any parameters that are outside laboratory-specified normal ranges for more than 24 hours are reported to veterinary staff as detailed below.
4. Water change, if applicable (e.g. for static systems) is performed at least weekly and recorded.

5. Tank and Equipment Cleaning/Disinfection/Changing
   1. Tanks housing fish are changed and cleaned/disinfected as often as necessary to allow for visualization of all fish housed in the tank. This should be recorded on the room sheets when the lab utilizes a tracking system for regular interval tank changing.
   2. Algae growth is acceptable providing it does not prevent visualization of the fish for health assessment.
   3. Cleaning, disinfecting, or changing of other equipment and system components (e.g. filters, UV bulbs) is performed according to specific laboratory SOPs and recorded on the room sheets.

6. Floor mopping/disinfection
   1. Room floors are mopped with a suitable disinfectant at least every 2 weeks.
   2. Mopping is recorded on the room log.

7. Room Conditions
   1. Room temperature and humidity is recorded daily.
   2. Room temperature values outside 77-84°F or room humidity values outside 30-70% for more than 24 hours are reported to the Plant Operations Call Center at (734) 647-2059.
   3. Negative room pressure is preferred but not required to minimize odors in the hallways.
   4. Rooms are maintained in a tidy and organized manner without excessive clutter.

3. Environmental Enrichment
   1. All vertebrate animals, including fish, receive environmental enrichment to ensure their health and well being. Details regarding acceptable forms of enrichment for fish are described in the Environmental Enrichment for Animals SOP. Group housing is not considered environmental enrichment. Each tank of fish receives at least 1 form of enrichment daily. Singly housed fish receive 2 forms of enrichment daily.

4. Singly-housed Fish
   1. Fish that are singly housed are identified on the tank with a blue post-it flag or sticker and labeled with the appropriate exemption code as described in Identifying Single Housed Animals SOP.

5. Emergency Reporting and Veterinary Oversight
   1. Veterinary staff visits every fish housing facility in accordance with Guidelines on Veterinary Oversight of Animal Facilities and will record these visits on the room log. This visit serves to assess the overall health status of the colony and review death logs, feeding logs, water quality parameters, and other room sheets.
   2. The veterinary staff encourages communication regarding any health concerns at any time. However, laboratories must contact the veterinary staff immediately (within 24 hrs from time of identification), for significant colony health concerns and prior to implementation of laboratory managed treatments not approved in the IACUC protocol. This communication is by email, phone, the electronic health reporting system, submitting an ATR (Animal Treatment Report), or an in-person conversation.
   3. Examples of situations requiring immediate reporting include:
      1. An acute mortality or morbidity event affecting greater than 5% of the total colony animals.
      2. An acute mortality or morbidity event affecting greater than 5% of the animals in a system.
      3. Prior to implementation of laboratory managed treatment not explicitly outlined in the approved animal use protocol or IACUC approved standard operating procedure.
      4. Any water quality parameter that is outside normal range for more than 24 hours.
   4. Information provided for any animal health report includes the name of person reporting the concern, building and room number, Principal Investigator (PI), protocol number, species, and a brief description of the issue or concern. A separate colony health report should be submitted for each aquatic room and for each species. However, multiple PIs and animals on different protocols can be combined into one report if all using a shared housing system.

3. Related Documents
   1. Sample Room Log
   2. Animal Enrichment Database
   3. Identifying Single Housed Animals SOP