

# Guidelines for Investigator-Managed, Small-Scale Zebrafish Satellite Facilities

## **Purpose:**

This document outlines the minimum requirements for maintaining an investigator-managed, small-scale zebrafish satellite facility in the NIH Intramural Research Program (IRP). The zebrafish is an important research animal model and can be successfully maintained and used in satellite facilities away from a centrally managed animal care facility. Zebrafish facilities can vary in research goals, size and complexity; however common principles as described in the *Guide for the Care and Use of Laboratory Animals* underlie all IRP zebrafish facilities and operations.

## **Definitions:**

- Animal – any live, vertebrate animal used or intended for use in research, research training, experimentation, biological testing or for related purpose. Zebrafish are considered an animal after hatching (i.e., > 72 hours post fertilization<sup>5,6</sup>).
- Investigator-managed zebrafish satellite facility - a decentralized facility with daily care of animals provided by qualified/trained personnel to include research and/or animal care staff. The principal investigator is responsible for the day-to-day management of the facility; however, they work with the IC Animal Care and Use Committee (ACUC) and veterinary staff to ensure the animals' health and welfare needs are being met<sup>1</sup>.
- Satellite facility - any animal housing or containment area outside a core animal facility or centrally designed or managed area in which animals are housed for more than 24 hours<sup>6,9</sup>.
- Small-scale facility - a facility with an average daily census of less than 3000 adult zebrafish.

## **Requirements:**

1. Satellite Facility Registration – NIH IC ACUC registers all satellite facilities with the Office of Animal Care and Use (OACU) to ensure the space and husbandry program meets regulatory and compliance requirements. The OACU reviews and concurs with IC requests to create and maintain satellite animal holding facilities<sup>7</sup>.
2. Veterinary Care Oversight – IC ACUC designates a veterinarian to oversee the veterinary care of the zebrafish held in investigator-managed zebrafish facility. This veterinarian will conduct visits at intervals appropriate to programmatic needs or when there are health or welfare concerns.
3. Room Layout – Zebrafish satellite facilities are configured to provide a stable and favorable environment that produces and maintains the health, welfare, and productivity of zebrafish. When zebrafish tanks are in the proximity of other laboratory activities and equipment to meet highly specific scientific or programmatic needs, the space is designed to provide consistent aquatic habitat requirements<sup>4</sup>.
4. Environmental Parameter Documentation – The following items must be monitored and documented daily<sup>2,3</sup>:
  - a. Water chemistry (pH, conductivity)
  - b. Water temperature (26° - 29° C)
  - a. Light cycle (adequate lighting and light protection to maintain an effective diurnal cycle)

5. Zebrafish Husbandry – Zebrafish husbandry is provided by qualified/trained personnel trained on zebrafish biology, care, and the satellite facility’s SOPs. The husbandry personnel also require sufficient understanding of the housing system to identify malfunctions and have the appropriate resources to address issues in a timely manner. The IC ACUC maintains training records for research staff. Contract staff members meet the husbandry training standards and training documentation requirements specified in their contract.
6. Records – At a minimum, records should be maintained on water chemistry, life support maintenance, feeding, and animal census. These records should be available upon IC ACUC or veterinarian request.
7. Disaster Planning – Disaster plans and support mechanisms for zebrafish satellite facilities should address preparations and responses to events such as staff shortages, electrical and heat outages, and fires<sup>8</sup>.

### **References:**

- <sup>1</sup>Cartner, S. C., et al. (2020). Chapter 38 - Regulations, Policies and Guidelines Pertaining to the Use of Zebrafish in Biomedical Research. The Zebrafish in Biomedical Research. S. C. Cartner, J. S. Eisen, S. C. Farmer et al., Academic Press: 451-459.
- <sup>2</sup>Hammer, H. S. (2020). Chapter 29 - Water Quality For Zebrafish Culture. The Zebrafish in Biomedical Research. S. C. Cartner, J. S. Eisen, S. C. Farmer et al., Academic Press: 321-335.
- <sup>3</sup>Lawrence, C. and T. Mason (2012). "Zebrafish housing systems: a review of basic operating principles and considerations for design and functionality." *ILAR* 53(2): 179-191.
- <sup>4</sup>Zynda, J. R. (2020). Chapter 25 - Aquatics Facility Design Considerations: Incorporating Aquatics into an Animal Facility. The Zebrafish in Biomedical Research. S. C. Cartner, J. S. Eisen, S. C. Farmer et al., Academic Press: 265-277.
- <sup>5</sup>NIH ARAC *Guidelines for Use of Zebrafish in the NIH Intramural Research Program*
- <sup>6</sup>PHS Policy on Humane Care and Use of Laboratory Animals (PHS Policy), 2015
- <sup>7</sup>NIH ACUC Coordinator SharePoint
- <sup>8</sup>NIH Animal Program Director Guidelines for Zebrafish Larvae Incubators, 2013
- <sup>9</sup>NIH Policy Manual 3020-2

Approved – 06/24/20

Revised – N/A