

BASIC TRAINING ON UTILIZATION OF ZEBRAFISH AS AN ANIMAL MODEL

This basic training program covers using Zebrafish as an animal model in biomedical research. It comprises mixed theory and practical sessions for essential aspects of Zebrafish Research. The course is obligatory for all students and researchers who intend to experiment with Zebrafish at Qatar University Zebrafish Facility under the Biomedical Research Center (BRC), regardless of previous training they may have had at other organizations. Our responsibility is to guide researchers and students in training and certification in using Zebrafish at BRC humanely and responsibly. This training program will give the trainee a general understanding of the regulations and responsibilities in using Zebrafish for a variety of research purposes. The successful participants will be awarded course completion certificates. A copy of the certificate should be submitted with relevant research protocols for QU-IACUC approval before starting Zebrafish projects.

Training language: English

Date and time: **August 24th & 28th, 2025**

Registration requirement: All participants for the Zebrafish course must complete the following CITI trainings through www.citiprogram.org and send the CITI completion certificate to our email brc@qu.edu.qa with the registration number:

- Working with the animals in Biomedical research – Refresher course
- Working with Fish in Research Settings
- Working with Zebrafish (Danio Rerio) in Research Settings

Registration Fees

Participants	Undergraduate students	Graduate Students/Technicians	Researchers (PI, Post-Doc, RA)
QU Affiliates	QR 150	QR 350	QR 1000
Non-QU Affiliates	QR 300	QR 700	QR 2000

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Sessions:

For each session, there will be a theoretical lecture followed by demonstrations explained to the participants in an interactive manner. The techniques demonstrated in this course will be at a basic level. Passing the course will not indicate competency, therefore additional practice will be required to ensure that the individual is confident before applying the techniques. There are a total of 6 sessions in this workshop:

Session 1: Introductory lecture on Zebrafish Animal Model in Biomedical Research

24th August 2025: 3:00 – 4:00 pm

This lecture will introduce the participants with the basics of Zebrafish Experimentation as well as relevant procedures at BRC. Topics will include:

- Overview of BRC Research Activities,
- Biosafety Practices and Ethical Procedures at BRC;
- Zebrafish as an emerging animal model in research; advantages and limitations of Zebrafish, overview of different techniques and research areas for Zebrafish.

The lecture will be delivered by Dr. Huseyin C. Yalcin from BRC, the head of the Zebrafish Facility at the center. It will last one hour.

Session 2: Use of Zebrafish in Disease Investigations Lecture

24th August 2025: 4:00 – 5:30 pm

This lecture will introduce the participants with the most commonly used techniques on Zebrafish in disease investigations with example applications. These include CRISPR-CAS9 mutant line generation, MORPHOLINO knock down approach, XENOGRAFT cancer cell transplantation, diet induced models.

The lecture will be delivered by Dr. Himanshu Lajpat, a postdoctoral researcher at the center from BRC. It will last 1 hour and 30 minutes.

Session 3: Zebrafish Husbandry Lecture and Demonstration

25th August 2025: 3:00 -5:30 PM

This lecture will introduce to the participants to how to properly maintain zebrafish lines using water circulation systems. Topics will include the Basics of Zebrafish maintenance, assessment and monitoring of water quality, feeding of zebrafish, and health monitoring of Zebrafish.

In the demonstration part, the participants will see the main husbandry room getting overview on

- Operation of the water circulatory system, feeding, and breeding of the adult Zebrafish,
- Water quality tests for the water circulatory system
- Breeding of Adult Zebrafish
- Collection, counting, sorting, cleaning, and monitoring of embryos (24 hr., 48 hr., 72 hpf).

Zebrafish Facility technologist Ms. Enas Al-Absi will deliver the lecture. Duration is 2 hours and 30 minutes.

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Session 4: Working with Adults requirements and procedures

26th August 2025: 3:00 PM- 5:30 PM

This lecture will guide participants through conducting adult zebrafish experiments, with a focus on ethical and regulatory standards. We'll start with the application process, outlining the steps for approval from the IACUC, in accordance with the Ministry of Public Health (MoPH), and the necessary documentation. The talk will cover guidelines from the Biomedical Research Center (BRC) on humane care, including housing, care standards, and welfare protocols. Additionally, we'll explain how to collaborate with the BRC, covering proposal submissions and accessing their facilities, while adapting protocols to align with facility capacities. This comprehensive overview ensures experiments are efficient, ethical, and compliant.

Demonstration of experimental rooms (embryo and adult), see specific adult requirements, and examples of adult protocols.

Zebrafish Facility Technologist Ms. Enas Al Absi will deliver the lecture. Duration is 2 hours and 30 minutes.

Session 5: Monitoring of Zebrafish Embryo/Larvae Lecture and Demonstration

27th August: 3:00 PM – 5:30 PM

This lecture will show the proper handling of zebrafish embryos and how to monitor their development. Topic will include: assessment of developmental stages of zebrafish embryo via microscopy; developmental assays for Zebrafish such as hatching rate, survival rate, tail flick; phenotypic assessment for deformities; high-speed video recording for heart function assessment; and locomotion monitoring for behavioral. In the demonstration part, the participants will see:

- How to image and video record unhatched embryos for tail flick analysis,
- How to image and video record hatched embryos for phenotypic assessment,
- How to image and video record blood flow in major blood vessels for heart function assessment,
- How to record locomotion videos for behavioral assessment

Zebrafish Facility Technologist Mr. Ahmed Elwan will deliver the lecture. Duration is 2 hours and 30 minutes.

Session 6: Experimental analysis for the recorded images and videos

28th August 2025: 3PM – 5:30 PM

This demonstration will show the attendees how to analyze the collected data from the previous session. These include:

- Tail flick analysis using the Noldus software
- Heart Function analysis using the Viewpoint Zebrolab software
- Behavioral analysis assessment using Viewpoint software

Zebrafish Facility Technologists Mr. Ahmed Elwan will deliver the lecture, which will last 2 hours and 30 minutes.