



## MGM INSTITUTE OF HEALTH SCIENCES

(Deemed University u/s 3 of UGC Act, 1956)

Grade 'A' Accredited by NAAC

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### Value Added Course

## ZEBRAFISH HUSBANDRY EDUCATION

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## **MGM SCHOOL OF BIOMEDICAL SCIENCES, NAVI MUMBAI**

**(A constituent unit of MGM INSTITUTE OF HEALTH SCIENCES)**

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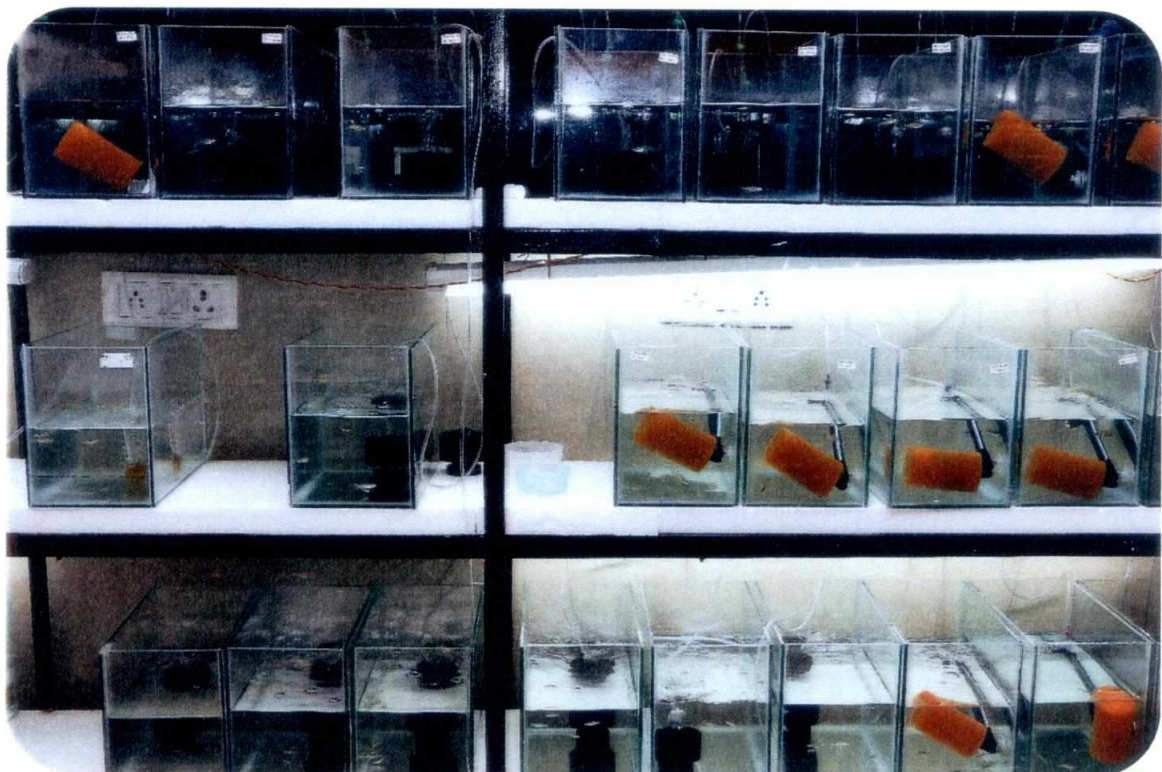
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### *Zebrafish Husbandry Education*





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### Zebrafish Husbandry Education

#### Department under Which Course to Be Conducted:

Department of Medical Biotechnology (Central Research Laboratory), MGM School of Biomedical Sciences, Kamothe, Navi Mumbai

#### Overview: Why there is a need of Zebra fish as a "Research Model"?

Zebrafish (*Danio rerio*) has become increasingly important model to scientific research, since 1960s. It has several unique characteristics that make it a valuable model for studying human genetics and disease. Zebrafish have a similar genetic structure to humans. They share 70 per cent of genes with us. 84 per cent of genes known to be associated with human disease have a zebrafish counterpart. As a vertebrate, the zebrafish has the same major organs and tissues as humans.

It is one of the fastest growing vertebrate organism. Zebrafish embryos are nearly transparent which allows researchers to easily examine the development of internal structures. Every blood vessel in a living zebrafish embryo can be seen using just a low-power microscope. One of the unique ability is to regenerate its heart muscle and fin. For example, if part of their heart is removed they can grow it back in a matter of weeks.

These striking similarity to humans and novel characteristics has made this model to be widely used for various biomedical applications.

#### Objective:

1. To study the research model, *Danio rerio*, widely used in biomedical applications.
2. To describes operating procedure for caring and husbandry of zebra fish

#### Course duration:

Duration of this course is two days (8 hrs each day) = 16hrs



**Course content:**

1. Background information on zebrafish
2. Maintenance of Zebrafish
3. Breeding
4. Behavioral studies
5. Removal of embryos from the chorion
6. Microscopic observations
7. Staining techniques

**Outcome:**

- Students will learn Zebrafish husbandry
- Behavioral parameters could be observed and studied
- Different staining techniques and its microscopic observations will be studied

**Title:** Zebrafish Husbandry Education

**Eligibility:**

UG / PG / Medical / SBS / Physiotherapy / Nursing / Dental – students or faculty of MGMIHS & others.

**Course Outline:**

The course is a 16 hours value added course for students of MGMIHS. This course will be delivered as a two day session of 8hrs each day.

Both session will cover a unique and informative topic followed by practical session.

The sessions will include:

- Tips on maintaining Zebrafish and larvae at laboratory level
- Different techniques of breeding to increase the number of larvae
- Hands-on behavioral study of parameters to observe the effect of any product or drug and removing embryos from the chorion
- Staining and development of bone and cartilage of in Zebrafish larvae
- Microscopic observations of stained as well as unstained larvae to understand the difference between the two

**Teaching learning method:**

Theoretical and experimental sessions, Interactive sessions, questionnaires.

**Assessment:** Pre Test / Post Test / Feedback

**Annual Intake:**

Per Batch 10 students and it will be flexible as per the resources and persons availability

**Fee Structure:**

The participation fees will be charged as per MGM-SBS Policy for training and skill development