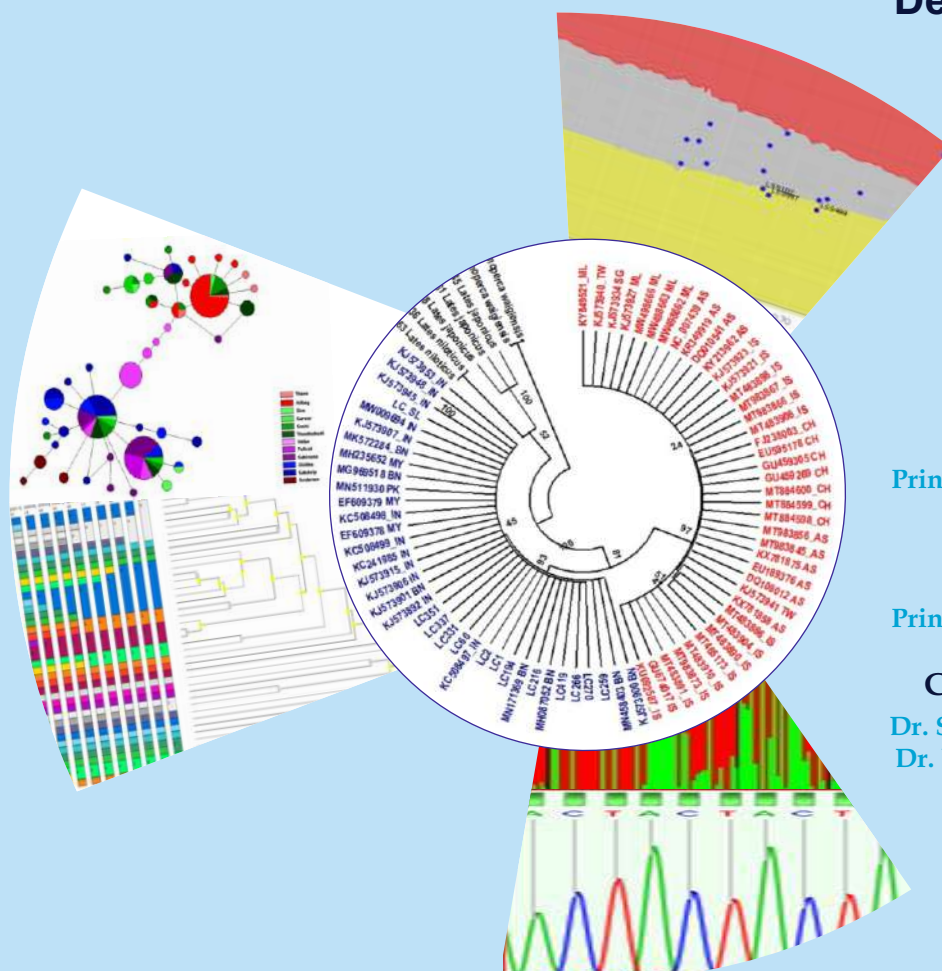


# Advances in Molecular Tools for Aquatic Genetic Resource (AqGR) Management

December 12-21, 2023



**Course Convener**  
Dr. Uttam Kumar Sarkar  
Director, ICAR-NBFG

**Course Co-convener**  
Dr. Vindhya Mohindra  
Principal Scientist, ICAR-NBFG

**Course Coordinator**  
Dr. Rajeev Kumar Singh  
Principal Scientist, ICAR-NBFG

**Course Co-coordinators**  
Dr. Sangeeta Mandal, Sr. Scientist  
Dr. L. Mog Chowdhury, Scientist  
ICAR-NBFG

Dates to remember :

Last date for submission of Application 01 December, 2023  
Last date for submitting Course fee 02 December, 2023

Contact : [rajeevsinghnbfg@gmail.com](mailto:rajeevsinghnbfg@gmail.com) (Mob. 9415164176)



**ICAR - National Bureau of Fish Genetic Resources**  
Canal Ring Road, Dilkusha P.O., Lucknow -226 002

About ICAR-NBFGR:

ICAR-National Bureau of Fish Genetic Resources was set up in 1983 under the aegis of the Indian Council of Agricultural Research for providing research inputs for sustainable management and conservation of fish germplasm resources. It has emerged as a Center of Excellence in cataloging and conserving aquatic bio-resources of the country. It has developed modern facilities, multidimensional strategies, and technological capabilities to work on conservation, management and registration of aquatic germplasm.

Advances in Molecular Tools for Aquatic Genetic Resource (AqGR) Management

India is among the mega biodiversity countries of the world. With only 2.4% of the land area, India accounts for about 9 % of the recorded fish species of the world. At present, over 34,000 fish species have been recorded across the globe, of which 3157 species exist in Indian waters. Conservation of natural resources inhabiting aquatic ecosystems is important as majority of the food still comes from the wild due to low domestication level in fisheries sector. The documentation of genetic variation, which exists at inter/intra species level is of vital significance for the survival of any species. This genetic variability can be assessed and quantified through molecular markers. Molecular tools provide valuable data on genetic diversity through their ability to detect variation at the DNA level. With the advent of advanced high throughput sequencing and genotyping technologies, it is now possible to identify large number of loci that can help in better understanding of the genomic basis of adaptive divergence. These approaches are also useful in identifying candidate genes and loci, linking traits to genotypes.

The ICAR-National Bureau of Fish Genetic Resources is actively involved in the development of molecular markers and their utilization in Aquatic Genetic Resource Management. Researchers at NBFGR have developed expertise and

infrastructure for wide range of cutting-edge technologies to discover/generate genomic resources, assess genetic diversity and useful functional genomic tools. The molecular markers especially, microsatellite DNA, mitochondrial DNA genes and SNPs are being employed for various applications ranging from population genetics, phylogeny and species validation. The genetic stock structures of 20 fish species across their native distribution in Indian rivers have been delineated along with their biological descriptors. The whole genomes of four important fish species have been sequenced and candidate genes have been identified for important aquaculture traits.

This training course is aimed at developing research expertise on biotechnological tools used in genetic resource management. The curriculum would cover concepts, theoretical as well as practical insights of different genetic and genomic tools used in genetic diversity assessment.

Course Content

- 1. DNA extraction, primer designing, PCR amplification
- 2. Sanger Sequencing, Strategies for NGS data generation and bioinformatics
- 3. Microsatellite and Mitochondrial marker development and validation
- 4. Statistical tools for genetic variability analysis
- 5. Applications of molecular tools for Aquatic Genetic Resource Management

Target Participants:

Scientist, Faculties/Technical officers; Research scholars/ Students/ Young Professionals

Intake capacity: 20 Participants

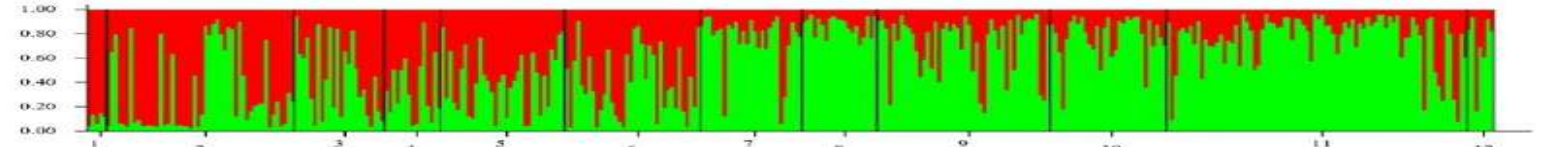
Fee: Rs 12000/- for Scientist, Faculties/ Technical officers

Rs 6000/- for Research scholars/Students/Young Profesional

Fee does not include travel, boarding, lodging or other personal expenses. Accommodation will be provided at ICAR-NBFGR Guest house on payment basis

About Lucknow

Lucknow, the capital city of Uttar Pradesh dates back to the Suryavanshi dynasty which extends along the banks of the River Gomti. It is also known as the Golden City of India, Shiraz-i-Hind and the Constantinople of the East. It has always been a multicultural city that flourished as a cultural and artistic capital of North India in the 18th and 19th centuries and as a seat of power of Nawabs. The rich cultural heritage renders it one of the beautiful cities in India and also known as the City of Nawabs for its hospitality and tehjib. Lucknow is the location of many social and cultural institutions of national significance, such as the Kathak, Khayal and Classical music as well as, is famous for its magnificent monumental works and beautiful poetry since the era of Mughals. The climate in the month of December will be moderately cold with temperature ranging from 15-21°C. The sprawling campus of NBFGR is located about 6 Kms from the Charbagh railway station and 7 Kms from the Chaudhary Charan Singh (Amausi) airport, both of which are well connected with the prepaid transport (auto/taxi cab) facility. The chikankari and gourmet vintage points make it the city of grandeur. With modern amenities and infrastructure, it showcases a grand culture. No other place has been able to blend past with the present with such consummate ease, as has Lucknow.



**REGISTRATION FORM**  
**Advances in Molecular Tools for Aquatic Genetic Resource (AqGR) Management**

**December 12-21, 2023**

ICAR-National Bureau of Fish Genetic Resources  
Lucknow-226002, U.P., India

Name (Dr./ Mr./ Miss/ Mrs.) : .....  
Designation : .....  
Date of Birth : .....  
Educational Qualification : .....  
Professional Experience : .....  
Present area of work : .....  
Brief statement (up to 50 words) giving reasons for interest in the course. Please indicate how it will help in research programme of the organization:.....  
.....

Mailing Address : .....  
.....

E-Mail .....

Phone: (O) ..... (R) ..... (M) ... ..

Course fee need to be paid either

- Online through ICAR-NBFGR website (<https://www.nbfgr.res.in:801/>) **OR**
- Through NEFT/IMPS to ICAR-NBFGR account having following details:  
Name of beneficiary: ICAR Unit NBFGR, Lucknow  
Name of Bank and Branch address: Axis Bank Ltd., Aashiyana, Lucknow  
Account No.: 918020045053793  
IFS Code: UTIB0001878  
Branch code: 001878  
MICR code: 226211010

Amount..... (In Words).....

Transaction No..... Date.....

Issuing Bank.....

Any other information:.....

Place:

Date:

(Signature of candidate)

Forwarding from Head of Institution/ Competent Authority:

1. Candidature of Dr./ Mr./ Miss/ Mrs..... working as ....., is forwarded for inclusion in the training course. The course fee will be sent by due date, if selected.

2. Candidature (Mark "☑" as applicable in the parenthesis):

a. Students & research scholars(     )     b. Others/permanent employee (     )

(Signature and seal of Competent Authority)

Name:

Designation: