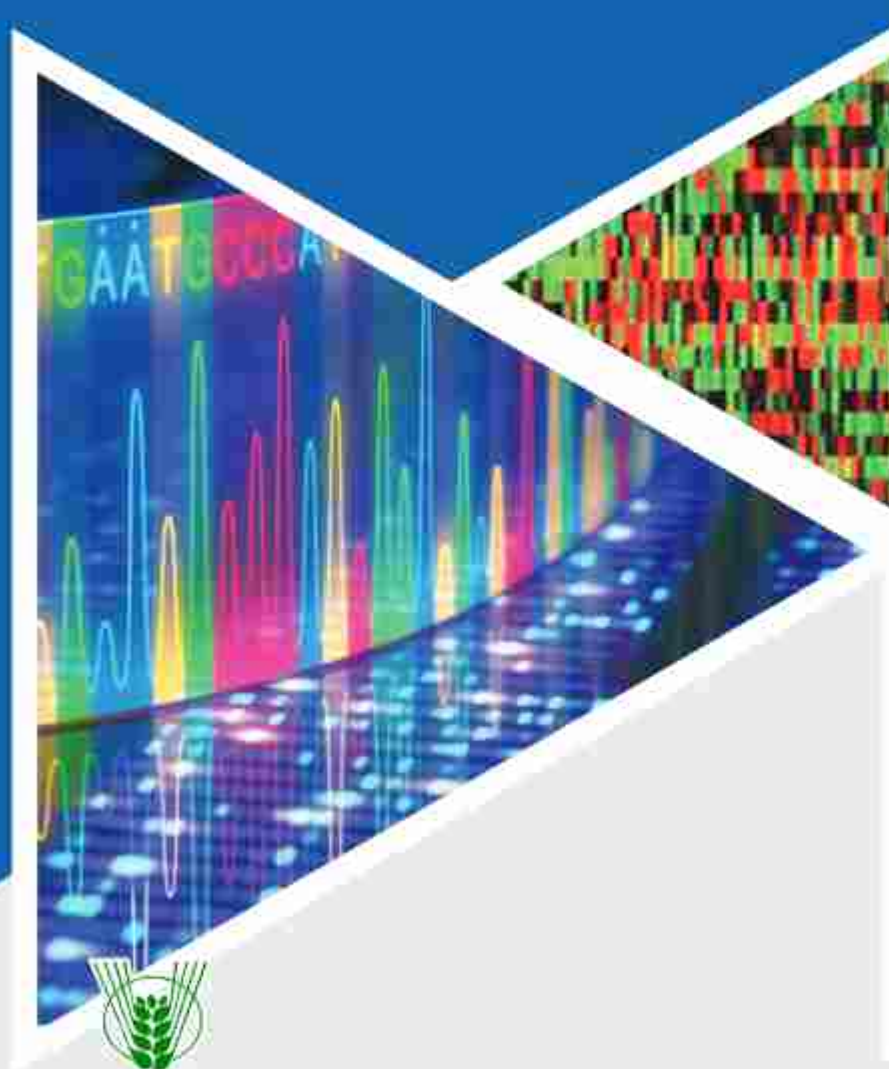


HANDS-ON TRAINING ON “TRANSCRIPTOME DATA ANALYSIS”

2-6 December, 2024



RNA sequen

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ICAR-Central Institute of Freshwater Aquaculture

Indian Council of Agricultural Research
(An ISO 9001:2015 Certified Institute)
Kausalyaganga, Bhubaneswar-751 002, India

Overview

Technological advancement in sequencing technology and development of bioinformatics tools has revolutionized biological research. The growing power and reducing cost of Next Generation Sequencing technology stimulated to generate huge amount of sequence data. The appearance of high throughput sequencing platforms transformed the traditional approach of one gene or one protein at a time in biological researches. Transcriptomics enables examination of thousands of genes and their expression pattern using next generation sequencing technologies. Transcriptomics aid scientist by examining all RNA transcripts present in a cell or tissue to understand gene expression pattern, alternate splicing and gene regulation mechanism. This shift has profoundly changed how we understand cellular functions, disease mechanisms, and gene regulation. In this context, the objective of the present program is to provide opportunities to unlock the potential of transcriptomics in understanding gene expression. This hands-on training on Transcriptome Analysis is designed for life science researchers, bioinformaticians, and students looking to dive deep into the study of RNA sequences. The course will provide practical exposure to analyzing and interpreting transcriptomic data using modern computational tools. The Institute has established Bioinformatics facility recently with high end computational facilities and standardized protocols for both open source software like FastQC, TRINITY, VELVET and SAMtools etc. and paid software like CLC Genomics server and workbench.

Why Attend?

- **Wet Lab exposure:** From sample collection to RNA isolation and quality analysis.
- **Comprehensive Training:** From raw sequencing data to meaningful biological insights, participants will get a step-by-step understanding of the transcriptome analysis process.
- **Hands-On Experience:** Perform data analysis using state-of-the-art bioinformatics tools and real datasets.
- **Expert Guidance:** Learn from experienced trainers in bioinformatics and genomics.
- **Networking Opportunities:** Connect with fellow participants, researchers, and professionals in the genomics field.

Who Should Attend?

- Scientists, Academicians, Researchers, Research Scholars and Post graduate students in biology, bioinformatics, or related fields.
- Researchers looking to expand their expertise in high-throughput RNA sequencing (RNA-seq) and transcriptomics.
- Professionals interested in applying transcriptome analysis to clinical or academic research.

Training Highlights

- RNA isolation and cDNA synthesis
- Introduction to Linux
- Data Preprocessing and Quality Control
- Transcript Alignment and Quantification
- Differential Gene Expression Analysis
- Functional Annotation and Pathway Analysis
- Visualization of Transcriptomic Data
- Variant calling & 3D modelling
- Quantitative real time PCR

Learning Outcomes

- Understanding the principles of RNA isolation and analysis.
- Exposure to linux operating system.
- Understand the principles of RNA sequencing and experimental design.
- Gain proficiency in using bioinformatics tools to process and analyze transcriptomic data.
- Learn to identify and interpret differentially expressed genes.
- Develop skills in data visualization and functional analysis of transcriptomes.

ICAR-Central Institute of Fresh-Water Aquaculture

The ICAR-Central Institute of Freshwater Aquaculture (ICAR-CIFA) is a premier research Institute in freshwater aquaculture in the country under the administrative control of the ICAR, New Delhi. This Institution has to its credit the sprawling campus of 147 ha with more than 350 assorted ponds in the farm, hatcheries, feed mill, ABI, research laboratory facilities, a Krishi Vigyan Kendra, Guest House, Hostels, Post office and Bank located within the campus. There are more than 75 research scientists catering to the research, training and extension need in breeding, culture, health, nutrition and physiology, genetics and biotechnology and social science aspects of fresh water fish and shellfish species. The focus is species and system diversification, genetic improvement of prioritized species through genetic and biotechnological tools, development of high quality feed, disease diagnostics, technology dissemination and extension.

Course Material

The Training Manual will be handed over to all participants at the beginning of training.

Course Fee

A course fee of Rs. 6,000/- per candidate (this includes registration fee only) will be charged at the time of registration. Selected candidates will be provided online payment link for payment of registration fee.

Accommodation

Accommodation will be arranged in the Institute's Guest House/ Trainees Hostel on payment basis.

How to Apply

Interested candidates should register and apply online through <https://www.cifatraining.com/registration>. Participants are advised to depart to Bhubaneswar only after the receipt of participation confirmation letter from the Course Director. Last date of receiving application is 25 th November 2024. Intimation to selected candidates will be sent through email.

How to Reach

The Institute is located near to Uttara, Kausalyaganga, about 10 km from Bhubaneswar Railway station and 12 km from Biju Pattnaik Airport (Auto fare Rs. 150/- or Taxi/OLA/UBER fare Rs. 350/-)

ORGANIZED BY

**Fish Genetics & Biotechnology Division
ICAR-Central Institute of Freshwater Aquaculture
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