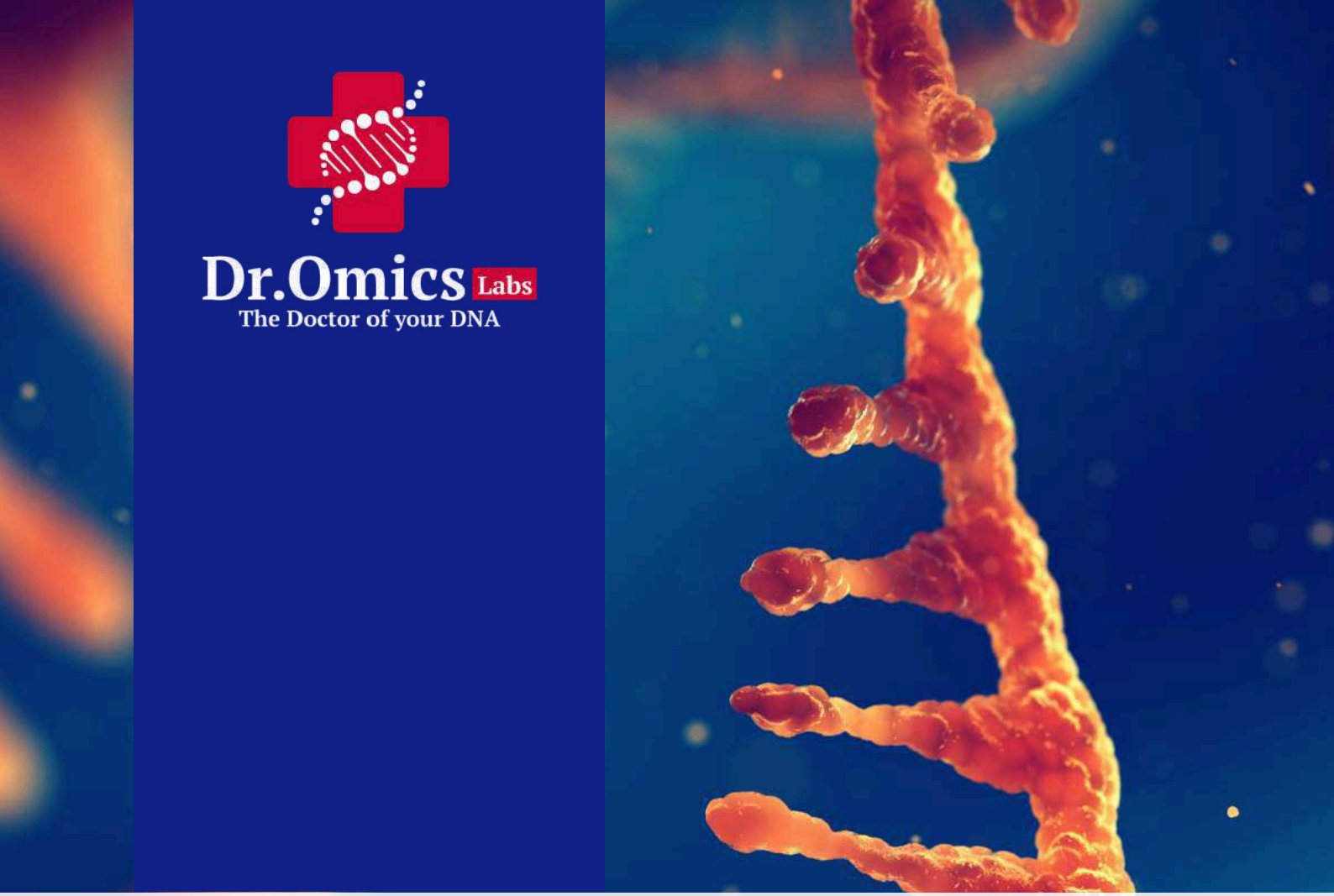
Dr.Omics Labs
The Doctor of your DNA



# Ribo-nucleOmics
## 8 Weeks Core Course

**Empowering Tomorrow's Genomic Leaders**

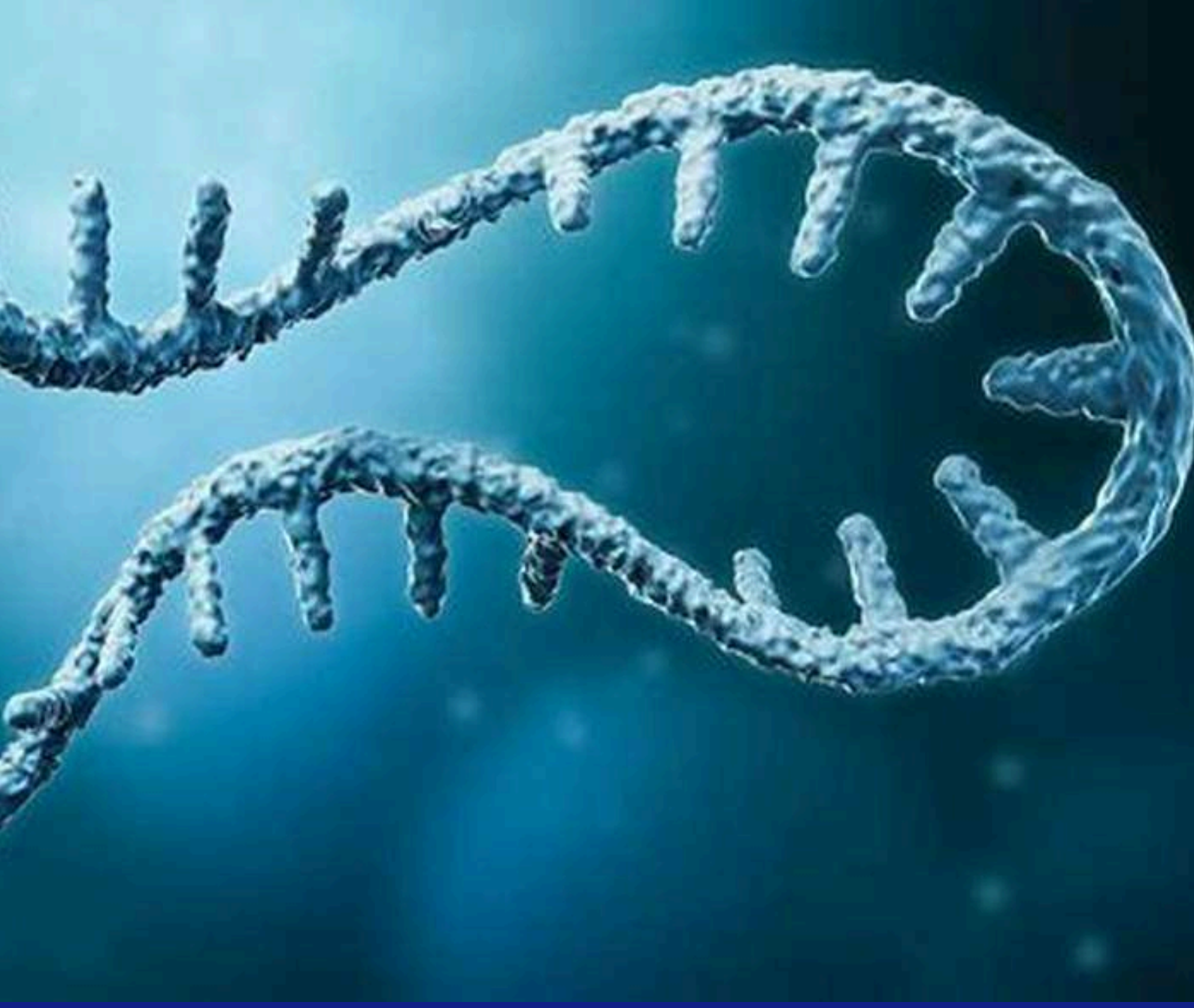
www.dromicsedu.com

# Welcome to Dr Omics Labs - Your Gateway to Genomic Excellence!

DrOmics Research Lab, a prominent research facility, offers comprehensive genomics research solutions and Bioinformatics services worldwide from its base in India. Headed by Deepshikha Satish, PhD (Translational Bioinformatics), our team comprises dedicated, keen-eyed, young, and enthusiastic Research Professionals. Our primary goal is to deliver specialized training programs for professionals, PhD, and MSc students in advanced technologies and fields. Our mission is to equip the future generation of scientists with the essential knowledge, skills, and hands-on experience to excel in their research and drive progress in the genomics sector.

Our training programs encompass a range of biotechnology subjects including molecular biology, genomics, proteomics, bioinformatics, and genetic engineering. Through workshops, seminars, hands-on sessions, and collaborative projects, students gain hands-on experience to understand advanced techniques and methodologies in biotech research.

The programs are structured to promote a cooperative and engaging learning atmosphere. Students are urged to join discussions, exchange ideas, and partake in practical experiments. Moreover, mentorship opportunities are available, enabling students to receive advice and assistance from seasoned experts as they progress through their training.



# Ribo-nucleOmics Core Course Highlights

Embark on a transformative journey into the intricate world of RNA and genomics. Our comprehensive course is designed to provide you with a profound understanding of the fundamental concepts and advanced techniques in Ribo-nucleOmics.

- Explore the structure and function of different RNA molecules.
- Understand the role of RNA in cellular processes.
- Dive into the dynamic world of genomics.
- Learn about DNA sequencing and its applications.

# Course Overview

01 Reference-Based RNASeq

02 Denovo-Based RNASeq

03 Single Cell-RNASeq Data Analysis

04 mi-RNASeq

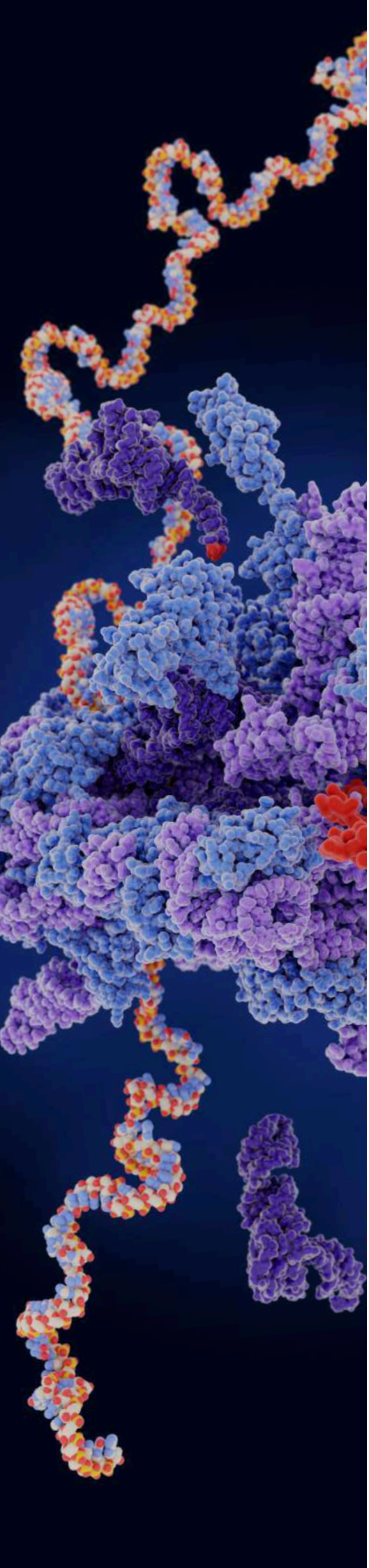
**Duration: 8 Weeks**

## **Module I:** Reference-Based RNASeq

- Introduction to RNA Seq
- Necessary Tools installation
- Learn how Data Retrieval is done
- Quality Check of reads
- Trimming and cleaning of data
- Understanding mapping of reads on reference genome & File formats (SAM, BAM)
- Visualization techniques
- Gene Expression Quantification & Analysation
- Pathway & Gene ontology enrichment analysis
- Pathway Network analysis
- R programming Basics
- Learn Different plots (e.g. Heatmap, volcano plot etc)

## **Module II:** Denovo-Based RNA Sequencing

- RNA Sequencing
- Generation of transcriptomic assembly
- Statistical study of assembly
- Mapping and abundance calculation
- Visualization of mapped reads
- Generate the count matrices for differential expression analysis

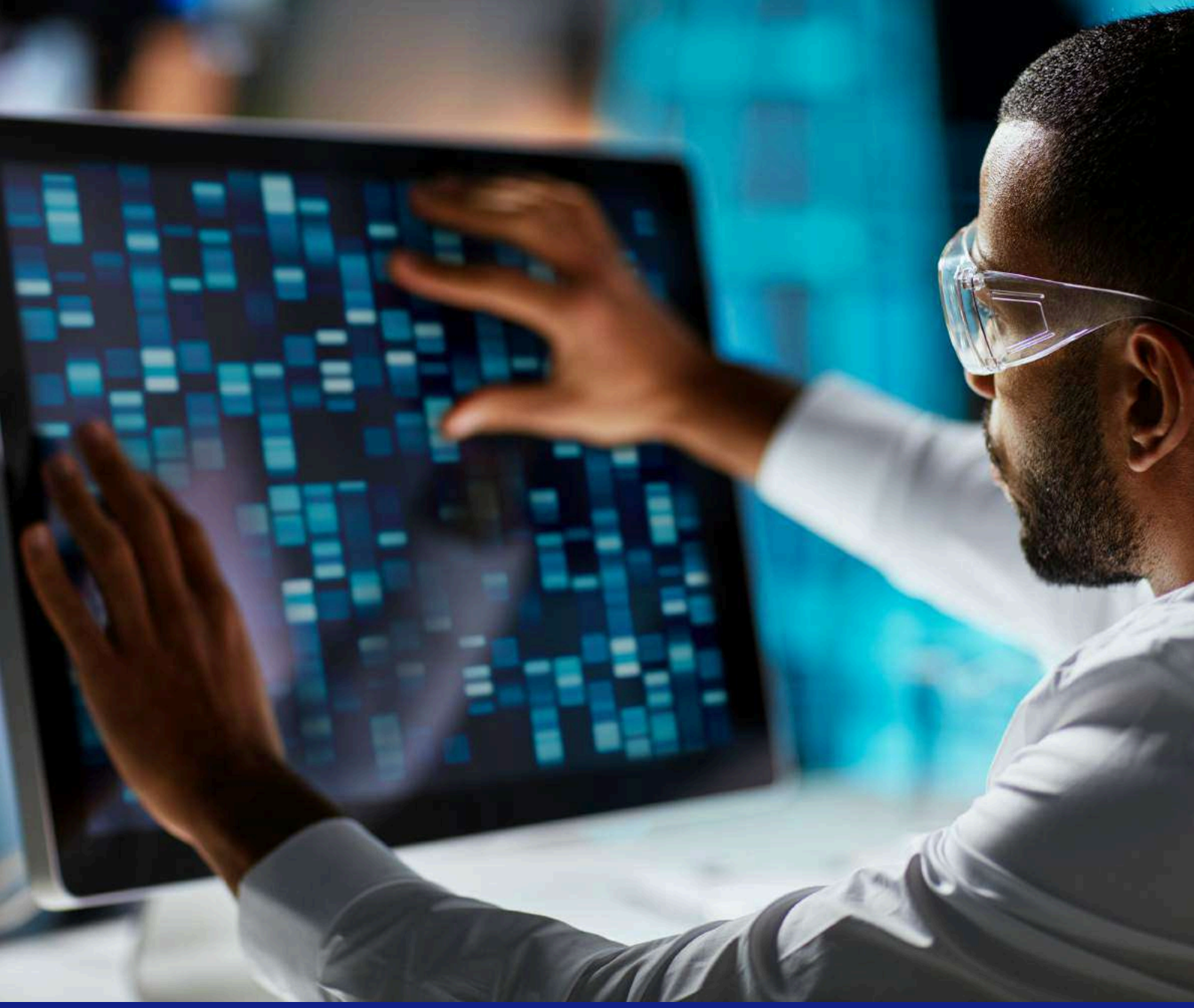


## **Module III:** scRNA Seq

- Introduction to Single cell RNA Sequencing
- Data Retrieval (Cell-Ranger and SRA)
- Data preprocessing and quality check
- Processing of filtered data (normalization, scaling, dimension reduction)
- Clustering
- Identification of Differentially expressed features
- Cluster annotation and Gene Annotation
- Data visualization (Violon plot, Dot plot, Dim Plot)

## **Module IV:** mi-RNASeq

- Data Downloading (NCBI SRA/EBI SRA)
- Quality control using Fastqc
- Trimming (cutadapt/Fastp/Trimmomatic)
- Mapping of Reads to Reference genome using mapper.pl
- Generation of Known, novel and abundance miRNA reports using MirDeep2
- Differential expression of genes using EdgeR/DESeq2
- miRNA Target prediction using miRDB
- Annotation of Target gene Using DAVID/Uniprot
- Functional and Pathway Enrichment Analysis using Panther/ShinyGO
- miRNA-mRNA network using Cytoscape



# What Sets Us Apart?

- **Cutting-Edge Research Opportunities**
  - Engage in hands-on training and research led by industry experts.
  - Access cutting-edge equipment and technologies for innovative research opportunities.
- **Interdisciplinary Approach**
  - Integrate knowledge from biology, chemistry, and informatics.
  - Gain a holistic understanding of Ribo-nucleOmics.

NEED MORE INSIGHT & SUPPORT?

# CONTACT US!


602/E, W NO 3, G/F, L/SIDE, SEQNO-M, H 3/727
GADAIPUR, NEW DELHI , SOUTH-WEST DELHI-110030

+91-7289003396

www.dromicsedu.com


*thank you!*

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OUR CERTIFICATIONS & GRANTS

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