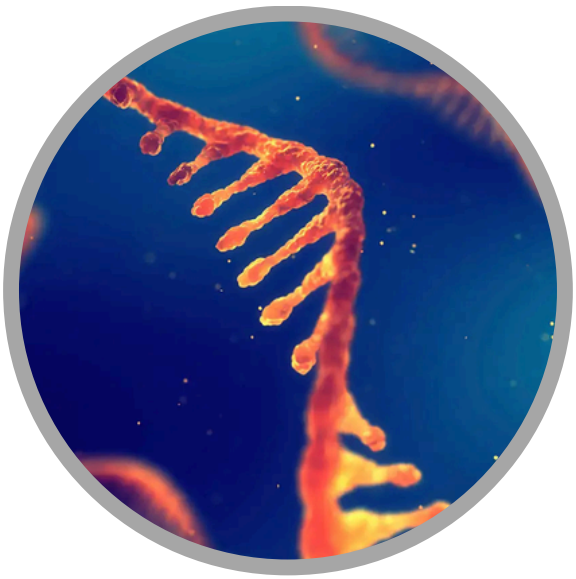
GENESPECTRUM Simplify Bioinformatics ACADEMY

GENESPECTRUM LIFE SCIENCES

Online Training Program on

Cancer Transcriptomics and Data Analysis Using R



With the rapid advancements in Next Generation Sequencing (NGS) technologies, RNA sequencing has become the leading method for gene quantification. These technological strides are revolutionizing cancer research by enabling the identification of genes expressed in tumor cells and the discovery of biomarkers for early cancer diagnosis and treatment.

This workshop on **Cancer Transcriptomics Data Analysis using R** provides a comprehensive overview of differential gene expression analysis utilizing R and Bioconductor tools. Participants will gain in-depth knowledge of cancer dataset analysis, from data retrieval through the TCGA portal to quality control and functional analysis. By the end of the workshop, attendees will have acquired essential skills in R programming and the NGS workflow for RNA-Seq datasets, empowering them to effectively analyze cancer datasets.

Prerequisites:

- Basic understanding of biology and enthusiasm to learn.
- You don't need any computing or programming experience (we will teach you that).
- A computer with Windows 10 or 11/Mac OS.

Who can take this course: Bachelors and Masters students, Ph.D. Scholars, Medical Doctors working in Clinical Genomics, Researchers, and Teachers from Pharma, Biochemistry, Microbiology, Biotechnology and other allied sciences.

Detailed Topics

Bioinformatics Basics

- Introduction to Bioinformatics
- Overview of cancer transcriptomics
- Databases for public data retrieval

R Programming

- What is R?
- Objects in R
- File operations
- Plotting and Visualization
- Introduction to Bioconductor

Using TCGA Portal

- Exploring datasets in TCGA
- Data formats
- Data retrieval using the TCGAbiolinks package

RNA Seq Data Analysis Workflow

- NGS Data Analysis Overview – File Formats and Tools
- Alignment and Counting
- Normalization

Differential Gene Expression using DESeq2

- DGE using DESeq2
- Visualization of the DEGs
- Filtration of the DEG
- Gene Set Enrichment Analysis (GSEA) using the David tool

A Brief Introduction to Single-Cell Transcriptomics

Other details of the workshop:

- **Duration of the course: 16 November to 8 December 2026 | Every Monday and Tuesday from 6:30 to 8:00 PM IST**
- There will be assignments, practice sessions, etc. Participants are encouraged to try the commands and tools during their free time.
- The sessions will be conducted online via Zoom meetings.
- An e-Certificate will be provided to each participant.
- The course material will be provided to each participant on Google Drive.

Registration Fee: Rs 5000 | USD 70 per participant.

FAQ:

1) What is the last date of registration?
Registration is open till 15th November, 6 PM IST

2) What if I miss some of the sessions?
We provide recordings of each session. You can watch the recording and complete the topic

3) How can I get answers to my doubts post-session?
You can ask your doubts via email or WhatsApp

4) Is there any discount available on registration fees?
Yes, we offer a group discount for 4 or more participants registering together. Contact us to know more.

For Registration:

- https://academy.genespectrum.in/cancer-trans/

For any queries:

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