

Functional Genomics & Pathway Analysis — Hands-on

Gain expertise in functional genomics and pathway analysis with end-to-end, reproducible practical sessions from expression matrices to biological insights.

Functional Genomics & Pathway Analysis

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Networks & Modules](#) [Session 4 — Mini Capstone: Report](#)

Session 1

Fee: Rs 6300 [Apply Now](#)

Expression & Normalization

Counts matrices, CPM/TPM/FPKM and library-size effects

Theory

Differential expression pipelines & contrast design

[DESeq2](#) [edgeR](#) [limma-voom](#)

QC, batch correction & exploratory analysis

[PCA](#) [UMAP](#) [Combat](#)

Session 2

Fee: Rs 8400 [Apply Now](#)

Enrichment & Pathways

ORA vs GSEA: inputs, ranks & permutation schemes

Theory

Databases & term mapping

KEGG **Reactome** **GO**

Automation & visualization of enrichment outputs

clusterProfiler **g:Profiler** **Enrichr**

Session 3

Fee: Rs 11200 Apply Now

Networks & Modules

PPI networks & topology metrics for key drivers

STRING **Cytoscape** **igraph**

Co-expression modules & trait associations

WGCNA **ME correlation** **Hub genes**

Pathway overlay & module enrichment summaries

ReactomePA **KEGGgraph** **ggraph**

Session 4

Fee: Rs 14000 Apply Now

Mini Capstone: Pathways Report

Design end-to-end analysis from counts to pathways

Theory

Automate DE→GSEA→network maps with provenance

Snakemake **Conda/Mamba** **R Markdown/Quarto**

Deliver publication-ready figures & interpretations

`pandas` `ggplot2` `Cytoscape`