Pathway Enrichment & Metabolic Network Mapping — Hands-on

Learn how to move from statistically significant metabolite and lipid features to pathway level and network level biological interpretation. This module focuses on mapping identifiers, running pathway enrichment, applying topology aware methods and building metabolic networks so that your metabolomics results translate into clear, defensible biological stories.

Pathway Enrichment & Metabolic Network Mapping

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Session 1
Fee: Rs 8800 Apply Now
Pathway Databases & Metabolite Mapping

Pathway resources for metabolomics and lipidomics

KEGG, Reactome, BioCyc **SMPDB and small molecule maps strengths and limitations**

Identifier cleanup and cross mapping

InChIKey, HMDB, KEGG IDs **ChEBI, PubChem and synonyms resolving duplicates and isomers**

Preparing feature lists for enrichment tools

selecting significant features | fold change and p value thresholds | background sets and universes

Session 2
Fee: Rs 11800 Apply Now

Enrichment Methods & Significance

Over representation and enrichment analysis basics

contingency tables and p values | hypergeometric and Fisher tests | multiple testing corrections

MetaboAnalyst and similar tools in practice

upload formats and mapping | choosing organism and libraries | reading enrichment result tables

Communicating significance and robustness

q values and adjusted p values | effect size and hit ratios | sensitivity analyses and caveats

Session 3
Fee: Rs 14800 Apply Now

Topology, Networks & Multi Omics Context

Pathway topology and impact scores

node centrality concepts | degree, betweenness, closeness | topology based pathway impact

Building and visualizing metabolic networks

metabolite reaction graphs | Cytoscape and similar tools | node attributes and styling

Placing metabolomics into multi omics context

linking genes, proteins and metabolites | overlaying

transcriptomics or proteomics network modules and sub pathways

Session 4
Fee: Rs 18800   Apply Now

Mini Capstone: From Features to Pathways

Constructing a full pathway analysis workflow

from feature table to enriched pathways

Summarizing results as clear biological stories

key pathways and direction of change linking to figures and tables limitations and alternative explanations

Deliverables: pathway table, network figure & methods text

ranked pathway enrichment table exported network visualization ready to edit methods paragraph