Microbiome–Metabolome Integration & GNPS Bridges — Hands-on

Learn how to connect microbiome profiles with metabolomics features to build mechanistic, pathway aware stories. This module covers data structures for integration, GNPS and feature based molecular networking, linking taxa to metabolites, and summarising joint microbiome metabolome patterns for manuscripts and reports.

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Session Index

Session 1

Fee: Rs 8800 Apply Now

Integration Concepts & Data Preparation

Why integrate microbiome and metabolome data

ecology and function in one view | **complementary resolution of pathways** | **case studies from gut and environment**

Data structures for multi omics integration

feature tables (ASVs, species, OTUs) | **MS feature**

tables and peak lists | sample and batch metadata alignment

Pre processing for each layer before integration

normalisation and scaling principles | batch effects and drift correction overview | ensuring paired and matched samples

Session 2

Fee: Rs 11800 Apply Now

Metabolomics Tables, GNPS & Molecular Networking

From raw metabolomics to feature tables

peak detection and alignment overview | MS1 and MS2 feature information | intensity matrices and metadata joins

GNPS and feature based molecular networking concepts

spectral libraries and cosine scores | molecular families in networks | exporting network and annotation tables

Visualising molecular networks and feature clusters

Cytoscape style layouts overview | colouring by class or source | overlaying sample group information

Session 3

Fee: Rs 14800 Apply Now

Linking Taxa, Features & Pathways

Correlation and association between taxa and metabolites

Spearman and partial correlations | multiple testing and sparsity awareness | simple network style visualisations

Pathway mapping and enrichment with integrated data

mapping features to KEGG or other resources **overlaying microbiome contributions** **interpreting joint pathway level shifts**

Basic multi omics integration approaches

simple CCA and PLS style concepts **block PCA and correlation circle ideas** **linking integrated signatures to phenotypes**

Session 4

Fee: Rs 18800 Apply Now

Mini Capstone: Microbiome–Metabolome Story

Designing an integration analysis for one dataset

guided theory plus practical

Building joint microbiome metabolome summaries

correlation heatmaps and networks **pathway or molecular family plots** **linking signatures to clinical or environmental traits**

Deliverables: integrated figure set and short narrative

plots connecting taxa and metabolites **summary tables for key associations** **brief methods and results text for reports**