Capstone — End-to-End Metabolomics/Fluxomics Project — Hands-on

Bring together everything you have learned across metabolomics, lipidomics and fluxomics into a single end to end project. In this capstone you will scope a biological question, work from RAW files through QC, statistics, pathway and flux interpretation, and finally deliver a fully documented, reproducible project package suitable for manuscripts or stakeholder review.

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Help Desk · WhatsApp

Session Index

Session 1

Fee: Rs 8800 Apply Now

Project Scoping, Datasets & Experimental Context

Selecting and framing the capstone question

disease, nutrition, toxicology or biotech scenario | **primary hypotheses and endpoints** | **defining success criteria for the project**

Understanding experimental design and metadata

groups, time points and interventions | **QC layout,**

batches and run order | covariates and confounders to track

Assembling RAW files and prior preprocessing outputs

LC–MS/GC–MS/NMR RAWs and vendor formats | peak lists, feature tables and logs | project folder structure and naming

Session 2

Fee: Rs 11800 Apply Now

Processing, QC & Feature Matrices

Rebuilding or auditing the processing pipeline

peak picking, alignment and deconvolution check | normalisation and transformation choices | documenting all key parameters

QC metrics, batch assessment and correction

pooled QC performance and RSD filters | run order drift and batch visualisation | batch correction and post QC checks

Final analysis ready feature matrices

feature filtering and missingness handling | log, scaling and transformation steps | saving clean matrices with metadata keys

Session 3

Fee: Rs 14800 Apply Now

Statistics, Pathways & Flux Views

Core statistics and multivariate summaries

PCA and clustering for quality and trends | group comparisons with FDR control | effect size and volcano style summaries

Pathway, network and enrichment interpretation

mapping features to metabolites and pathways **pathway enrichment and topology views** **overlaying results on metabolic networks**

Fluxomics perspective (for tracer datasets)

basic EMU or model based summaries (overview) **connecting isotopologue patterns to flux changes** **integrating steady state and flux level insights**

Session 4

Fee: Rs 18800 Apply Now

Capstone Delivery: Report & Reproducible Package

Structuring the capstone story for stakeholders

background, methods, results and conclusions

Figures, tables and slide ready visualisations

QC, stats and pathway figure panels **key tables for metabolites and fluxes** **summary slide deck outline**

Reproducible project and handover package

notebook or script driven analysis flow **data dictionary and environment file** **checklist for manuscript or client delivery**