Label Free Quantification — LFQ and iBAQ — Hands-on

Understand how to turn LC–MS/MS signal into robust quantitative protein profiles using label free strategies. This module focuses on the concepts behind LFQ and iBAQ, from experimental design and feature intensity extraction to normalization, missing value handling and statistical comparison for discovery and biomarker studies.

Label Free Quantification — LFQ and iBAQ

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Session Index

Session 1

Fee: Rs 8800 Apply Now

LFQ Principles & Experimental Context

What label free quantification measures in proteomics

precursor intensity based LFQ **spectral counting concept** **relative vs absolute views**

Requirements and limitations of LFQ designs

replicates and run to run stability **instrument and sample QC needs** **dynamic range considerations**

Where LFQ fits relative to labeled and targeted approaches

discovery cohorts | follow up with targeted assays | cost and throughput tradeoffs

Session 2

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Feature Intensities, Normalization & Missingness

From identified peptides to quantitative features

intensity extraction concepts | alignment across runs idea | match between runs conceptually

Normalization strategies for LFQ data

log transforms and scaling | global vs local normalization ideas | effects on fold changes

Missing value patterns and handling options (conceptual)

MCAR vs MNAR thinking | filtering vs imputation ideas | impact on downstream tests

Session 3

Fee: Rs 14800 Apply Now

Protein Level LFQ, iBAQ & Statistics

Summarizing peptide intensities to protein level

handling multiple peptides per protein | shared peptide logic | robust statistics intuition

Concept of iBAQ for approximate protein abundance

normalizing by theoretical peptides | relative abundance within samples | use cases and caveats

Statistical comparison of LFQ protein intensities

basic tests for differential abundance | multiple testing control overview | effect sizes and volcano

plots concept

Session 4

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Study Design, QC & Reporting for LFQ

Designing LFQ cohorts and replicate structures

theory plus planning worksheet

QC metrics for LFQ data quality monitoring

coefficient of variation patterns | sample correlation and clustering | intensity distributions across runs

Reporting LFQ workflows and results transparently

methods description templates | summary tables and figures | exporting matrices for sharing