Isobaric Labeling — TMT, iTRAQ and SILAC — Hands-on

Learn how to design and execute multiplexed quantitative proteomics using isobaric tagging and metabolic labeling. This module focuses on TMT and iTRAQ chemistry, workflow design, channel setup, basic SILAC concepts, and acquisition considerations that enable robust relative protein quantitation across multiple conditions.

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Session 1

Fee: Rs 8800 Apply Now

Isobaric Labeling Concepts & Experimental Design

Why isobaric labeling for multiplexed proteomics

relative quant across many samples **batch compression** **comparison to label free**

TMT and iTRAQ tag principles (reporter, balance, reactive group)

isobaric mass in MS1 **reporter ions in MS2 or MS3** **lysine and N terminus labeling**

Experimental design and channel assignment strategy

biological groups vs tags **reference channel**

concepts | balancing loads across channels

Session 2

Fee: Rs 11800 Apply Now

TMT / iTRAQ Chemistry, Sample Prep & Workflows

Labeling chemistry and reaction conditions (concepts)

amine reactive NHS esters | organic solvents and buffers | pH and temperature ranges

Peptide level labeling workflow (from digest to quench)

peptide desalting before labeling | tag reconstitution and addition | quenching unreacted label

Pooling, cleanup and fractionation options (overview)

mixing labeled channels | high pH fractionation idea | storage and stability notes

Session 3

Fee: Rs 14800 Apply Now

SILAC & Hybrid Quant Strategies (Concepts)

Stable isotope labeling by amino acids in cell culture (SILAC)

light, medium and heavy channels | label incorporation considerations | mixing cultures before lysis

Conceptual comparison: SILAC vs TMT / iTRAQ vs label free

advantages and limitations | instrument and sample constraints | when to choose which approach

Hybrid designs and reference channel ideas (conceptual)

TMT with bridge reference sample | linking multiple TMT sets | integrating with LFQ cohorts

Session 4

Fee: Rs 18800 Apply Now

Acquisition, Ratio Handling & Mini Capstone

Acquisition considerations for TMT / iTRAQ data (overview)

Theory + Practical (planning exercise)

Reporter ion based ratios and ratio compression concepts

co isolation and co fragmentation ideas | MS3 and SPS concepts (high level) | basic ratio QC thinking

Mini capstone: design sheet for a simple TMT or iTRAQ experiment

channel layout and sample map | workflow and QC checklist | notes for downstream analysis team