Sample Prep — Protein Extraction, Digestion and Cleanup — Hands-on

Go from complex biological samples to LC–MS/MS ready peptide mixtures with confidence. This module focuses on the theory and practical decision-making behind protein extraction, solubilization, digestion and cleanup so that your downstream identification and quantification are not compromised by poor sample quality.

Sample Prep — Protein Extraction, Digestion and Cleanup

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Session Index

Session 1

Fee: Rs 8800 Apply Now

Lysis & Protein Extraction Basics

Overview of sample types and matrix challenges

cells and tissues **biofluids** **membrane rich samples**

Lysis and solubilization strategies (conceptual)

mechanical vs chemical lysis **detergents and chaotropes** **protease and phosphatase inhibitors**

Protein recovery, clarification and storage considerations

clarification and removal of debris | buffer compatibility with LC–MS/MS | aliquoting and freeze protection

Session 2

Fee: Rs 11800 Apply Now

Reduction, Alkylation & Digestion Chemistry

Disulfide bond management and denaturation choices

why reduction and alkylation | impact on peptide mapping | common pitfalls

Enzymatic digestion strategies (theory level)

trypsin and other proteases | on pellet vs in solution logic | missed cleavages and sequence coverage

Designing digestion workflows for different sample types

low vs high complexity samples | time and temperature constraints | compatibility with labeling strategies

Session 3

Fee: Rs 14800 Apply Now

Cleanup, Fractionation & Enrichment

Why cleanup is essential before LC–MS/MS

removing salts and detergents | improving sensitivity and robustness | carryover considerations

Concepts of solid phase cleanup and fractionation

reversed phase at peptide level | offline fractionation logic | orthogonality of separations

Enrichment strategies for targeted sub proteomes (overview)

depletion of high abundance species **basic PTM and peptide enrichment concepts** **trade offs between depth and throughput**

Session 4

Fee: Rs 18800 Apply Now

QC, Troubleshooting & Study Templates

Assessing protein and peptide quality prior to LC–MS/MS

theory plus checklist exercise

Common failure modes and how to reason about them

low protein yield **poor digestion patterns** **carryover and contamination indicators**

Building sample prep sections for a proteomics study plan

template for methods sections **sample mapping sheets** **handoff checklists to MS core**