Mass Spectrometry Imaging (MSI) for Spatial Metabolomics — Hands-on

Extend metabolomics into space by learning Mass Spectrometry Imaging (MSI) concepts and workflows. This module focuses on how MSI captures spatial patterns of metabolites and lipids in tissue sections: experimental setup, acquisition strategies, basic preprocessing ideas and visualization so that you can interpret spatial metabolomics maps alongside histology and other imaging modalities.

Mass Spectrometry Imaging (MSI) for Spatial Metabolomics

Help Desk · WhatsApp

Session Index

Session 1

Fee: Rs 8800 Apply Now

MSI & Spatial Metabolomics Foundations

What is Mass Spectrometry Imaging and how it differs from LC–MS

pixel based vs bulk measurements **spectra per pixel concept** **ion images and intensity maps**

MSI modalities and typical applications (concept overview)

MALDI vs DESI style ideas | metabolites vs lipids vs drugs | tumour margins, brain maps, plant tissues

Key trade offs in MSI experiments

spatial resolution vs sensitivity | mass resolution and coverage ideas | throughput and run time considerations

Session 2

Fee: Rs 11800 Apply Now

Sample Prep, Acquisition & Experimental Design

Tissue handling, sectioning and matrix concepts (MALDI style)

fresh frozen vs FFPE (idea) | section thickness thinking | uniform matrix application concepts

Acquisition parameters and scan strategy (concepts)

pixel size and step size | mass range and polarity choices | calibration and reference spots idea

Experimental design and QC in MSI studies

replicates across sections / subjects | tissue microarray concept (overview) | internal standards and reference regions

Session 3

Fee: Rs 14800 Apply Now

Preprocessing, Registration & Visualization Concepts

Basic MSI data structure and preprocessing ideas

spectral binning / peak picking concepts | baseline and normalization ideas | handling low intensity pixels

Co-registration of MSI with histology or other images (high level)

aligning MSI with H&E sections (concept) | ROIs and annotation masks | region based statistics ideas

Visualising ion images and simple multivariate maps

single ion intensity maps | RGB compositing concepts | PCA factor images idea

Session 4

Fee: Rs 18800 Apply Now

Mini Capstone: Spatial Metabolomics Storyboard

Constructing a simple MSI based spatial metabolomics narrative

Theory + Practical

Selecting example ion images and regions of interest

linking maps to histological features | contrasting two tissue states | noting limitations and artefacts

Deliverables: MSI storyboard slides & figure checklist

short PDF/HTML storyboard | list of key ion images and ROIs | figure and caption planning checklist