# MS Imaging & Spatial Metabolomics — Basics — Hands-on

Learn how to convert tissue sections into quantitative ion images and spatial metabolomics maps. This module walks through experimental design, MSI acquisition, image processing, annotation and basic spatial statistics so that you can interpret metabolite distributions in tissue, tumors, organs and microbial colonies.

## MS Imaging & Spatial Metabolomics — Basics

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**Session Index**



**Session 1**

**Fee: Rs 8800** Apply Now

### Fundamentals of MS Imaging & Spatial Metabolomics

Concepts and technologies in MS imaging and spatial omics

**MALDI MSI, DESI and related modes** | **mass spectra per pixel and ion images** | **spatial resolution vs coverage trade offs**

Tissue, organ and microbial applications

**tumor and margin mapping** | **drug distribution and pharmacology** | **microbial colonies and consortia**

Experimental design and basic terminology

regions of interest and field of view | pixel size, step size and raster patterns | replication and controls for MSI

Session 2

Fee: Rs 11800 Apply Now

## Sample Prep, Matrices & Acquisition

Cryosectioning and slide preparation for MSI

section thickness and orientation | mounting and drying best practices | histology compatible workflows

Matrix selection and deposition strategies

common matrices for metabolites and lipids | spray vs sublimation approaches | homogeneity, crystal size and delocalisation

Acquisition parameters and QA during runs

mass range, resolving power and step size | calibration and lock mass strategies | reference spots and QC regions

Session 3

Fee: Rs 14800 Apply Now

## Image Processing & Spatial Statistics

From raw data to ion images and peak tables

vendor formats and open formats (imzML) | baseline correction and normalisation | peak picking and spectral alignment

Segmentation, co localisation and basic statistics

unsupervised clustering and regions | ion co

**localisation metrics** **region based comparisons and ROC maps**

Registration with histology and annotations

**overlaying MSI with H&E images** **drawing ROIs and exporting masks** **linking to pathology or anatomical labels**

**Session 4**

**Fee: Rs 18800** Apply Now

## Mini Capstone: Spatial Maps & Report

End to end spatial metabolomics workflow on a teaching dataset

**from raw MSI files to ion maps and ROIs**

Summarising spatial patterns for biology or pathology teams

**heatmaps and composite RGB ion images** **region based boxplots and statistics** **clear narrative on metabolite localisation**

Deliverables: MSI project folder, figures & methods text

**ion images and ROI masks** **exported feature tables for statistics** **ready to edit methods and results template**