WORKSHOP SUMMARY

Workshop: Matrix application I/II
Topic: Portrait spotting – matrix and trypsin
Session: 3B & 4B
Time: Wednesday 9:00 am and 11:00 am

Background

Matrix application is a critical component of any MALDI imaging experiment and should be tailored for each tissue and analyte. Ideally, matrix deposition is fast, precise, and reproducible. It should enable analyte extraction and adequate crystal formation while minimizing delocalization. A robotic acoustic reagent spotter, such as the Labcyte Portrait 630 spotter, can fulfill these criteria. By applying focused acoustic energy to a solvent reservoir, picoliter droplets of matrix or other reagents can be rapidly applied to tissue at a regular spacing as low as 200 µm. Repeated deposition of matrix droplets at each location creates an array of discrete matrix spots, provides excellent analyte extraction, and minimizes cross-contamination between spots.

Highlights

- Choosing the optimum matrix solution for the experiment
- Defining the tissue region to be spotted
- Loading the target and source
- Calibrating source parameters
- Setting up and executing automatic methods
- Alignment of multiple reagents (i.e. trypsin and matrix)

Summary

In this workshop, attendees will learn how to use an acoustic reagent spotter to apply reagents onto defined tissue regions. In one example, matrix deposition will be demonstrated using a matrix solution of sinapinic acid in 50% acetonitrile, 0.1% trifluoroacetic acid (TFA) onto tissue for subsequent imaging MS analysis of proteins. In a second example, trypsin will be deposited onto formalin-fixed, paraffin-embedded tissue. Trypsin will be applied in an array over the tissue surface to generate tryptic peptides, followed by deposition of α-cyano-4-hydroxycinnamic acid (CHCA) matrix at the same coordinates.