SEP 20, 2019

High Resolution Imaging Mass Spectrometry Analysis using Bruker Daltonics Platforms

Elizabeth Neumann¹, Jamie Allen¹, David Anderson¹, Danielle Gutierrez¹, Jeff Spraggins¹

¹Vanderbilt University

VU Biomolecular Multimodal Imaging Center / Spraggins Research Group

Human BioMolecular Atlas Program (HuBMAP) Method Development

Jamie Allen
Vanderbilt University

ABSTRACT

Scope:

Acquire 10 µm spatial resolution imaging mass spectrometry (IMS) datasets of ~ 5mm² regions of tissue.

Expected Outcome:

A series of ion images that can be used to visualize the distribution of lipids localizing to physiological regions within the human kidney.

MATERIALS

Slide Adapter for Instrument
Bruker MALDI timsTOF Flex

BEFORE START INSTRUCTIONS

Prepare tissue by following protocols for sectioning and matrix application.

OPEN ACCESS

DOI:
dx.doi.org/10.17504/protocols.io.7gdhjs6

Protocol Citation: Elizabeth Neumann, Jamie Allen, David Anderson, Danielle Gutierrez, Jeff Spraggins 2019. High Resolution Imaging Mass Spectrometry Analysis using Bruker Daltonics Platforms. **protocols.io** <https://dx.doi.org/10.17504/protocols.io.7gdhjs6>

License: This is an open access protocol distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Protocol status: Working
We use this protocol and it's working

Created: Sep 18, 2019

Last Modified: Apr 08, 2023

PROTOCOL integer ID:
27877

Keywords: HuBMAP, BIOMIC, Kidney, Imaging, MALDI, Chemistry, Mass Spectrometry, Imaging Mass Spectrometry, Vanderbilt, MSRC

- 1 Scann a 3200 dpi image of the matrix coated tissue section in the MTP slide adapter 2 with sufficient contrast to visualize the tissue boundaries.
- 2 Choose a method that has "height correct" initiated upon sample docking.
- 3 Insert the slide adapter plate into the instrument airlock. Then press "load."
- 4 While the height correct profile is being generated, open FlexImaging and follow the prompts to designate sample file name, method, pitch, scanned image of the slide, etc.
- 5 Once the height correct profile has been generated, train the target position with three teaching points following the instructions within FlexImaging.

- 6 Draw a measurement region around the tissue for IMS analysis.
- 7 Go to an area off of the tissue and ensure the focus of the laser is adequate for 10 μm spatial resolution imaging.
- 8 Start the acquisition.