

Opening in July 2019

The Johns Hopkins Applied Imaging Mass Spectrometry – AIMS Core/Service Center

The newly established Johns Hopkins AIMS Core/Service Center makes available rapid matrix-assisted laser desorption/ionization (MALDI) imaging at high spatial resolution, which includes sample preparation, on-tissue digests and derivatizations, and data analysis. The new AIMS Core, directed by Dr. Kristine Glunde, is opening in July 2019. It is housed in the Cancer Research 2 building (CRBII) in the lower basement in room LB03D and LB03E.

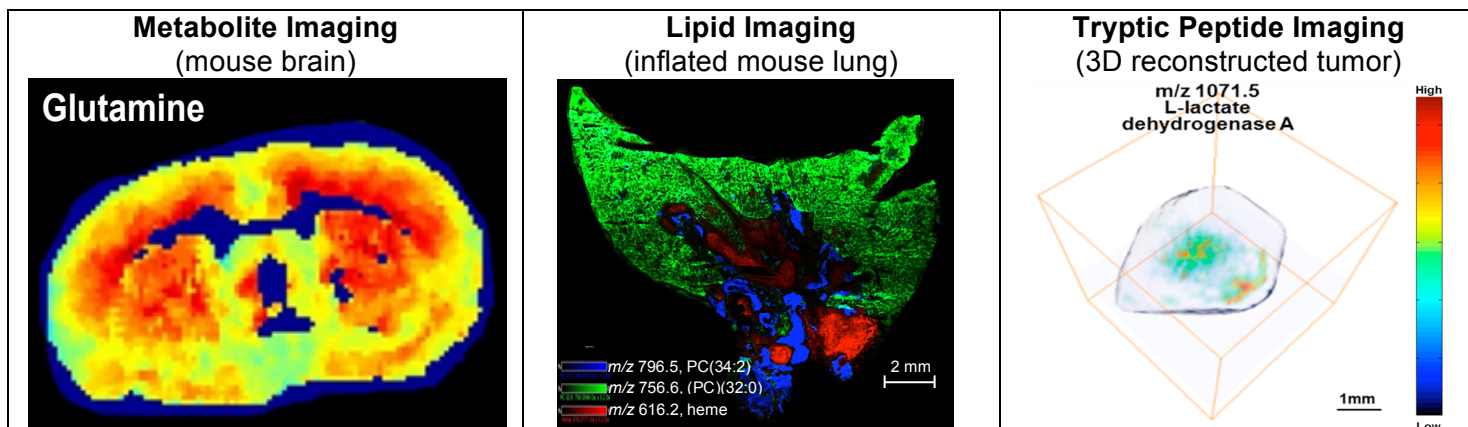
Spatially resolved MALDI imaging measurements are directly taken from a frozen or formalin-fixed paraffin-embedded (FFPE) tissue section without destroying it. MALDI imaging combines mass spectrometric analyses of biomolecules with simultaneous histological evaluation to analyze intact proteins, tryptic peptides (on-tissue tryptic digest), N-glycans (on-tissue PNGase digest), peptides, lipids, metabolites, and drug molecules in a spatially resolved manner.

Equipment

- Bruker Rapiflex MALDI TOF/TOF instrument for high-throughput MALDI imaging
- HTX M5 Sprayer for accurate robotic spraying of enzymes and matrices
- Leica Cryostat for MALDI-imaging-compatible cryosectioning
- Slide scanner for histology and immunohistochemistry co-registered with MALDI imaging
- Workstation with SCiLS lab for data analysis

Services

- MALDI-imaging compatible cryo-sectioning in gelatin and other MALDI-compatible cryo-media
- MALDI-imaging sample preparation of formalin-fixed paraffin-embedded tissue sections
- On-tissue digestions including for tryptic peptides and glycans
- On-tissue derivatizations for metabolite imaging
- Robotic matrix application with HTX M5 sprayer
- High-throughput multiplexed MALDI imaging of up to 5,000 biomolecules at once
- High spatial resolution MALDI imaging of 20 micron pixel size or better
- MALDI imaging covering maximum area of regular microscopy slide (75 mm by 25 mm)
- Customized development of MALDI imaging protocols
- Targeted MALDI imaging of drugs, drug metabolites, imaging agents, contrast agents, or other agents
- Discovery MALDI imaging of metabolites, lipids, peptides, intact proteins, tryptic peptides, glycans
- On tissue MS/MS for analyte identification in imaging or profiling mode
- Data analysis: segmentation analysis, pathology-guided analysis, and statistical analysis with dedicated software package (SCiLS Lab)



More applications will be added to the AIMS Core portfolio as they become available in the rapidly developing field of MALDI imaging.