



Member of Hackensack Meridian Health



Mass Spectrometry Imaging Core

For more information contact

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Mass Spectrometry Imaging Services

Mass spectrometry imaging (MSI) is available to researchers for clinical and preclinical investigations. MSI experiments can be tailored based on experimental needs, but examples of disease-based characterization include; inter- and intra-tumor heterogeneity, infectious diseases, inflammatory diseases, neurological diseases and normal-tissue radiation injury. Our workflows enable routine high resolution imaging studies that map the spatial distribution of endogenous (lipids, metabolites, glucans, peptides, and proteins) and exogenous (pharmaceuticals) molecules to histologically defined cellular regions.

Applications include:

Pharmacokinetic/Pharmacodynamic Studies

- Drug and metabolite distribution
- Drug induced toxicity – phospholipidosis
- Pharmacodynamics

Lipids and Metabolites

- Sphingolipids and glycosphingolipids
- Phospholipids
- Cardiolipins
- Cholesterol
- Bile acids
- Triacylglycerol
- Glycolysis metabolites
- Hexosamine biosynthetic pathway metabolites
- Pentose phosphate pathway metabolites
- TCA cycle metabolites
- Amino acids
- Nucleotides
- Biogenic amines

Glycans

- N-linked glycans

MALDI HiPLEX-IHC

- Multiplex IHC Imaging
 - tailored to antibody targets of choice
 - carried out on the same sections as drug/lipid/metabolite imaging experiments

Instruments

Bruker Solarix 2xR 7T Hybrid QqFT-ICR Mass Spectrometer

The hybrid quadrupole – Fourier transform ion cyclotron resonance mass spectrometer is predominantly used for MS imaging of biomolecules and pharmaceuticals. The instrument features a dual ESI/MALDI ion source. Combination of the latest Magnetic Resonance Mass Spectrometry (MRMS), ParaCell and Magnetron control technology provides a maximum resolving power >10M, enabling routine access to Isotopic Fine Structure (IFS) information with high mass accuracy (600 ppb).

HTX-TM Sprayers

The M3 and M5 MALDI mass spectrometry imaging sample preparation systems provide high quality matrix deposition for superior analyte extraction and spatial image resolution.

Leica Laser Microdissection Microscope 7 (Shared)

The LMD7 microscope provides researchers with access to cutting-edge technology for the isolation of single cells or specific cell populations from frozen/FFPE tissue sections, bone sections and cell culture. The captured cells or regions of interest can then be post-processed for a wide range of downstream assays including DNA, RNA, proteomic, lipidomic, metabolomic and pharmaceutical quantitation.

Leica Biosystems CM1860 and CM3050 S Cryostats

The Leica cryostats are used for cutting accurate sections from frozen specimens for laser-capture microdissection and mass spectrometry imaging studies.

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