REDEFINED PERFORMANCE

ALL THE BENEFITS OF TIME-OF-FLIGHT TECHNOLOGY

SELECT™ SERIES MRT

Waters™

SELECT™ SERIES MRT

UNCOMPROMISED CONFIDENCE

ULTIMATE RESOLUTION AND MASS ACCURACY AT THE SPEED OF TOF

The SELECT™ SERIES MRT delivers the extreme confidence associated with parts per billion mass accuracy, equally at home with MALDI and DESI mass spectrometry imaging as it is with UPLC™-MS/MS analysis.

UNCOMPROMISED PERFORMANCE
Unambiguously identify compounds in the most complex of samples by combining exceptional mass resolution and specificity, independent of scan speed, all with the usability of a state-of the-art Q-Tof.

UNQUESTIONED CONFIDENCE
Move to a new level of confidence for small molecule LC-MS experiments by routinely obtaining ppb mass accuracy and revealing fine isotope structure at high scan rates.

ELEVATED BIOLOGICS CHARACTERIZATION
Make faster and better-informed decisions on biopharmaceutical workflows with the resolution to tease apart often subtle changes in compound structure.

ACCELERATED IMAGING CLARITY
Map the bio localization of compounds with the highest fidelity without sacrificing acquisition time or data quality.

ULTIMATE IMAGING COVERAGE
Easily image more molecular content with the simplicity of a new high-performance MALDI source or combine data with the versatility of DESI XS.

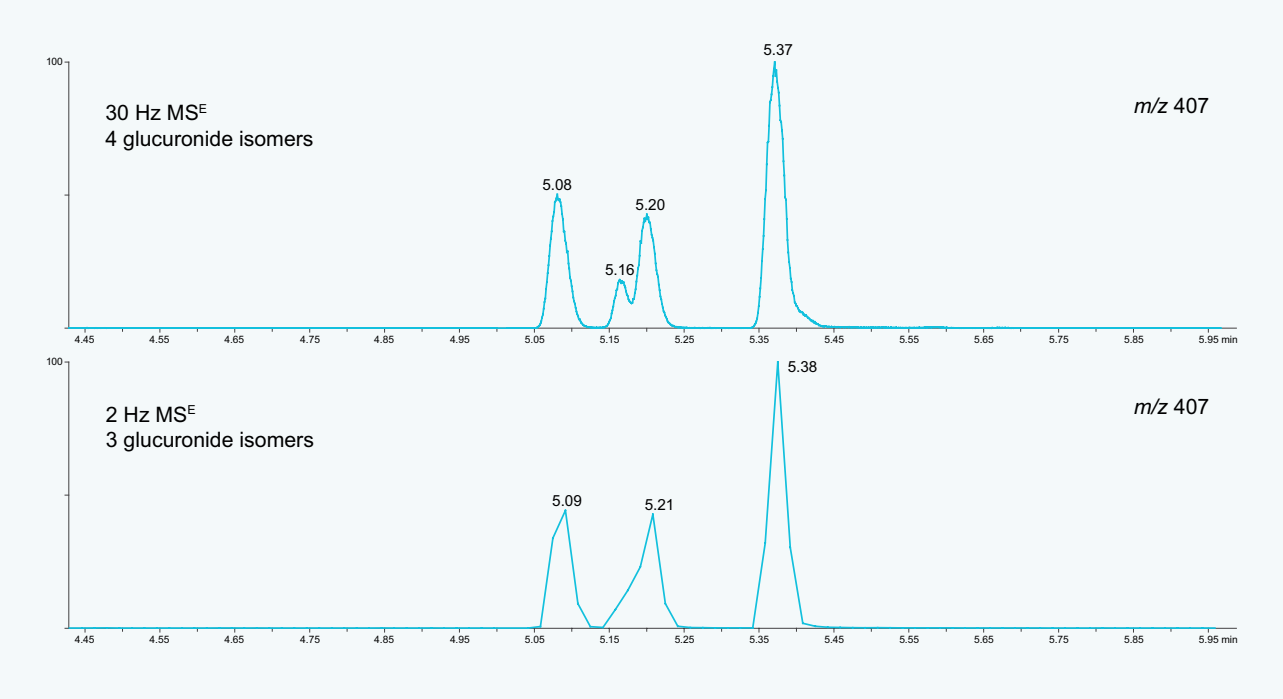
UNCOMPROMISED PERFORMANCE

High resolution mass spectrometry, without compromise.

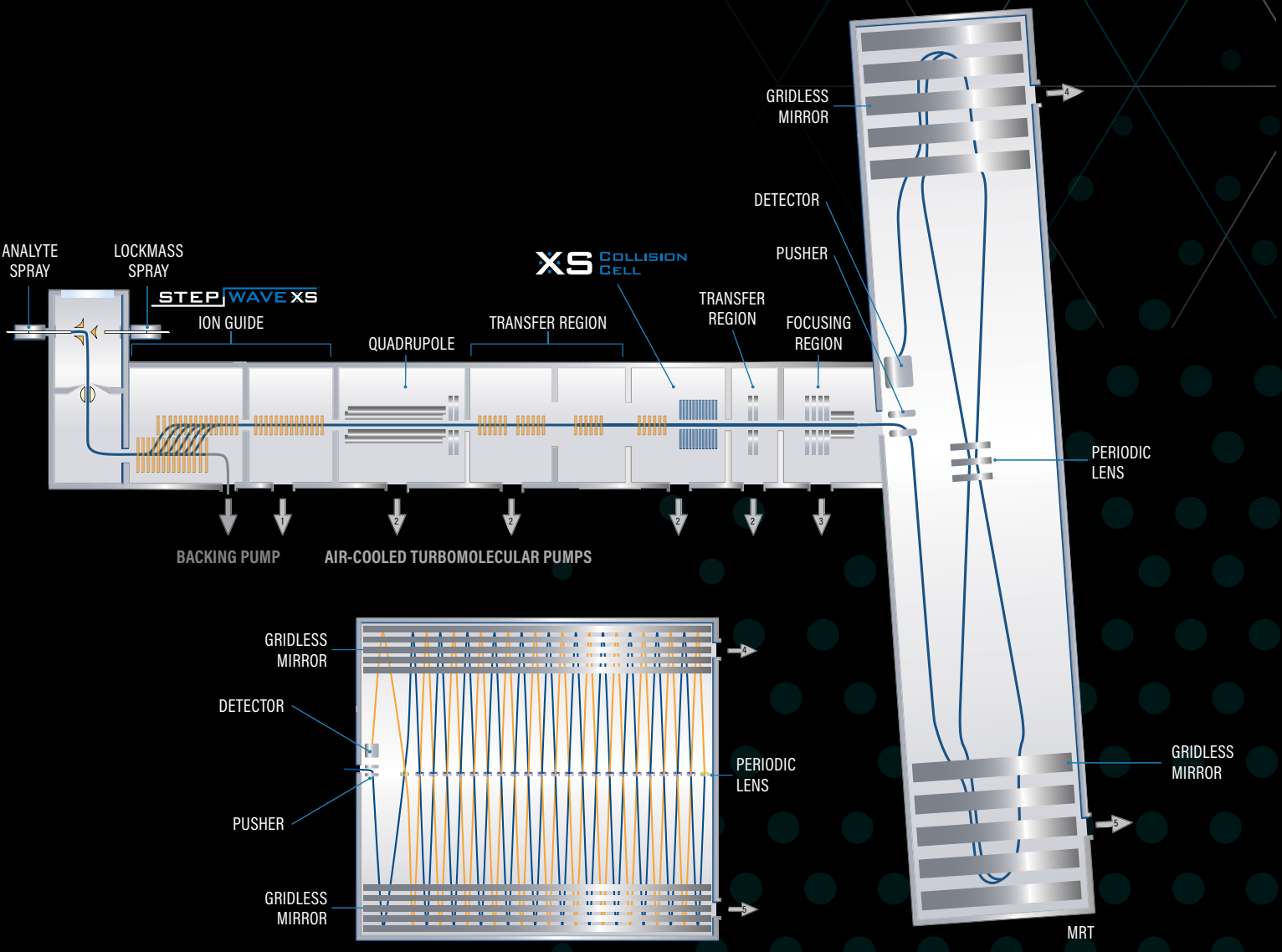
The superior mass resolving power of the Multi-Reflecting Time-of-Flight Mass Analyzer in the SELECT SERIES MRT delivers high precision and routine parts per billion mass accuracy independent of acquisition speed, providing unsurpassed quality of mass spectrometry data and information.

- ppb mass accuracy for both MS and MS/MS spectra with the speed to complement fast chromatography.
- Resolution to distinguish the fine isotope structure of small molecules, drugs and metabolites.
- Baseline resolved isotopic envelope of multiply-charged ions.
- Ultimate Tof performance for LC-MS and imaging studies.
- Unlike other high-resolution mass analyzers, with MRT there is no compromise to your experiments; mass resolution is consistent over a broad mass range independent of scan speed.

Mass Resolution at the Scan Speeds You Need



SELECT SERIES MRT



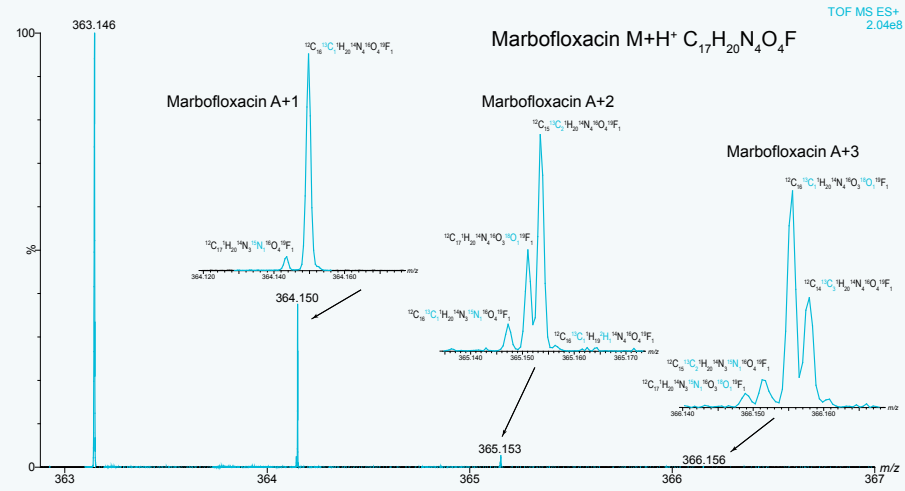
SELECT SERIES MRT, built with state-of-the-art Multi Reflecting Time-of-Flight (MRT) technology.

ULTIMATE CONFIDENCE

High confidence elemental composition and fine isotope structure with UPLC performance.

There is a continuous drive for research to increase statistical rigor by increasing study size and generally increasing productivity, the need for faster analysis has never been greater. The use of shorter chromatographic columns and rapid gradients enable higher efficiencies, unlike other ultra-high resolution mass spectrometers the SELECT SERIES MRT addresses these challenges without compromising performance. The SELECT SERIES MRT provides a new level of confidence for LC-MS and LC-MS/MS experiments by routinely obtaining ppb mass accuracy, revealing fine isotope structure, all with the exceptional usability of a state-of the-art Q-Tof.

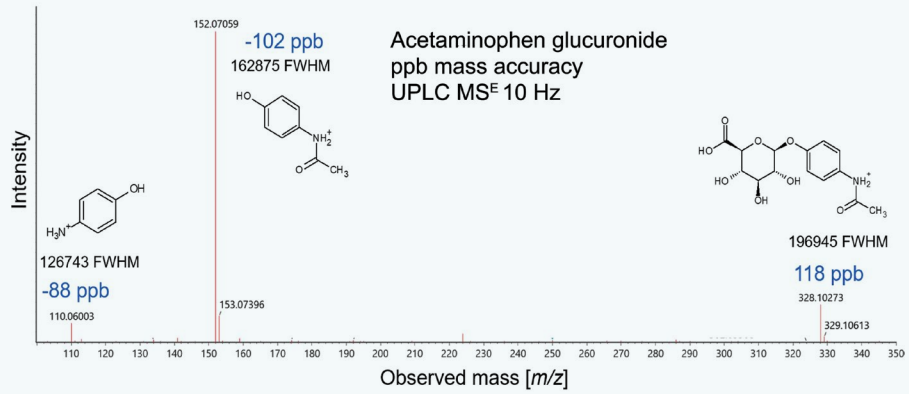
Unequivocal Elemental Composition With Fine Isotope Structure



Fine isotope structure from an LC-MS Resolution Enhancement Mode (REM) experiment.

The spectacular performance enables search tolerances to be minimized, providing higher confidence in elemental composition and molecular formula assignments for known and unknown targets. Moreover, the ability to routinely access such high specificity from accurate mass for both precursor and product ions is truly transformative. Resolution Enhancement Mode focuses Time-of-Flight duty cycle to enhance resolution even further for a target *m/z* range to more than 300,000 FWHM.

Confidence of ppb Mass Accuracy for Fragment Ions



MRT-UPLC-MS^E ES+ fragment ion spectrum obtained for acetaminophen glucuronide.

ELEVATED BIOLOGICS CHARACTERIZATION

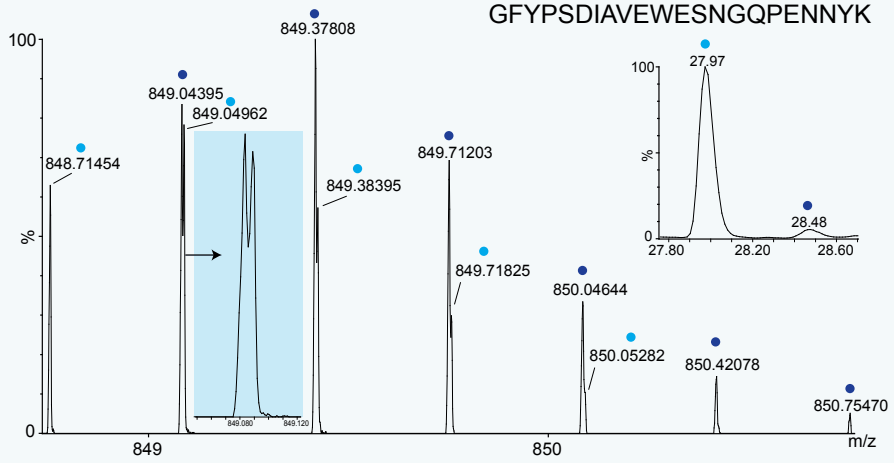
Delivering the confidence to make decisions on biologics development.

The SELECT SERIES MRT is easily integrated into biopharmaceutical discovery/characterization workflows such as peptide mapping and intact mass measurement.

The excellent mass accuracy of the MRT analyzer enables high sequence coverage even with a stringent 1 ppm precursor mass tolerance allowing greater confidence in peptide identifications. Furthermore, exceptional resolving power distinguishes the isotope distributions of native and deamidated peptides, enabling more accurate identification and quantification of these key post-translational modifications.

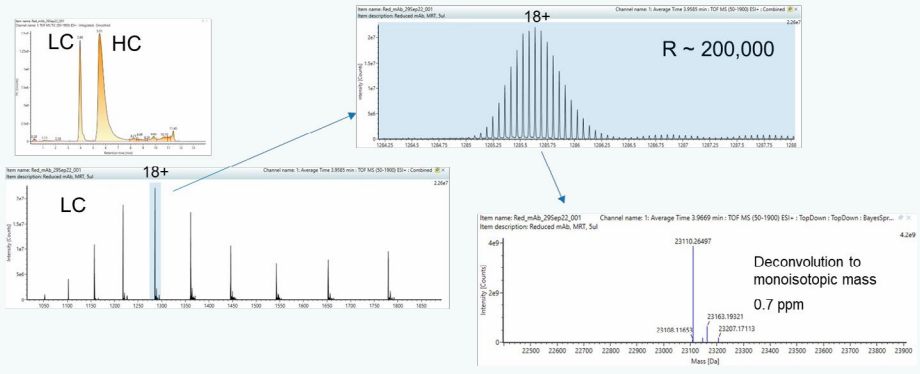
The high resolution of the MRT has benefits for small protein analysis in that fully-resolved isotope distributions can be obtained, aiding in deconvolution to monoisotopic mass.

Native and Deamidated Peptides Resolved



Unraveling the isotope challenge of deamidated peptides. Deamidated peptides are often in such low abundance relative to their native peptide that even with chromatographic separation the overlap between their isotope distributions is challenging with a low resolving power analyzer. In this example, the deamidated PENNYK peptide is distinguished from its native form (blue circles).

Monoisotopic Mass Accuracy for Antibody Characterization



Reduced antibody analyses enable characterization of individual subunits. The MRT yields high quality spectra with fully resolved isotope distributions (blue inset). High fidelity isotope distributions facilitate deconvolution to monoisotopic mass potentially boosting attainable mass measurement accuracy.

ACCELERATED IMAGING CLARITY

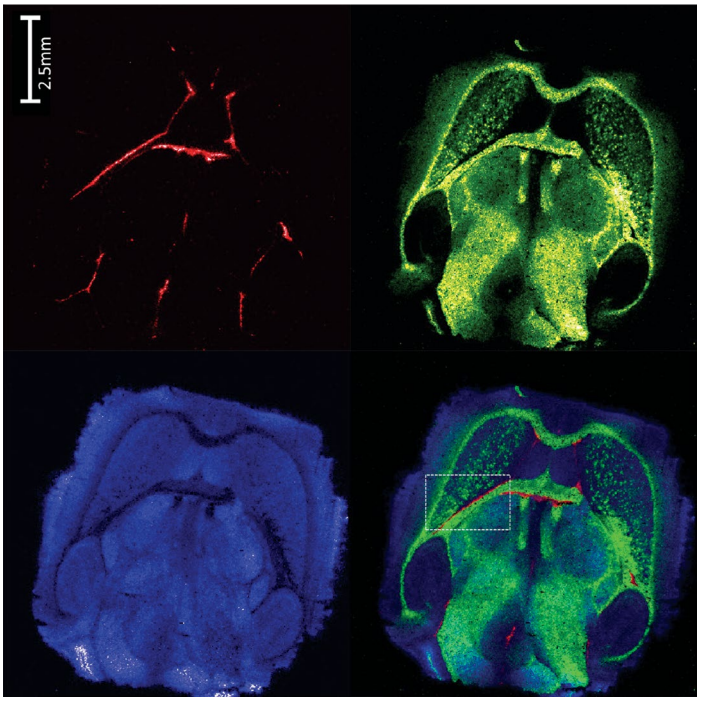
High spatial resolution, with improved selectivity and sensitivity.

Imaging by mass spectrometry delivers indispensable insights into the biodistribution of molecules which are otherwise lost by LC-MS approaches.

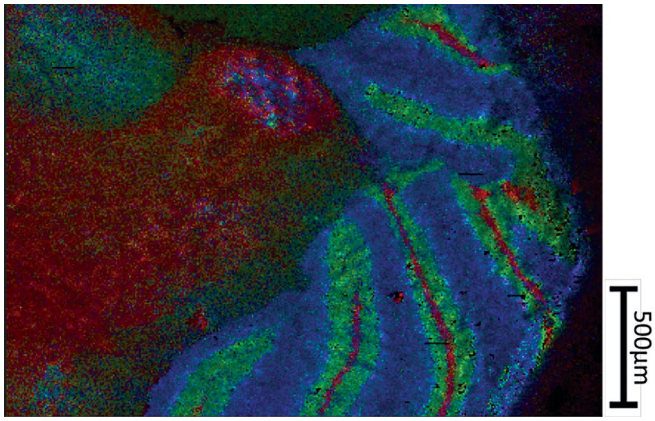
The ultra-high Tof resolution of the MRT delivers the confidence associated with ppb mass accuracy at the acquisition speed required to image large tissue sections routinely.

The overlapping isotopes which often blur the true localization of important lipid species can now be accurately differentiated and mapped.

MALDI Imaging on the MRT at 20 µm and 10 µm

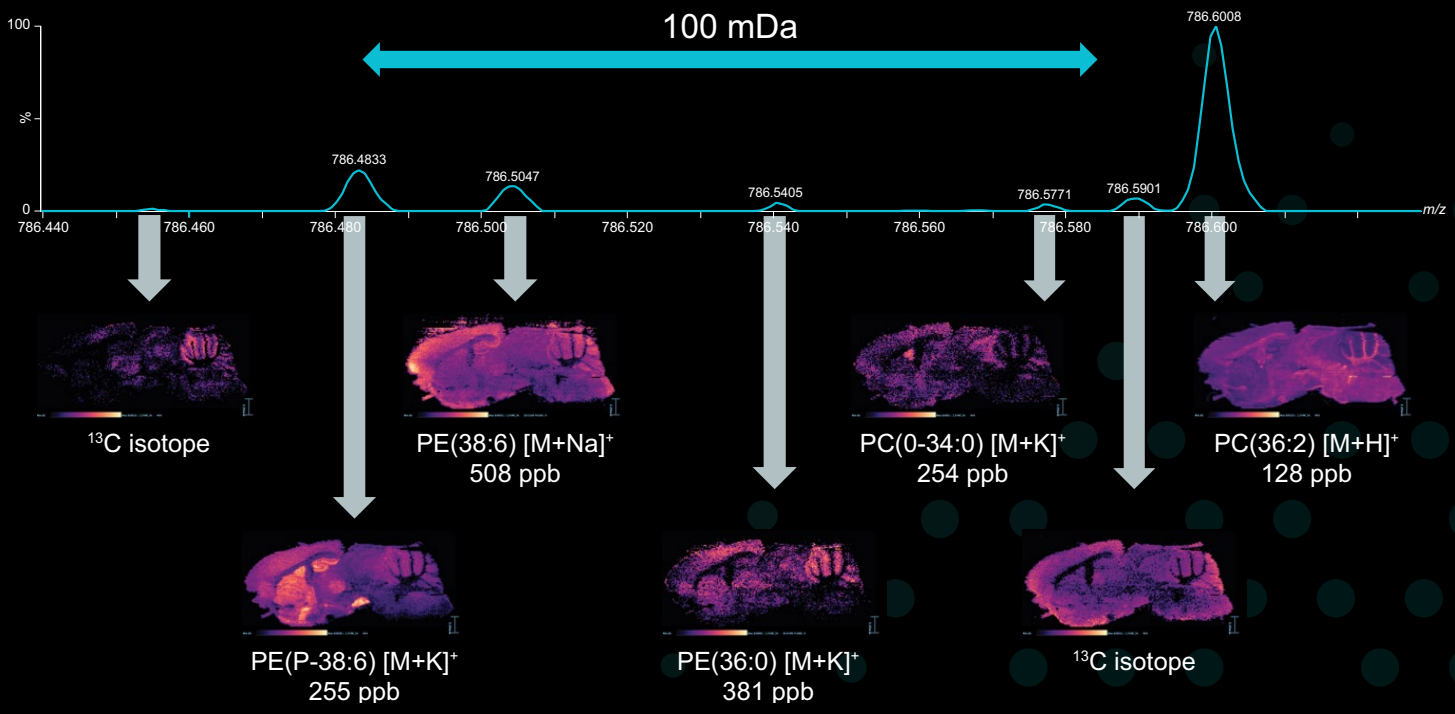


20 µm MALDI +ive mode image of mouse brain at 10 scans per second. Red- m/z 741.5304; Green- m/z 866.6483; Blue – m/z 844.5253; Laser focus: 6.0 mm. Attenuation: 325. Secondary attenuator: enabled. Laser rep rate: 1 Khz.



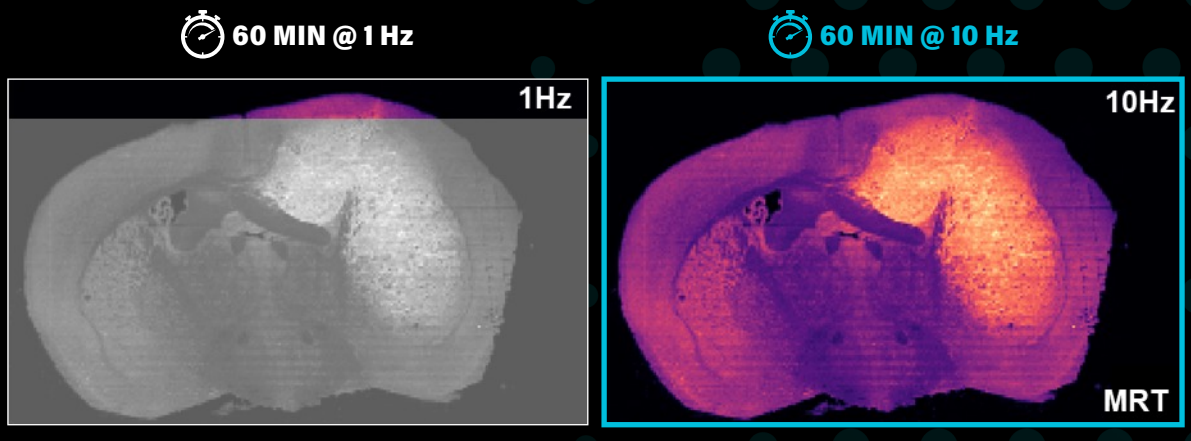
10 µm MALDI +ive image of mouse brain subsection at 10 scans per second. Green- m/z 844.52521 Red- m/z 826.57227; Blue - m/z 872.55646; Laser focus: 6.3 mm. Attenuation: 200. Secondary attenuator: enabled. Laser rep rate: 1 Khz.

Ultra-high Mass Resolution Delivers Greater Molecular Detail



Overlapping lipid isotopes accurately imaged.

See the Full Image in Less Time



MRT delivers the full picture in 1/10th of the time.

ULTIMATE IMAGING COVERAGE

Maximize molecular coverage with Full Spectrum Molecular Imaging.

Full Spectrum Molecular Imaging (FSMI) represents the complementary power of combining DESI XS and MALDI, with a high-performance MS system such as the SELECT SERIES MRT and a dedicated imaging informatics solution.

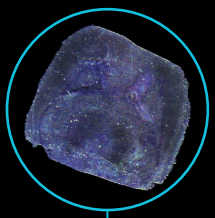
The seamlessly interchangeable MALDI and DESI XS sources, combine to provide a detailed molecular map that exceeds any single MS imaging technique currently available, delivering high quality, comprehensive, spatially resolved molecular information across a variety of application areas, and with the minimum of time and effort.

MALDI

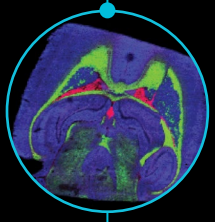
- High spatial resolution through increased signal to noise (S/N), with a focused laser beam profile.
- Enable imaging of large sections with a full-sized Micro Titre Plate (MTP) format MALDI target.
- Simplify usability and maximise productivity with an automated isolation valve, laser focus control whilst maximizing productivity and uptime with easy cleaning and maintenance.

DESI XS

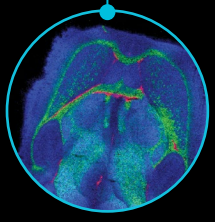
- Improved reliability, and simplicity.
- Enhanced sensitivity and molecular range through more efficient ion transfer with the heated transfer line and a new high-performance sprayer.
- Partially sealed housing increases environmental stability and reduces atmospheric interference.



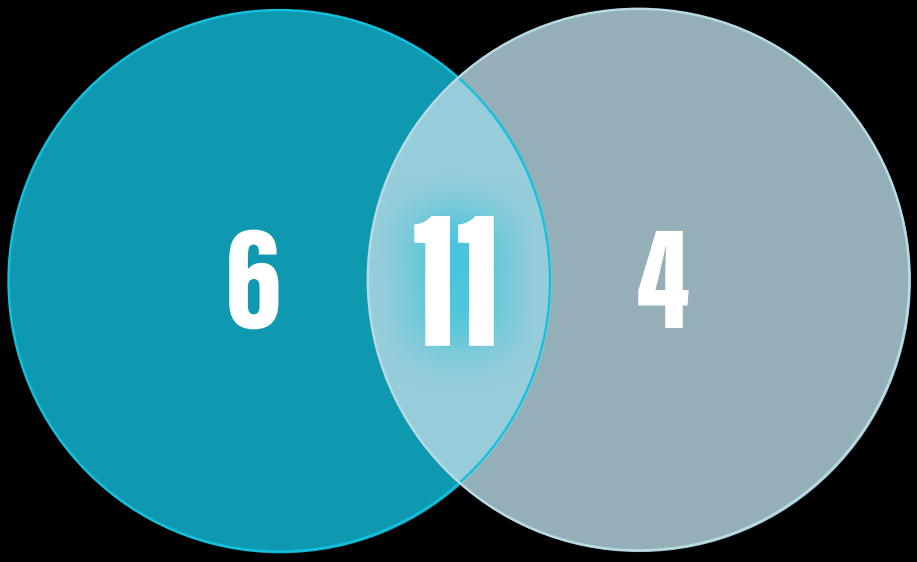
TISSUE SELECTION



DESI-MS IMAGE



MALDI-MS IMAGE



DESI™ XS

Combined coverage of 21 Pharmaceutical Products.

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