

Targeted MS Imaging Solution with DESI XS and XEVO TQ Absolute

MS Imaging has evolved. Harness Absolute confidence
with Absolute sensitivity.



DESI™ XS

xevo™ | TQ ABSOLUTE

Waters™

Targeted MS Imaging for sensitive, selective and fast molecular visualization

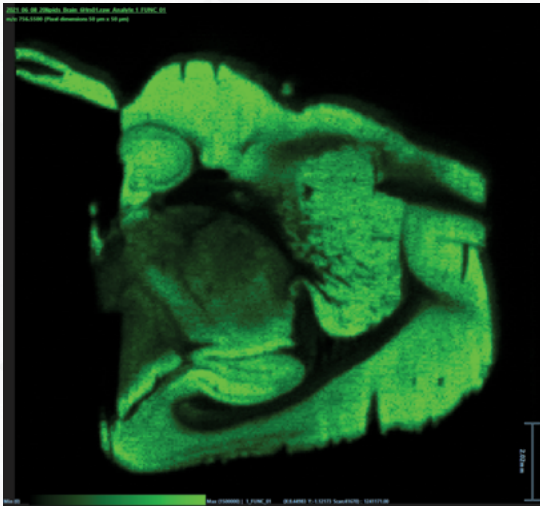
Combine the enhanced DESI™ XS with
Xevo™ TQ Absolute to unlock previously
inaccessible molecular spatial information
directly from surfaces.



- Access lower limits of detection in molecular visualization directly from surfaces simply and quickly
- Reduce the data size and interpretation burden of complex, full scan MS imaging data sets
- Visualize and quantify known biomarkers, APIs and metabolites and low concentrations
- Combine sensitivity with high throughput analysis to efficiently handle large imaging studies
- Obtain comprehensive, detailed spatial information with limited sample preparation
- Add MSI analysis easily into a multi-modal imaging workflow
- Improve quantification workflows with the sensitivity and dynamic range of tandem quadrupole MS
- Achieve improved environmental sustainability and lower laboratory operational costs with an MSI system that uses 50% less electricity and gas and produces 50% less heat than most other QQQ systems

The take-home of going targeted...

Amazing visualization of previously inaccessible components



Targeted MRM monitoring and visualization of a lipid specific phospholipid in mouse brain.

The targeted MS imaging system is at least five times more sensitive than a discovery HRMS MS Imaging system, meaning that compounds can be accessed at lower levels than previously possible or even visualized for the first time.

Performing MS analysis directly on a tissue or material's surface precludes optimized sample preparation, often challenging detection of some compound classes. High sensitivity imaging mitigates the need for follow up analysis such as laser capture microdissection LC-MS, saving time and cost of analysis. Customers love the confidence that sensitivity brings as their molecules are "no longer in the weeds".



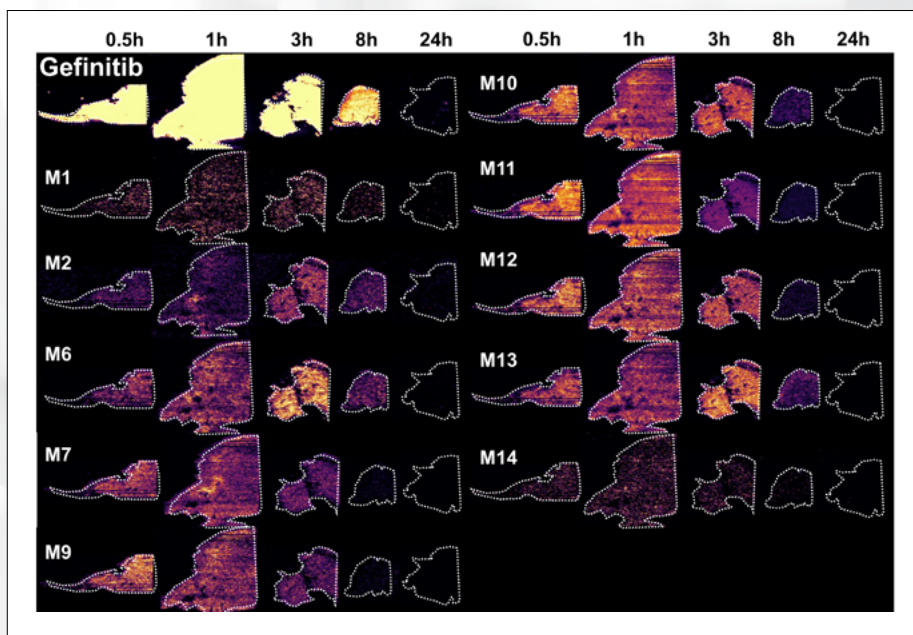
Go targeted to save time

Gain time to take on your toughest challenges

A targeted MS Imaging approach unlocks the ability to see the whole picture, not just a snapshot.

The rapid speed of targeted MS Imaging analysis on the Xevo TQ Absolute means it is possible to collect larger cohorts of images in a timely manner.

Data in pharma workflows can now be collected on whole studies with biological replicates, increasing statistical confidence in results over a smaller study snapshot.



0.5, 1, 3, 8 and 24 h post-dose tissue section ion images of the drug Gefitinib and 16 of its known metabolites (M1, M2, M6, M7, M9, M10, M11, M12, M13 and M14) in mouse liver

Tame the data

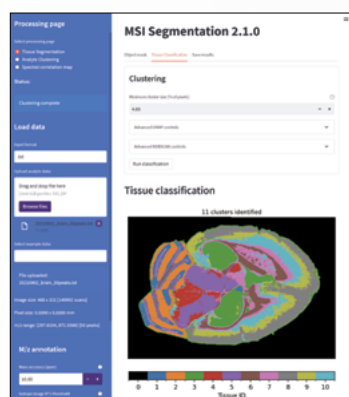
Tease apart the details with flexible software solutions

HDI 1.7

High Definition Imaging™ (HDI) software is multimodal, intuitive and streamlined, designed to simplify the mass spectral imaging workflow. This powerful software allows for full integration of discovery and targeted MS imaging data, through a single user interface. The HDI software package contains data analysis and processing tools required for rapid and effective interrogation of complex imaging data.

MicroApps

Complimenting HDI are a number of lightweight, but powerful, MSI MicroApps which help to mine imaging data for specific tasks, accelerating decision making.

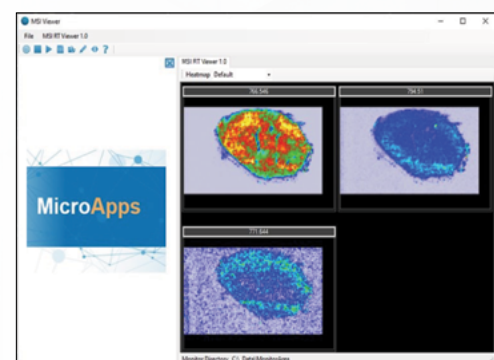
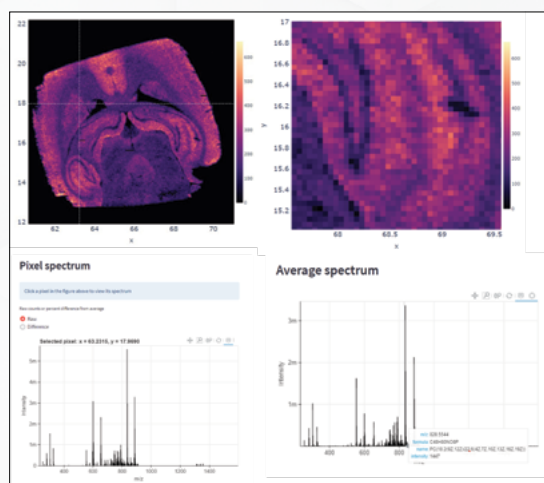


MSI Segmentation Browser

- Cluster pixels with spectral similarity to differentiate sample substructures.
- Subtract background pixels.
- Cluster whole ion images for easy determination of co-localized molecules.

MSI Analyte Browser

- Annotation tool matches spectral features across the entire dataset to entries in a chemical database.
- Explore spatial and spectral distributions of individual peaks and scans.
- Combine key features in a single RGB color figure.
- Guides chemical annotations with spatial distributions.



Realtime viewer

- View real time XICs for selected species resulting in faster optimization, problem discovery and troubleshooting.
- Real time view of the instrument set-up and significantly speeding up the acquisition and data processing.

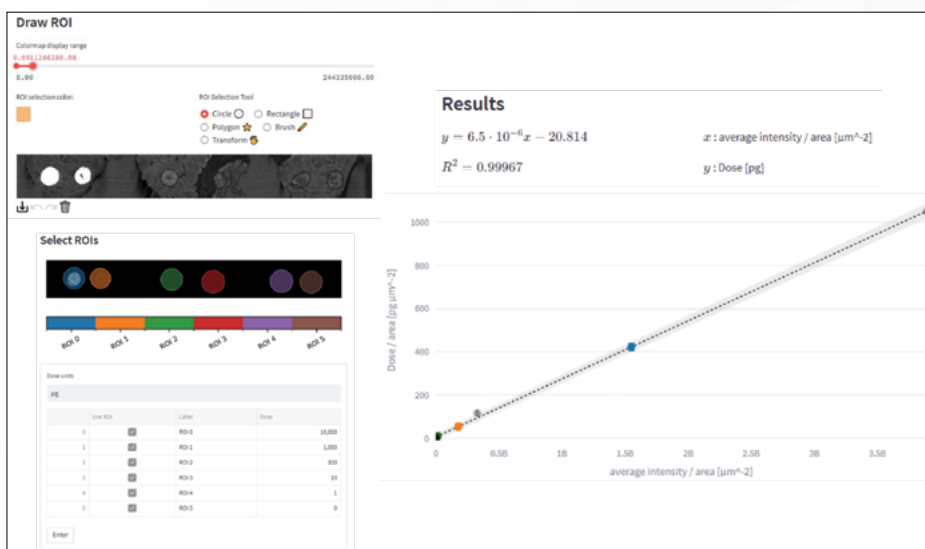
Take a tally of your targets

MS Imaging quantification with the power of tandem quads

A visual representation of where a compound is situated on a segment of tissue can provide a powerful insight into the relevance of a biomarker or the toxicity of a drug or metabolite.

The next logical question is how much is there relative to a normal or safe amount.

Tandem quadrupoles are an industry standard solution for accurate and sensitive quantification via LC-MS methods. The exceptional sensitivity, linearity and dynamic range of the Xevo TQ Absolute combined with DESI XS can now aid quantification workflows in mass spectrometry-based imaging.



MSI Quantify making quantification workflows accessible to MS Imaging.

MSI Quantify MicroApp — Provides an informatics workflow

An informatics workflow for the evaluation of quantification performance and execution of MSI quantitation experiments

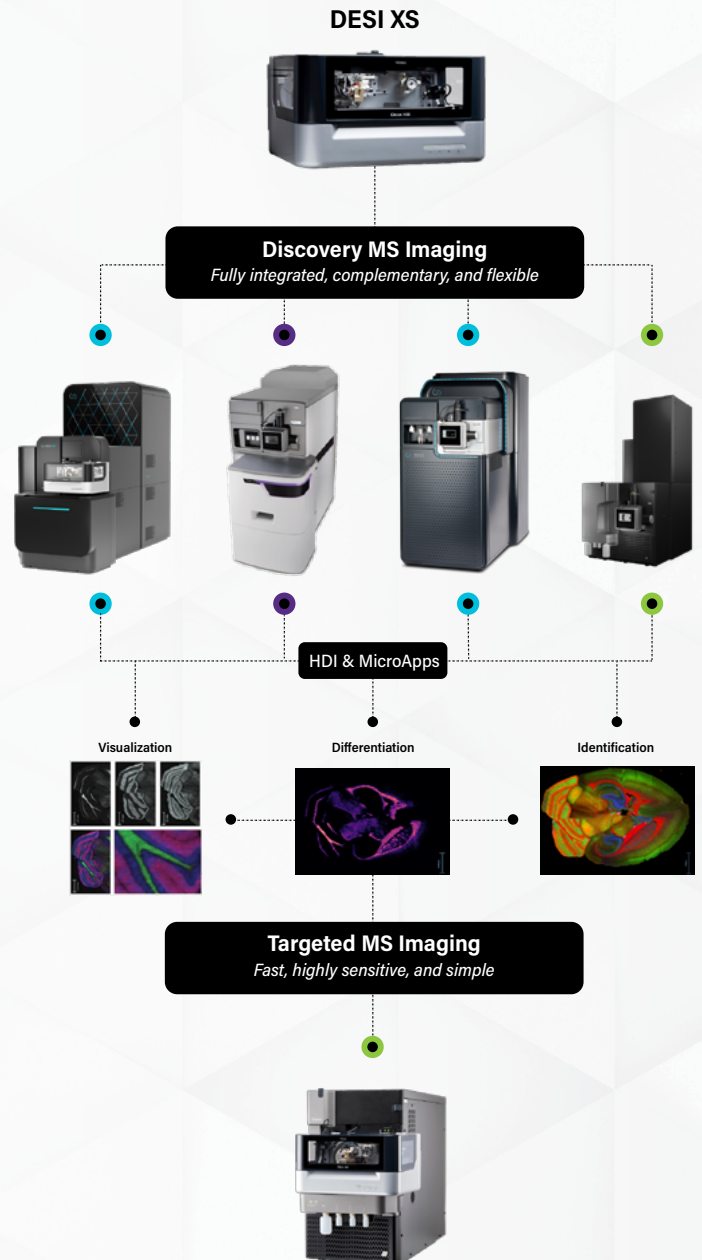
- Workflow for extracting summed intensities from ROIs
- Apply normalization and corrections
- Plot calibration graphs with statistics

Tackle anything

Flexible workflows from discovery to targeted MS Imaging

Fully integrated and complementary Waters technologies delivering flexible MS Imaging.

- Discovery MS Imaging with DESI™ XS is available on the Xevo TQ Absolute, Xevo™ G3 QTof, SYNAPT™ XS, SELECT SERIES™ Cyclic™ IMS, and SELECT SERIES MRT platforms.
- DESI XS Performance, ease-of-use and reproducibility is enhanced with the high-performance sprayer and heated transfer line.
- DESI and MALDI (Matrix Assisted Laser Desorption Ionization) are uniquely integrated on the SYNAPT XS and SELECT SERIES MRT platforms for Full Spectrum Molecular Imaging, with or without ion mobility, respectively.
- DESI can be coupled with Ion Mobility on the SYNAPT XS and SELECT SERIES Cyclic IMS for additional compound separation, especially useful for the imaging of isobaric species.
- High Definition Imaging (HDI) software; an intuitively designed platform that simplifies and streamlines the mass spectral imaging workflow. With options to add your own or Waters developed plug-ins to meet individual needs.
- A suite of MS Imaging MicroApps allows for detailed data interrogation. Data compatible with 3rd party MSI software.



Target to turn back the dials

Lower operational costs and improve sustainability in MS Imaging

Waters shares a common mission with our customers: to leave the world a better place than we found it.

Like many of our customers, Waters is actively working to address environmental sustainability in balance with the need to continually reduce operational costs. The Xevo TQ Absolute has been designed with lower electricity consumption, gas consumption, and BTU/hr output — reducing the need for costly air conditioning.

The Xevo TQ Absolute also provides more analytical capability per square foot of lab space by minimizing the LC-MS/MS footprint, enabling laboratory managers to fully optimize their facilities and increase efficiency.

	Waters Xevo TQ Absolute	Sciex™ 7500*
Relative bench width	100%	184%
Power consumption	1560W	3077W
Air conditioning demand (heat displacement)	5,323 Btu/h	10,500 Btu/h
Nitrogen/Zero-grade air consumption	23 L/min	52 L/min
Audible noise (MS)	61 dB	68 dB

Comparison of key sustainability factors between Xevo TQ Absolute and Sciex 7500



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