SCIEX

Clinical IVD LC-MS/MS devices

danaher

The power of precision

Explore our IVD LC-MS/MS devices

Unveil the benefits of mass spectrometry for your most challenging clinical assays with our portfolio of robust and sensitive IVD LC-MS/MS solutions.

SCIEX offers best-in-class LC-MS/MS solutions that are registered as in vitro diagnostic (IVD) devices with a Class I designation from the US Food and Drug Administration (FDA) and a Class A designation under the EU In Vitro Diagnostics Regulation (IVDR). Our IVD LC-MS/MS systems are designed to meet the needs of the clinical diagnostic lab. Capitalize on the benefits of mass spectrometry for your clinical laboratory.

Mass spectrometry offers clinical labs many advantages over traditional tests. It sets the benchmark for mass accuracy, precision, robustness and sensitivity, giving you data that delivers specificity and sensitivity that simply isn't achievable with traditional techniques. Capitalize on the benefits of mass spectrometry for your clinical laboratory, which include:

- **Workflow efficiencies** – Multi-analyte panels, compatibility with generic sample prep, versatility in allowing the addition of new compounds, requires less preparation of samples and has a lower costper-sample than other methods
- **Qualitative information** – QTRAP Technology available on SCIEX IVD LC-MS/MS systems can also generate structural analysis of target analytes
- **Versatility** – SCIEX IVD LC-MS/MS systems provide a unique level of performance for a wide range of clinically relevant analytes
- **Sensitivity** – Reliably quantify low-levels biomarkers and metabolites
- **Dynamic range** – Detect biomarkers at a wide range of concentrations
- **Rapid scan speed** – Resolve similar analytes with fast quadrupole scanning
- **Flow range flexibility** – Ionize analytes across a wide range of flow ranges
- **Data integrity and compliance** – Meet your compliance and tracking requirements with SCIEX IVD LC-MS/MS systems and software solutions

Citrine system

The Citrine system – our fastest and most sensitive IVD mass spectrometer yet, provides you with the performance and reliability to tackle today's difficult assays, and the versatility to address tomorrow's challenges. Harness the benefits of the Citrine system to meet the demands of your clinical laboratory.

Powerful sensitivity

Reliably measure clinically relevant biomarkers and metabolites at picomole levels

Highly multiplexed panels

Monitor hundreds of MRM transitions per run with accuracy and precision

Rapid polarity switching

Get faster than ever data acquisition with 5 ms polarity switching

Wide dynamic range

Detect biomarkers from human specimens at a wide range of concentrations

Unique workflows

Perform qualitative and quantitative analysis in a single injection (available withthe QTRAP system version)

Learn more

4500MD system

The 4500MD system – our workhorse and most flexible IVD mass spectrometer, provides you the level of performance required for routine clinical assays. Ideal for labs that develop their own applications to validate methods and that need lower detection limits or higher throughput. Elevate your diagnostic testing capabilities with peace of mind with the 4500MD system and meet the daily needs of your clinical laboratory.

Workflow productivity

Accurately detect and quantify hundreds of analytes in a single injection

Polarity switching

Data acquisition of both positive and negative ions within a single run with 50 ms polarity switching

High robustness

Reliably quantify hundreds of analytes across thousands of injections

Unique quant/ qual workflows

Confidently identify low levels of analytes in complex biological matrices

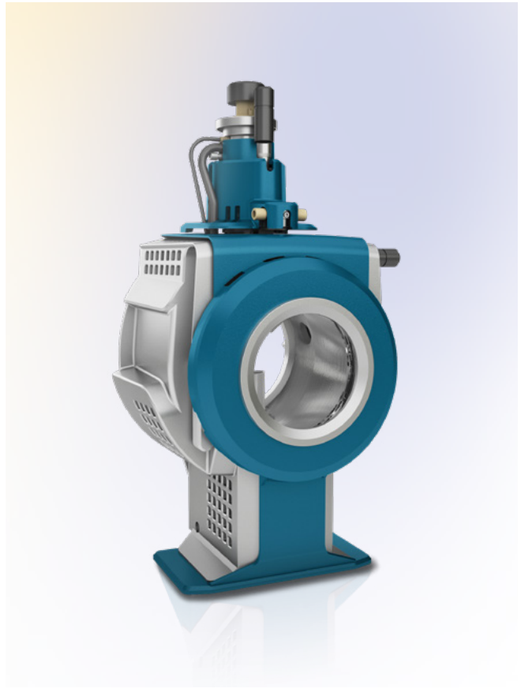
Learn more

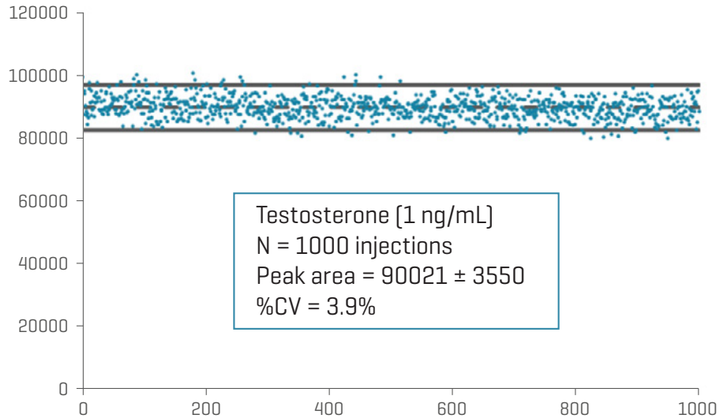
Powerful and robust SCIEX IVD LC-MS/MS systems powered by the Turbo V Ion Source

As scientific understanding evolves into improved clinical diagnostic testing, customers who develop their own assays are turning to fast, sensitive instruments to perform routine tests with high efficiency and cost savings. SCIEX IVD LC and MS devices provide rock solid, robust performance for biological compounds minimizing maintenance and maximizing uptime. Our IVD mass spectrometry systems feature the Turbo V ion source and Curtain Gas interface for advanced reliability, sensitivity and reproducibility.

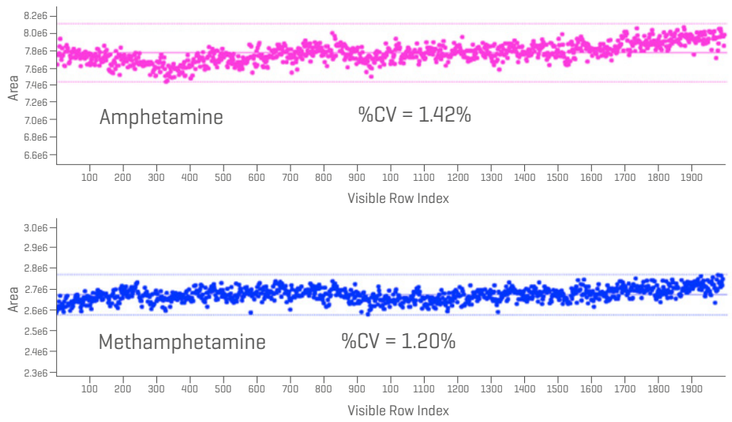
The patented Turbo V ion source is made for demanding applications and considered the gold standard for LC-MS/MS ionization. The ion source delivers highly efficient desolvation for stable, sensitive performance; virtually eliminating cross contamination— even large sample loads, across a wide range of flow rates.

The Curtain Gas interface provides a wall of clean nitrogen to help prevent neutral components from entering the mass spec, so the system is more robust, requires less maintenance, and delivers increased uptime for your lab.





Measured peak areas for 1000 consecutive injections on the Citrine system system of a 1 ng/mL testosterone sample acquired over a 48-hour period of continuous instrument operation without operator intervention.



Measured peak areas for 2000 consecutive injections on the 4500MD system of a sample containing amphetamine (top) and methamphetamine (bottom) acquired over a period of 5 consecutive days of continuous instrument operation without operator intervention.

IVD systems to meet your lab requirements

Specifications	Citrine system	4500MD system	Importance
Recommended for	Highest sensitivity	Assays requiring higher sensitivity and higher throughput	lowest level of quantitation Choice of options to meet your lab needs and budget
MRM mode sensitivity	100x	10x	Higher sensitivity means less sample prep may be required, and enables the detection of trace levels of compounds in biological matrices
QTRAP sensitivity*	500-1000x	50-100x	Higher sensitivity means less sample prep may be required, and enables the detection of trace levels of compounds in biological matrices
Polarity switching time	5 msec	50 msec	Faster polarity switching allows monitoring positive and negative ions in a single method. No need to perform 2 analyses per sample
Minimum MRM dwell time	1 msec	1 msec	Smaller MRM dwell times allow you to monitor more analytes in a single method. You can further improve throughput by switching to fast UHPLC methods
Triple quadrupole scan speed	12,000 Da/sec	12,000 Da/sec	Faster scanning speeds allow you to acquire more information about your sample, in each run. Throughput can be improved by switching to fast UHPLC methods
QTRAP scan speed*	20,000 Da/sec	20,000 Da/sec	Faster scanning speeds allow you to acquire more information about your sample, in each run. Throughput can be improved by switching to fast UHPLC methods
Software	SCIEX OS software	SCIEX OS software	Powerful, intuitive software to meet your needs
Dynamic range	5.5	4	Allows quantitation across a broad concentration range

*Only applicable to Citrine QTRAP and 4500MD QTRAP system

QTRAP MS/MS – two instruments in one

The QTRAP system is a hybrid triple quadrupole/ linear ion trap mass spectrometer - a unique, flexible MS/MS system that can accommodate a wide variety of both quantitative and qualitative LC-MS/MS workflows.

It is the ability to use both triple quadrupole and linear ion trap scan functions on a single platform – and even within a single LC-MS/MS run – that makes the QTRAP system adaptable to a wide variety of both screening and quantitative tests.

Which of these peaks is the target compound?

In a typical LC-MS/MS chromatogram, there may be numerous peaks observed. If several peaks elute at a similar retention time, it can be difficult to correctly identify the target compound.

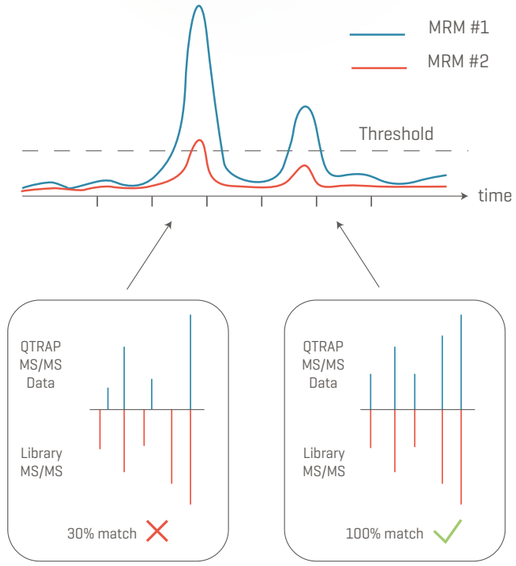
Compound ID using MS/MS library searching

The QTRAP system can be used to rapidly acquire MS/ MS spectra for every detected peak that exceeds athreshold. Library searching of MS/MS spectra allows the unambiguous identification of chromatographic peaks.

While screening by LC-MS/MS for 100's of target compounds in a single method, numerous peaks may be observed for every target mass, owing to the presence of interference ions having common fragment ions and MRM transitions. Using QTRAP MS/MS, LC peaks can be unambiguously identified based on library searching of the full-scan MS/MS spectra that are automatically acquired for every peak that exceeds a predetermined threshold.

Unambiguous compound ID using SCIEX QTRAP systems

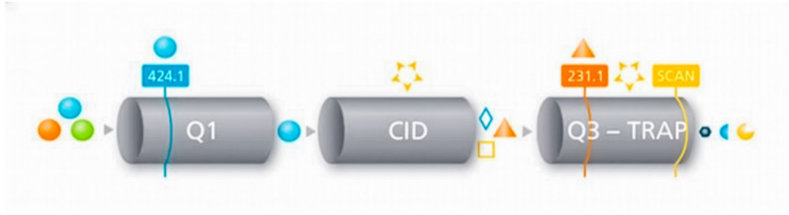
Leverage the scanning speed and sensitivity of the QTRAP system to automatically acquire full-scan MS/MS spectra for every detected compound during a targeted MRM experiment – quant and qual in a single injection!



Improve your limit of detection using MRM^3 scanning on the QTRAP systems

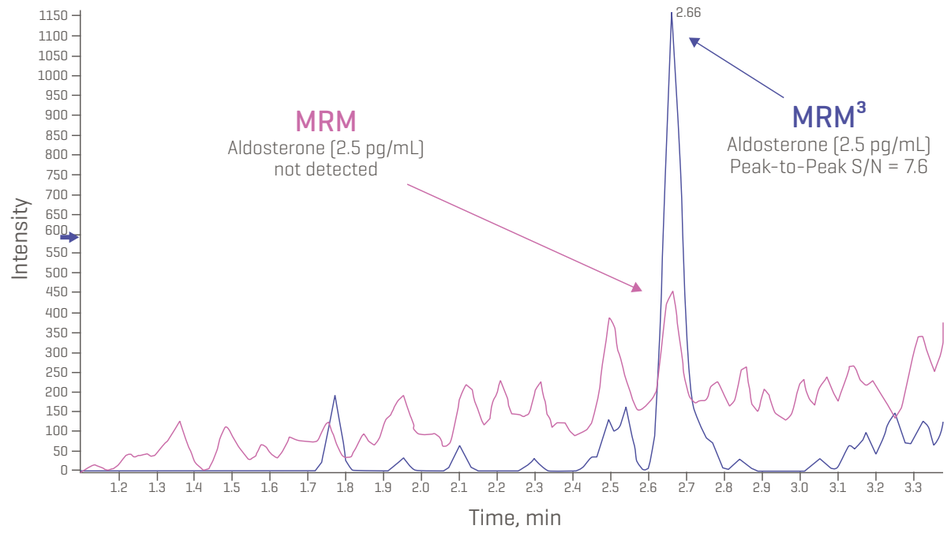
In some cases isobaric interferences cannot be differentiated using high-resolution mass spectrometry, since the interferences may have the same exact mass as the target compound.

In these cases, the ability to use second-order fragmentation (MS/MS/MS) provides highly specific measurements, and can remove chromatographic interferences caused by isomers and background ions.



Use MRM^3 scanning on the QTRAP systems to enhance selectivity, specificity, and sensitivity to improve limits of detection in complex matrices.

Extracted ion chromatograms (XICs) of extracted human serum calibrator standard for aldosterone at 2.5 pg/mL using Citrine system

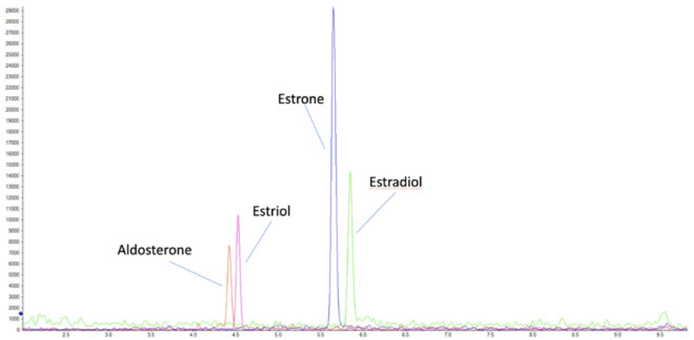


The use of the MRM workflow (pink) did not resolve aldosterone at 2.5 pg mL from the background due to numerous matrix interferences. The use of the MRM^3 workflow (blue) provided much higher sensitivity compared to MRM alone due to the additional level of selectivity obtained by monitoring secondary product ions for aldosterone in extracted human serum in oral fluid. The MRM^3 workflow was shown to increase selectivity by significantly reducing background and matrix interference, resulting in a 3- fold improvement in S/N compared to the MRM approach.

Speed and sensitivity to address a broad range of analytical challenges

Trace level compounds

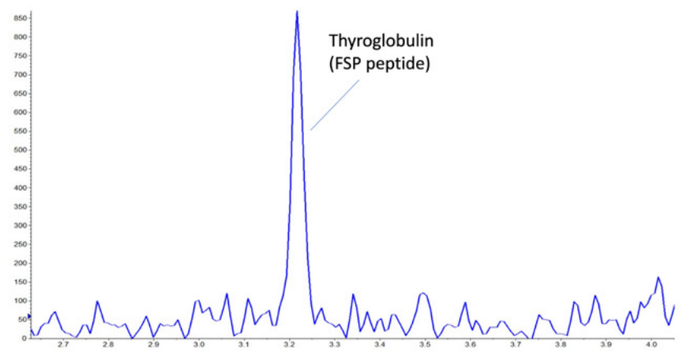
The Citrine system — our most sensitive tandem mass spectrometer enables the measurement of trace levels of biomarkers and metabolites at sub-pg/mL concentrations.



Sensitive detection of estrogens and aldosterone in BSA extract, at 1 pg/mL, using negative electrospray ionization (ESI).

Proteins and peptides

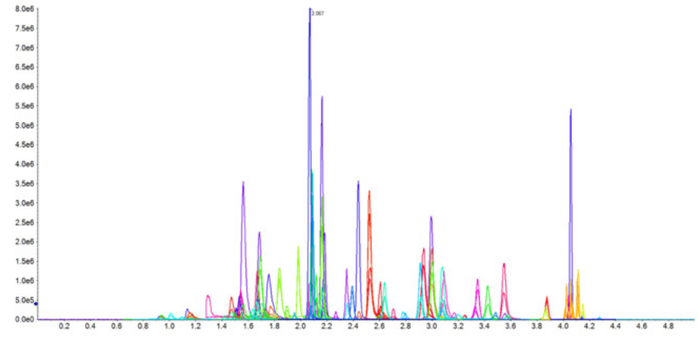
Citrine system provides accurate, sensitive quantitation of compounds with masses up to m/z 2000, allowing the measurement of large molecules such as peptides, protein digests and multiply-charged proteins.



Quantitation of thyroglobulin at a concentration of 0.06 ng/mL. Sample preparation consisted of trypsin digestion followed by SISCAPA immunopurification of the FSP peptide, prior to LC-MS/MS analysis.

Comprehensive multi analyte panels

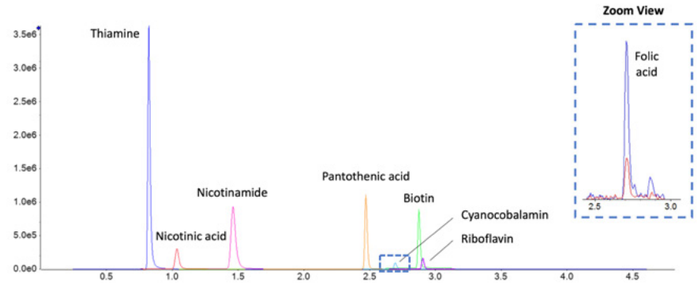
Fast MRM scanning (1 msec dwell times) and fast polarity switching (5 msec) between positive and negative ionization modes on the Citrine system enable the measurement of very large panels of compounds, across multiple compound classes.



Quantitative analysis of 93 compounds (212 MRMs) in a run-time of 5 minutes, using rapid polarity switching between positive and negative electrospray ionization (ESI) modes.

Small molecule quantitation

The versatile Citrine system offers ESI and APCI ionization options, an extended mass range up to m/z 2000, and a large linear dynamic range, making this the perfect tool for the measurement of a large variety of polar and non-polar biomarkers and metabolites in biological fluids, over a large range of concentrations.



Measurement of the water-soluble vitamins thiamine, riboflavin, nicotinic acid, nicotinamide, pantothenic acid, biotin, cyanocobalamin and folic acid, in serum.

Performance and application versatility

Compound class	Limit of quantitation	Family of compounds	4500MD	4500MD QTRAP	Citrine	Citrine QTRAP
Small molecule drugs and drug metabolites	1-100 ng/mL	Amphetamines	✓	✓	✓	✓
		Antidepressants and neuroleptics	✓	✓	✓	✓
		Antiretrovirals	✓	✓	✓	✓
		Benzodiazepines	✓	✓	✓	✓
		EtG and EtS	✓	✓	✓	✓
		Cyclosporine, tacrolimus, everolimus, sirolimus	✓	✓	✓	✓
		Nicotine and metabolites	✓	✓	✓	✓
		Opiates	✓	✓	✓	✓
		Phencyclidine	✓	✓	✓	✓
		Cocaine metabolites	✓	✓	✓	✓
		Heroin metabolite, 6-MAM	✓	✓	✓	✓
		Large pain panel	✓	✓	✓	✓
		Drugs of abuse screen (library search)		✓		✓
Small molecule biomarkers	1-100 ng/mL	Testosterone	✓	✓	✓	✓
		Amino acids	✓	✓	✓	✓
		Homocysteine	✓	✓	✓	✓
		Homovanillic acid	✓	✓	✓	✓
		Amino acids & acylcamitines in DBS	✓	✓	✓	✓
		Metanephrines, urine	✓	✓	✓	✓
		25-OH vitamin D2 and D3	✓	✓	✓	✓
Small molecule biomarkers	0.01-100 ng/mL	Metanephrines, plasma	✓	✓	✓	✓
		Testosterone	✓	✓	✓	✓
		17-OH-progesterone	✓	✓	✓	✓
		Cortisol	✓	✓	✓	✓
Small molecule drug metabolites	0.01-100 ng/mL	THC metabolite THC-COOH	✓	✓	✓	✓
Small molecule biomarkers	1-100 pg/mL	Estradiol, estrone, estriol			✓	✓
		Free T3 and free T4			✓	✓
		Steroid panels			✓	✓
		Testosterone, low-level			✓	✓
		1-25 dihydroxyvitamin D2 and D3			✓	✓
		Aldosterone			✓	✓
		Metanephrines in plasma, MRM[3]				✓
Small molecule drug metabolites	1-100 pg/mL	THC-COOH in hair, MRM[3]				✓
Large molecule biomarkers		Thyroglobulin			✓	✓
		Insulin and insulin analogues			✓	✓

Listed analytes and applications are representative examples and are not guarantees of performance in every laboratory setting.

Easy-to-use workflow driven IVD software

Inspiring clinical confidence

Explore consistent, high-quality results without deep mass spectrometry expertise. SCIEX combines LC-MS/MS systems, software, and automation to simplify workflows, reduce manual effort, and support reliable clinical testing.

Intuitive software for clinical labs

SCIEX OS software transforms LC-MS/MS data into clear, actionable results within a unified platform for acquisition, processing, and review. Built-in automation and standardized workflows enable efficient review-by-exception while supporting data integrity, consistency, and regulatory alignment.

The SCIEX OS advantage

Analyst MD software

- Manual review
- Static carryover management
- Manual reanalysis
- Fragmented tools
- Process driven compliance
- Single system focus

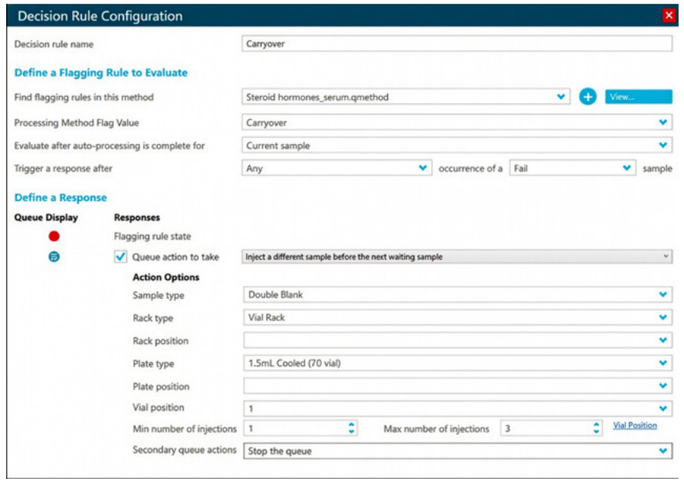
SCIEX OS software

- Automated review-by-exception flagging
- Dynamic blank insertion
- Dynamic reinjection workflows
- Unified end-to-end LC-MS/MS platform
- Built-in compliance and audit controls
- Enterprise-scale workflow and system management

Learn more

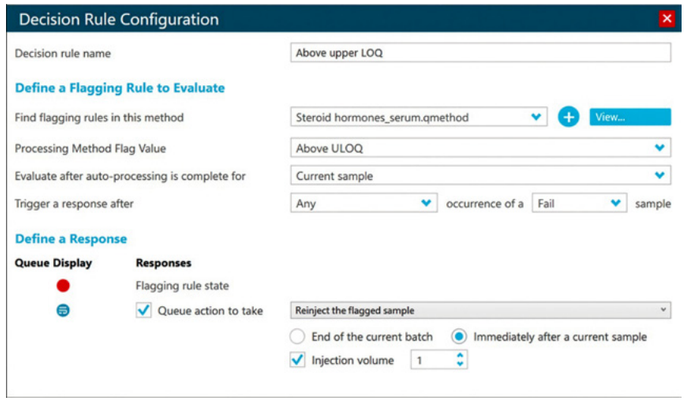
Easy-to-use workflow driven IVD software

Integrated decision rules within batch automation allow the system to anticipate and prevent common issues, eliminating unnecessary re-runs and supporting higher lab productivity.



Automatic carryover detection and mitigation

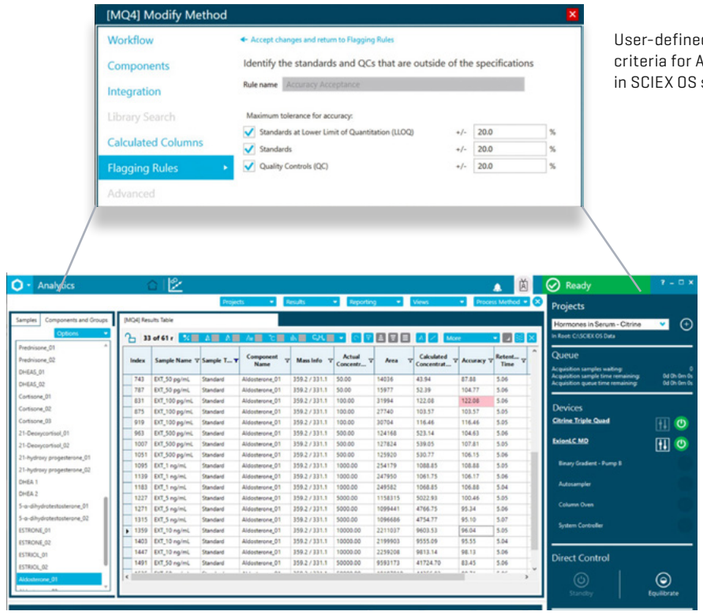
If potential sample-to-sample carryover is detected, SCIEX OS will automatically inject up to 3 additional double blank samples, until the carryover is removed.



Automatic re-injection of high concentration samples

If a concentration above ULOQ is detected, SCIEX OS will automatically re-run the sample using a lower injection volume.

User-defined flagging rules automatically highlight results outside acceptance criteria, enabling rapid identification of non-compliant data and streamlining review to support more efficient, confident decision-making.



User-defined acceptance criteria for Accuracy %, in SCIEX OS software

User-defined acceptance criteria for Accuracy %, in SCIEX OS software

- The SCIEX OS Analytics module enables users to define flagging criteria across multiple parameters, supporting rapid and efficient data review.
- Observe the “Accuracy acceptance” criteria applied to calibration standards with a ±20% threshold.
- In the Results table, values that fall outside the defined “Accuracy” limits are highlighted in red and can be filtered to quickly identify and review failing samples.

Additional resources

Empowering clinical mass spectrometry users with the resources they need to succeed.

SCIEX Now learning hub

SCIEX Now learning hub success programs provide LC-MS and CE training customized to meet your exact needs.

Learn more

LC-MS/MS planning and implementation guide

The LC-MS/MS planning implementation guide was developed to help new mass spectrometry users prepare and plan for the purchase, implementation and operation of an LC-MS/MS system in their clinical laboratory.

Learn more

Clinical knowledge center

A resource and education platform designed to provide the technical knowledge required to successfully implement mass spectrometry in a clinical laboratory setting.

Learn more

ROI calculator

Find out how profitable your lab could be with LC-MS/MS technology

The ROI calculator is a tool that helps you determine the profitability associated with capital expenditures for your organization. SCIEX offers this tool to help you explore the financial value a mass spectrometer can bring to your clinical laboratory.

See how profitable your lab could be in 3 easy steps:

1. Enter your budget
2. Enter the sample volume
3. Enter the sample cost

Learn more

Citrine system compendium

Explore 22 performance data sheets in clinically relevant molecules and sample types.

Learn more

4500MD system compendium

Dive into 28 performance datasheets covering clinical toxicology, therapeutic drugs, vitamins, steroid hormones, and small molecule biomarkers.

Learn more

SCIEX offers best-in-class LC-MS/MS solutions that are registered as in vitro diagnostic (IVD) devices with a Class I designation from the US Food and Drug Administration (FDA) and a Class A designation under the EU In Vitro Diagnostics Regulation (IVDR).

The power of precision

Headquarters
250 Forest Street in Marlborough, MA 01752
Phone 508-383-7700
sciex.com

International Sales
For our office locations please call the division headquarters or refer to our website at
sciex.com/offices

The SCIEX clinical diagnostic portfolio is For In Vitro Diagnostic Use. Rx Only. Product(s) not available in all countries. For information on availability, please contact your local sales representative or refer to https://sciex.com/diagnostics. All other products are For Research Use Only. Not for use in Diagnostic Procedures. Trademarks and/or registered trademarks mentioned herein are the property of AB Sciex Pte. Ltd. or their respective owners in the United States and/or certain other countries. © 2025 DH Tech. Dev. Pte. Ltd. MKT-35468-B

danaher