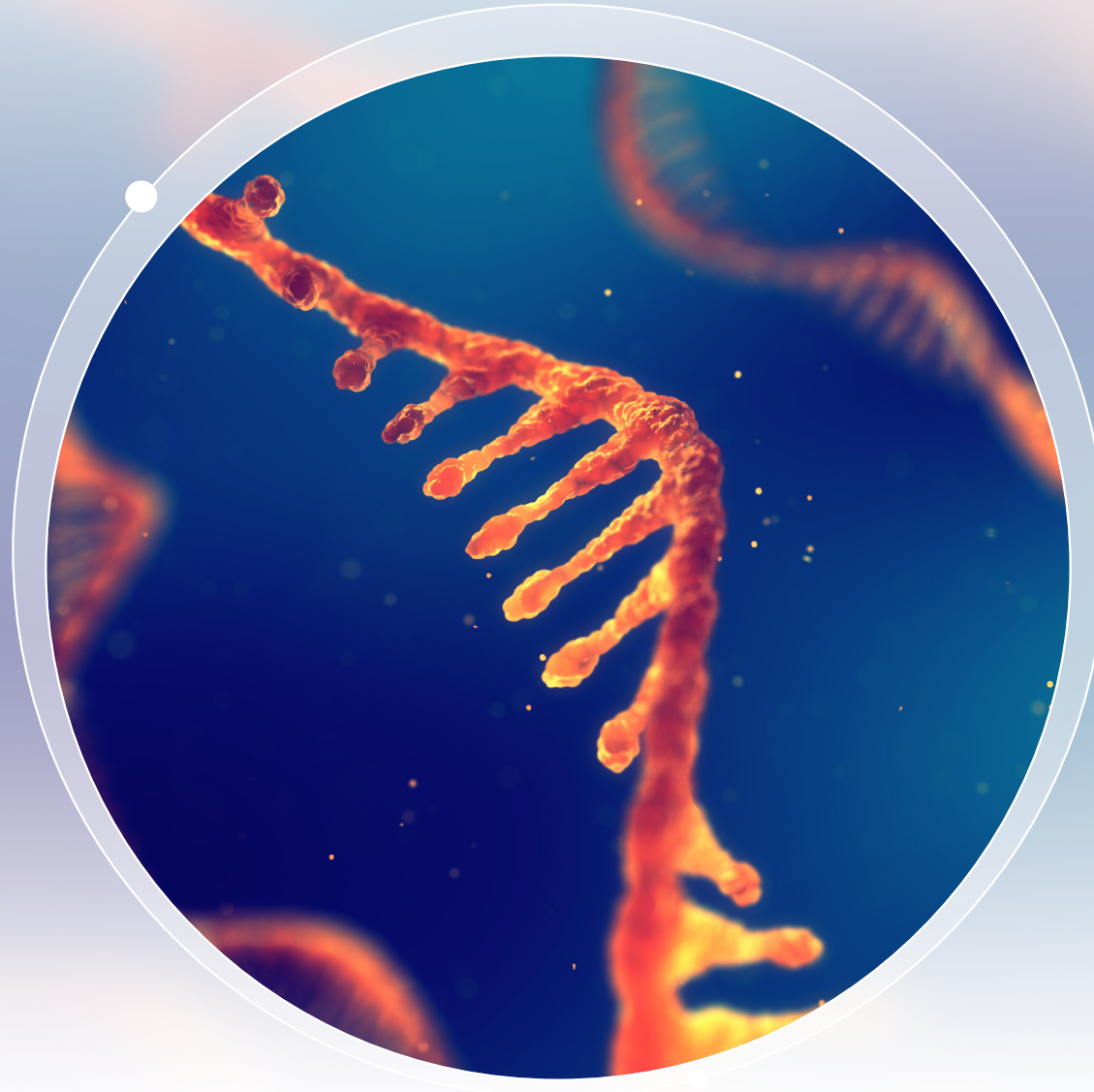


Oligonucleotide analysis solutions

Better sensitivity. Greater robustness.
Faster turn-around times.



Achieve the unexpected in your oligonucleotide analysis

LC-MS oligonucleotide analysis can be challenging

But it doesn't have to be. Whether your need is for high sensitivity quantification or characterization of impurities or catabolites, SCIEX provides complete end-to-end solutions for fast, easy, and confident LC-MS oligonucleotide analysis.

- **More sensitivity**
- **Greater robustness**
- **Faster turn-around times**

Instruments for every need and every workflow

Regardless of your oligo needs and separation and mass analyzer preferences, SCIEX has a complete solution to meet your needs.











Workflow	LC	MS and Ion Source	Software
Quantification	Microflow	QTRAP® 6500+ Optiflow® 	 OS-Q
	Microflow	TripleTOF® 6600+ Optiflow® 	
	High flow	QTRAP® 6500+ IonDrive® 	
	High flow	TripleTOF® 6600+ IonDrive® 	
Characterization	Microflow	TripleTOF® 6600+ Optiflow® 	 ProMass
	High flow	TripleTOF® 6600+ IonDrive® 	
	High flow	X500B QTOF TurboV™ 	
	Microflow	QTRAP® 6500+ Optiflow® 	

Table 2: Compatibility matrix of application workflows, mass spectrometry systems, and software packages.

Remove the noise Keep the signal.

Oligonucleotides are often in very complex sample matrices from which they can be difficult to extract. You can gain greater confidence in your results and higher throughput by eliminating the need for traditional liquid-liquid extraction techniques by using the Phenomenex® Clarity® OTX™ SPE sample preparation kit. Designed specifically for DMPK/ADME environment, the Clarity OTX procedure requires only a 15-minute extraction and is amenable to high throughput environments using the 96-well SPE format.

Oligo types	Sample types
DNA	Plasma
Aptamers	Serum
RNAi / siRNA	Urine
Thioates	Tears
Lipid-conjugates	Saliva
Liposome encapsulated	Tissue

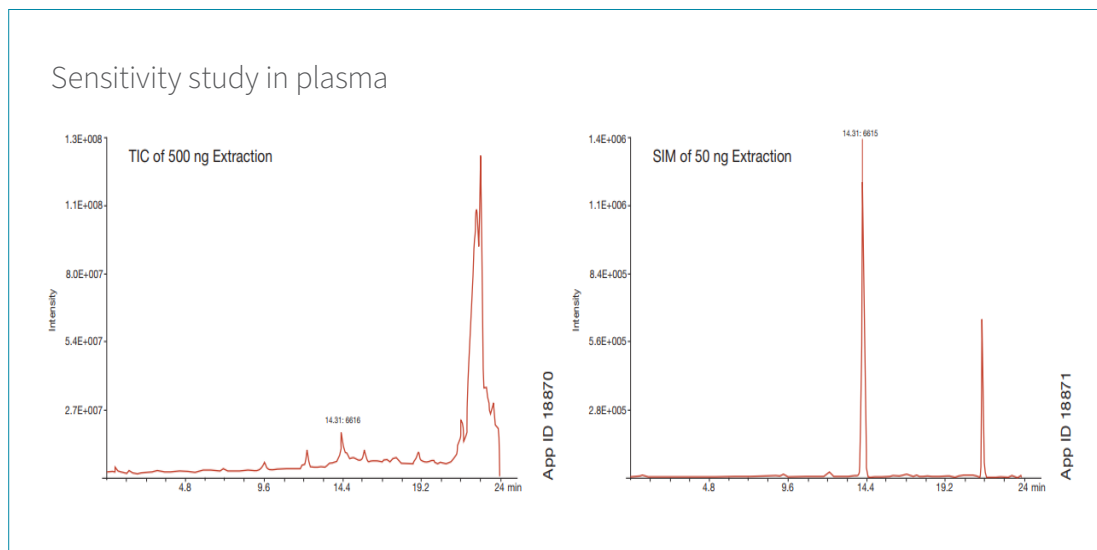


Figure 1. Due to the typical 80% and greater recoveries of the parent oligonucleotide therapeutic and its metabolites, detection in the picomole range is possible. The TIC above illustrates detection of a dosage in this very sensitive range. Aliquots of 500ng & 50ng spiked into plasma were extracted using Clarity OTX to determine sensitivity limits. A TIC of

the 500ng load is shown above. The 14.3 minute peak corresponding to the 19mer P-S can be quantitated. While a peak is not observed for the TIC of the 50ng load, using a XIC at m/z of 944 (the -7 charge state) one can still quantitate the oligonucleotide at very low levels.



Table 1: The Phenomenex® Clarity OTX™ Buffer and Extraction Solution is Suitable for Most Oligo Therapeutics and Biological Matrices

Make the move to microflow

More sensitivity. More robustness. More uptime.

Microflow chromatography will not only decrease system contamination and reduce system downtime for cleaning but you'll gain an instant boost in sensitivity.

All of this, while maintaining utmost ease and usability with SCIEX plug-and-play sources and chromatography equipment designed specifically for microflow.

Plus, SCIEX microflow solutions deliver exceptional performance and stability even at higher temperatures and pH conditions.



Optimal microflow ionization with simplified set up

Smart Simplicity: Designed with a “no fuss” mentality, the OptiFlow® Ion Source provides maximum sensitivity with no manual adjustments.

Intelligent probe sensing presets the system source settings to an optimal range for the best spray conditions. Consistent droplet formation and stable spray are ensured with the SteadySpray™ Probe design.

SecurityLink tubing provides a no-tools-required zero-dead-volume connection between your column and source using a permanently attached fitting on the source that has an internal torque limiter. The design enables selection of a wide range of column chemistries optimized for oligonucleotide applications.

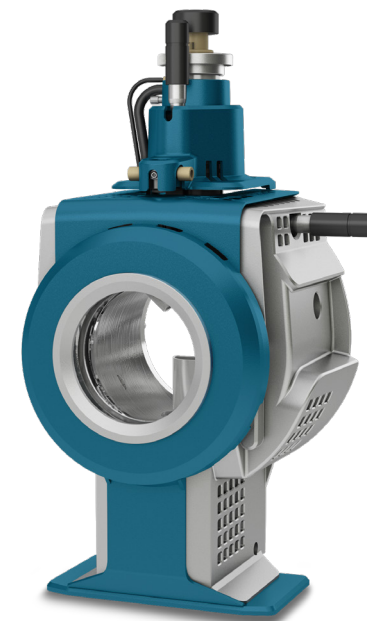
Not quite ready to make the move to Microflow?

The Turbo V™ Ion Source, renowned around the world for its efficiency and productivity, and the IonDrive™ Turbo V Sources make analytical flow easy. These robust ion sources provide exceptional stability, robustness, and ease-of-use at higher flow rates for your oligonucleotide assays.



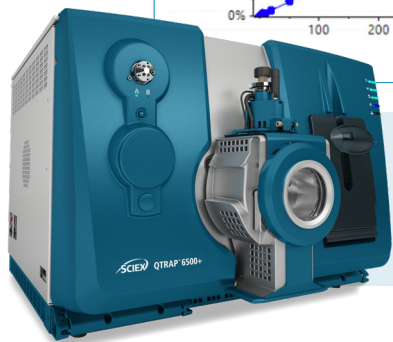
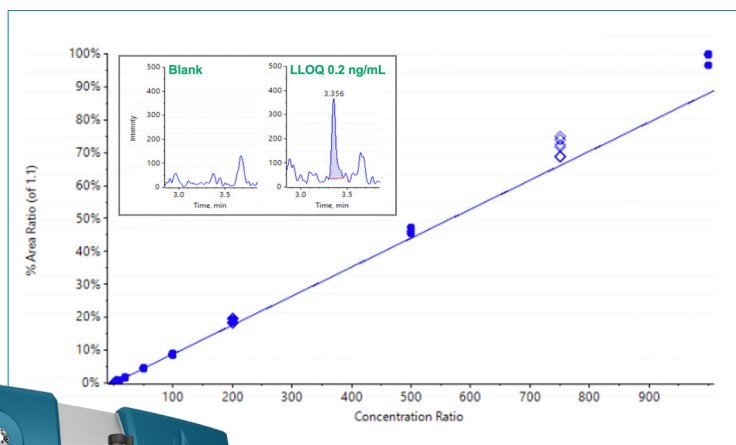
Tool free finger-tight connection

Automatic probe ID and configuration



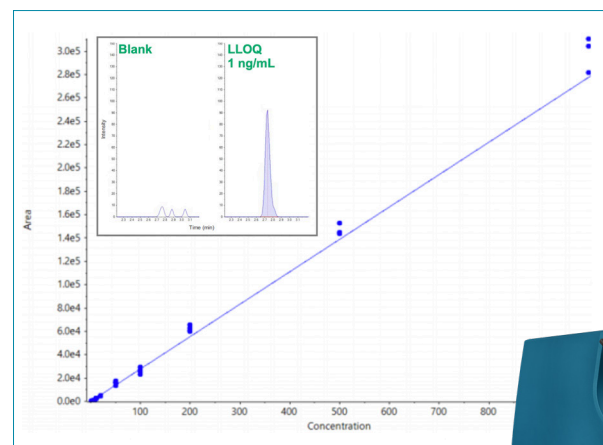
Best quant performance in high resolution or nominal mass

As a leader in quantification, SCIEX continually develops innovative and productive ways to help you achieve your need to extend the lower limits of quantification. Whether you prefer nominal mass or accurate mass, SCIEX's proven quant performance allows you to reliably and reproducibly achieve sensitivities of at least 1 ng/mL in biological matrices.



When only the lowest will do

Achieve pg/mL levels of sensitivity in complex biological matrix samples.



Quant and Qual without sacrificing sensitivity

Reliably achieve 1 ng/mL sensitivity in complex matrices with full scan MS and high resolution MS/MS.



Complete solutions for your oligonucleotide analysis

Fast and confident implementation.

No matter what the flow rate is, SCIEX offers end-to-end coverage for quantification and characterization workflows.

Quantification

Excellent negative ion mode performance ensures high sensitivity for the lowest levels of oligonucleotide quantification. With MS/MS based qualification, your assays will benefit from better selectivity by reducing confounding peaks due to isobaric and isoelemental contaminants and provide more confidence in results with less need for confirmatory experiments. The trusted quantification capability of SCIEX instruments demonstrated with thousands of small molecules will allow you to get the results you need for your therapeutic oligonucleotides.

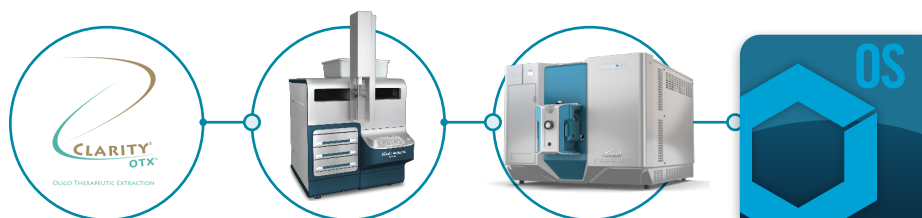


Figure 3: A complete end-to-end solution for oligonucleotide quantification including the Phenomenex Clarity OTX SPE kit, M5 MicroLC System, SCIEX Triple Quad™ 7500 LC-MS/MS System – QTRAP® ready with the OptiFlow® Pro Ion Source and SCIEX OS Software.

Impurity and metabolite identification

Oligonucleotides inherently suffer from a high rate of impurities as a consequence of their synthesis mechanism. Determining the identity and quantities of these impurities is critical for both safety and efficacy.

Oligos also exhibit their own class-specific mechanisms for in vivo metabolism/catabolism. Fully identifying and characterizing these metabolites is likewise essential for safety and efficacy.

High speed and high resolution MS and MS/MS coupled with industry standard software are the best combination for derisking and accelerating the development for your therapeutic oligonucleotides.



Figure 4: SCIEX solution for oligonucleotide characterization including the Phenomenex® Clarity® OTX SPE Kit, M5 MicroLC System, SCIEX TripleTOF 6600+ with the OptiFlow® Ion Source, and ProMass Software.

Unquestionable results

Flexible, compliant software.

SCIEX OS-Q offers a compliant workflow for oligonucleotide quantification in discovery and development giving you flexibility within when using MS or MS/MS data. This feature-rich package supports preclinical and clinical efforts for assessing pharmacokinetics and in vitro and in vivo metabolism and stability studies.

SCIEX OS Software

- Feature-rich quantification software packages
- Fully 21 CFR Part 11 compliant ready
- Flexible quantification using MS or MS/MS data
- Easily sum multiple ions for increased specificity and sensitivity

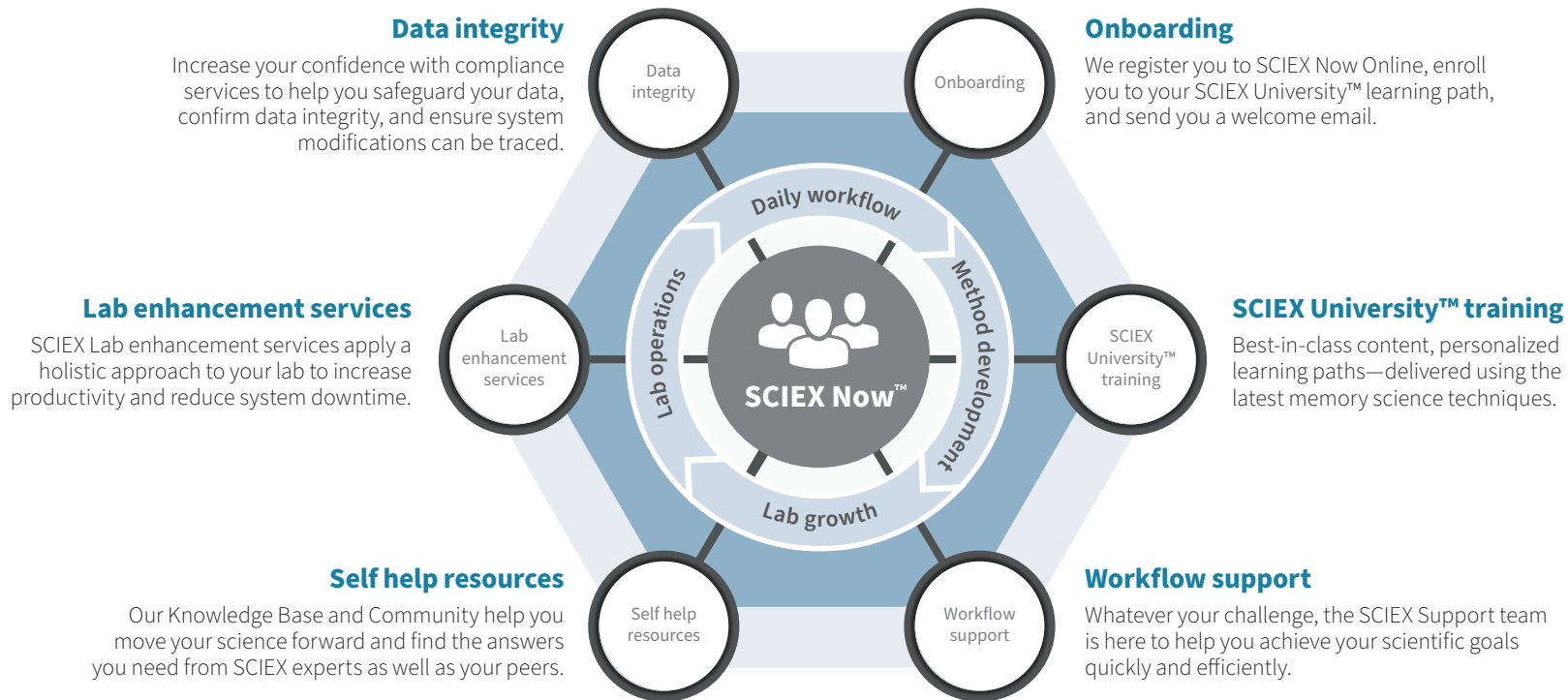
20 out of the top **20**

Pharma and BioPharma
companies use a SCIEX compliant
LC-MS software solution



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