



Transcend UHPLC Systems  
**Accelerate your science**



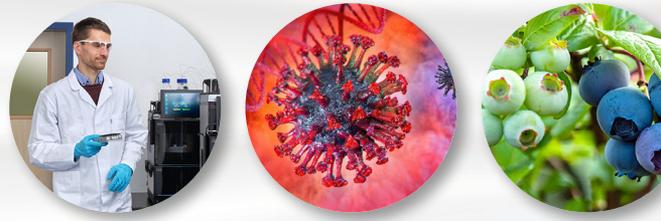
## Transcend LX UHPLC Systems



Thermo Scientific™ Transcend™  
LX-2 UHPLC System



Thermo Scientific™ Transcend™  
LX-4 UHPLC System



## Accelerate your analysis

From biomarker screening to drug discovery, the Thermo Scientific™ Transcend™ UHPLC Systems are the solution to the most demanding high-throughput applications. Now paired with industry-leading Thermo Scientific™ Vanquish™ UHPLC technology, Transcend systems provide:

- Improved throughput without compromising data quality or sensitivity
- Maximized mass spectrometer utilization
- Scalable instrumentation fit to your lab's needs with up to four parallel UHPLC channels
- Automated clean-up of samples even in the most difficult matrices
- Simple, intuitive LC-MS instrument management for complex, multichannel LC workflows
- Increased return on investment through reduced workflow steps, saving labor, time, and consumables
- Complete flexibility with full MS portfolio compatibility

### Transcend TLX UHPLC Systems



Thermo Scientific™ Transcend™  
TLX-1 UHPLC System



Thermo Scientific™ Transcend™  
TLX-2 UHPLC System



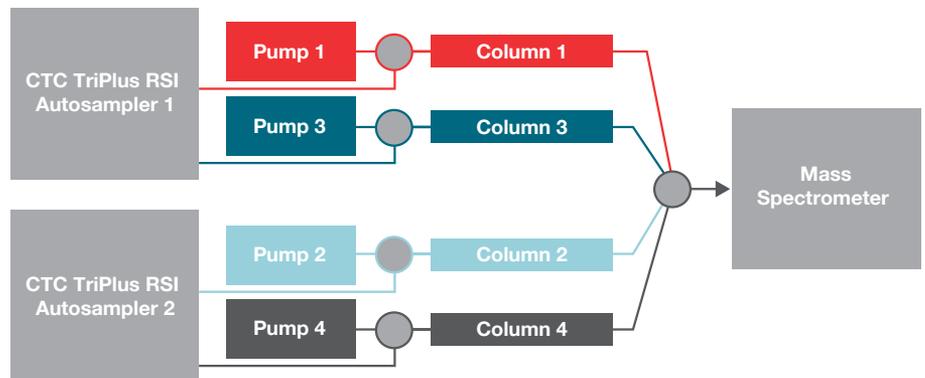
Thermo Scientific™ Transcend™  
TLX-4 UHPLC System

# The speed of multichannel UHPLC

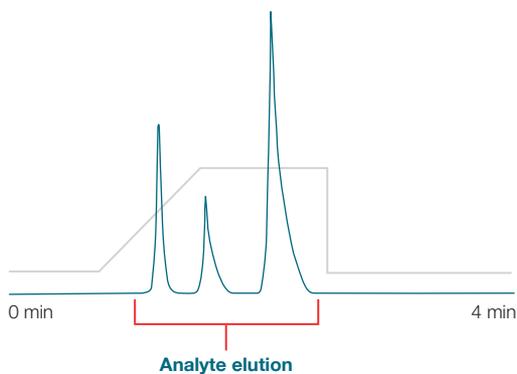
LC-MS users often waste valuable MS duty cycle on lengthy sample injection cycles, column washing, and column equilibration stages. The Thermo Scientific Transcend LX multichannel UHPLC systems eliminate wasted time by utilizing multiple LC channels interfaced with a single MS instrument for up to four-fold increase in throughput, depending on the configuration.

Choose between LX-2 or LX-4 systems for either 2 or 4 completely independent LC channels for improved throughput and return on investment.

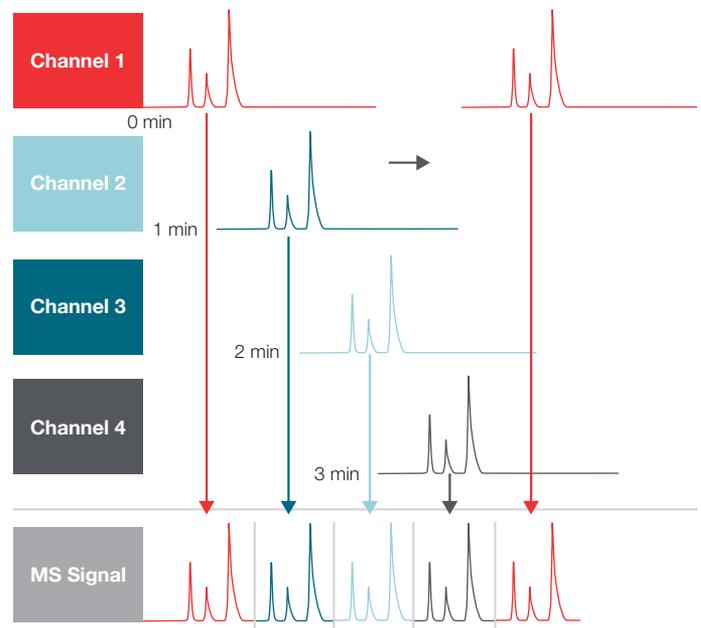
- Up to four-fold increase in throughput
- Straightforward implementation of existing HPLC and UHPLC methods for increased throughput without loss of performance or robustness
- Flexibility to run a single method on all channels, a different method on each channel, or multiple methods across all channels
- Maximized MS utilization by interleaving sample injections in order to deliver only the relevant retention time window of each injection to the mass spectrometer



The Transcend LX systems feature either 2 or 4 (shown) completely independent LC channels.



Analyte elution only occurs during a small portion of the total gradient.

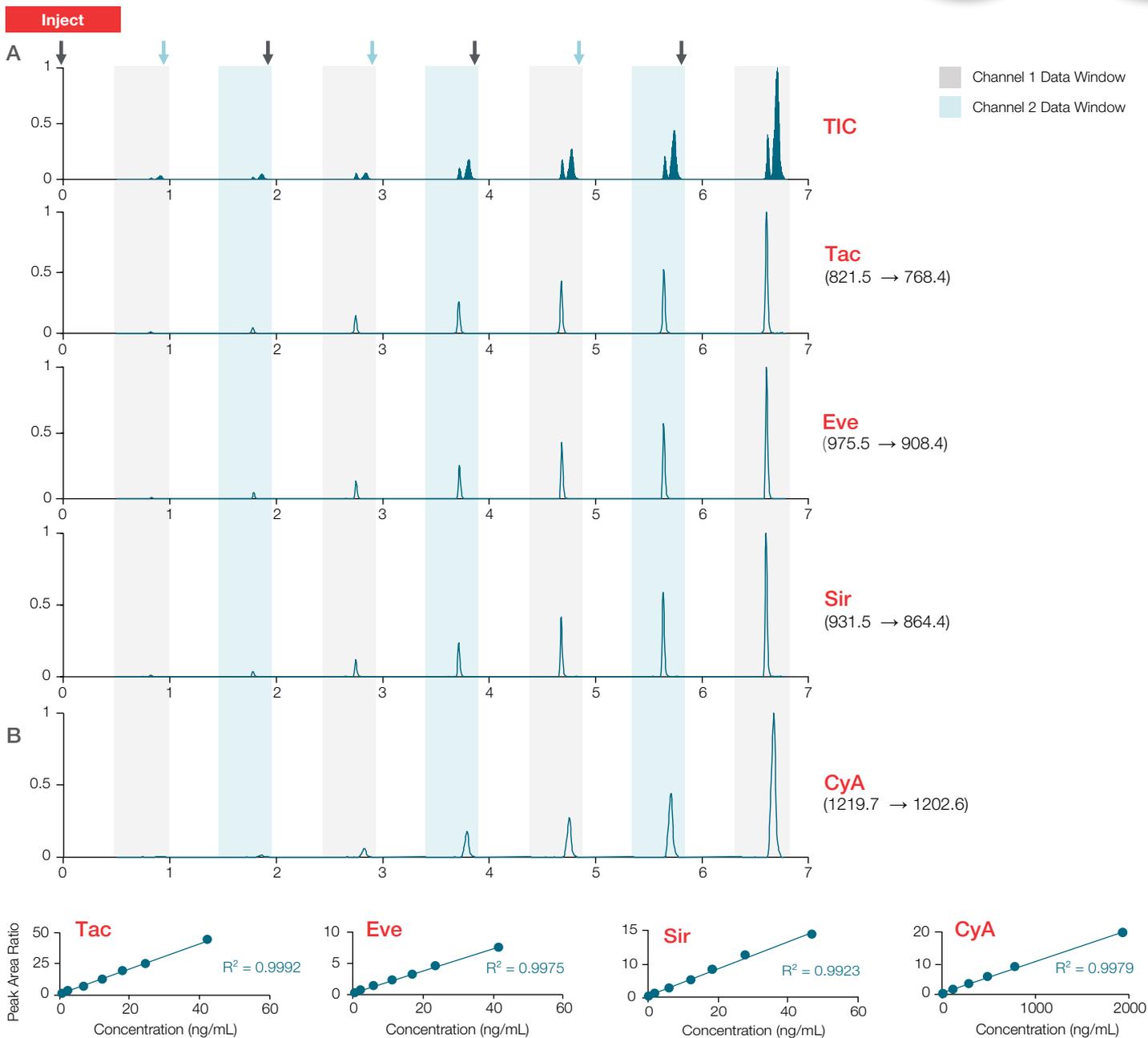
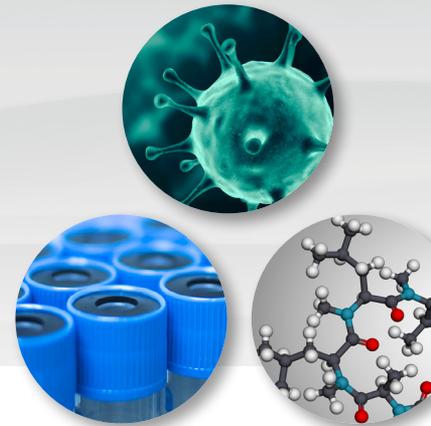


Injections are interleaved to maximize throughput and mass spectrometer utilization.



# Quantification of immunosuppressant drugs in blood

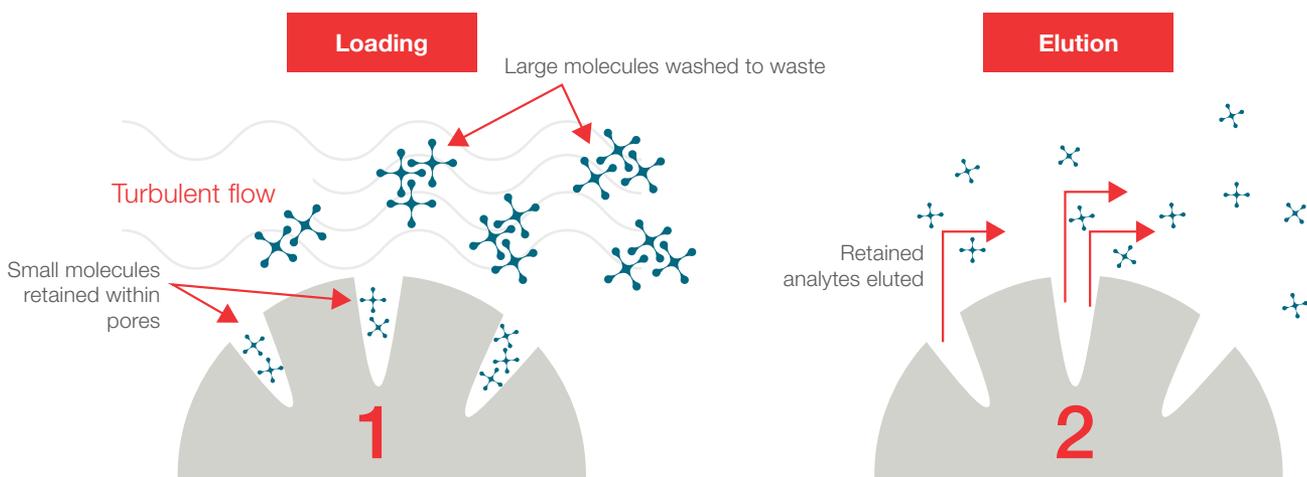
Transcend LX UHPLC systems are ideal for research clinical applications requiring high sensitivity, specificity, throughput, and reliability. With cycle times as short as 15 seconds and intelligent interleaving of injections, LX-2 and LX-4 systems maximize productivity and ROI in your laboratory.



Clinical research assay for quantification of immunosuppressant drugs Tacrolimus (Tac), Everolimus (Eve), Sirolimus (Sir), and Cyclosporin A (CyA) in whole blood using the Transcend LX-2 system interfaced to a Thermo Scientific™ TSQ Quantis™ triple quadrupole mass spectrometer. Seven injections on 2 parallel UHPLC channels (A) were used to generate calibration curves (B) for each of the four drugs.

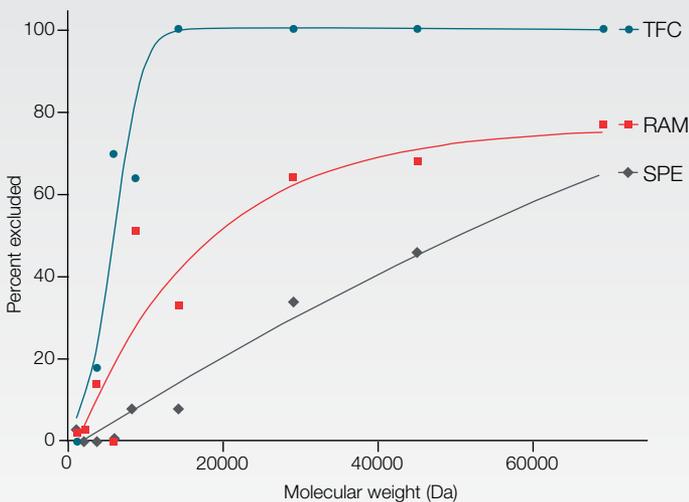
# The power of on-line sample cleanup with TurboFlow Technology

Thermo Scientific™ TurboFlow™ Technology combines characteristics of size-exclusion and traditional adsorption/partition chromatography for rapid extraction of small molecules through the following process.



Samples in complex matrices are loaded onto the TurboFlow column at high velocity, leading to biased diffusion of small molecules into column pores. Within pores, analytes are retained on the stationary phase—RP, IEX, and mixed mode available.

Analytes are then eluted off TurboFlow column at lower flow rates and loaded onto the head of the analytical column.



## TurboFlow technology benefits

- Save time, labor, and supplies with automated sample extraction
- Eliminate time-consuming method development by using the same clean-up method for a variety of matrices
- Direct injection of “dirty” samples and pre-concentration of large volume injections
- Improved sensitivity over manual sample preparation
- Simplify a variety of workflows for faster sample preparation and more confidence in analysis

TurboFlow technology offers superior sample cleanup to restricted access media (RAM) and solid phase extraction (SPE).

# Transcend TLX systems for on-line sample cleanup

The Transcend TLX systems utilize TurboFlow technology to enhance your lab's sample throughput, sensitivity, and method robustness. Depending on sample complexity, analyte abundance, and MS sensitivity, samples can be directly loaded or precipitated and centrifuged prior to loading. Transcend TLX systems offer the flexibility to choose from 1, 2, or 4 parallel UHPLC channels to meet any throughput requirements and ensure high return on investment through maximum mass spectrometer utilization.

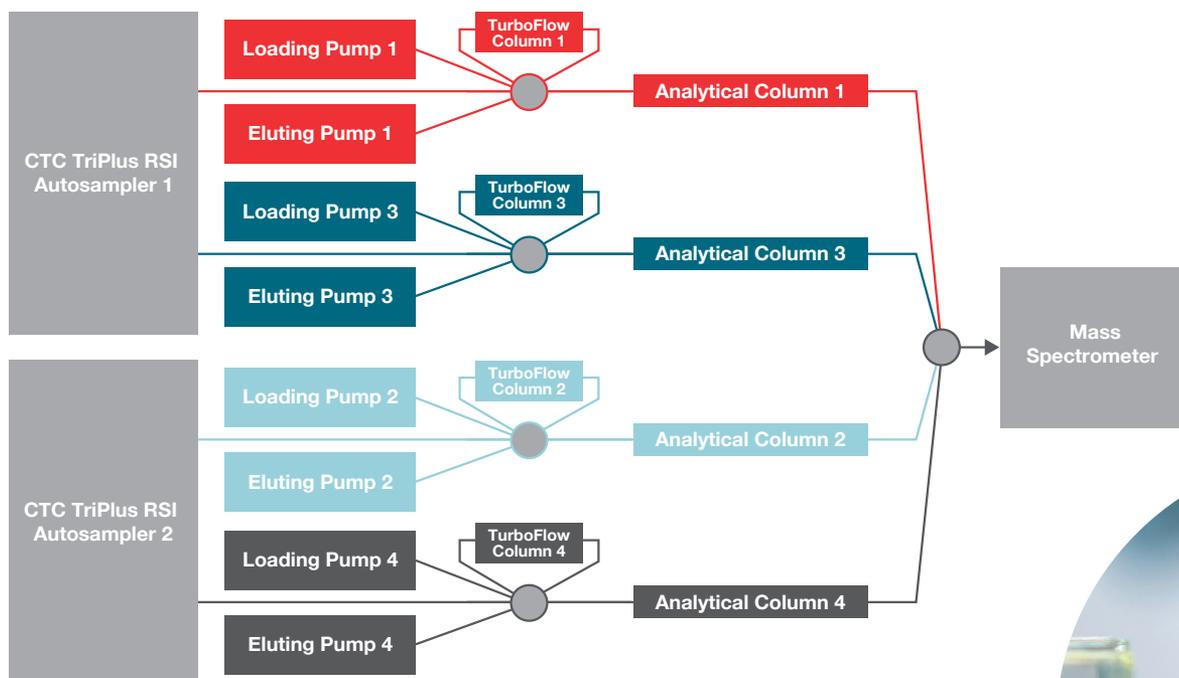


Diagram of Transcend TLX-4 system with four independent flow paths.

Pesticide analysis		
Solid-phase extraction	QuEChERS	TurboFlow method
1 Weighing	1 Weighing	1 Weighing
2 Extraction	2 Extraction	2 Extraction
3 SPE loading	3 Shake and centrifuge	3 Filtration
4 SPE washing	4 Transfer	4 Injection
5 SPE eluting	5 Shake and centrifuge	<b>267 samples/day</b>
6 Drying	6 Drying	
7 Reconstitution	7 Reconstitution	
8 Filtration	8 Filtration	
9 Injection	9 Injection	

**20 samples/day**

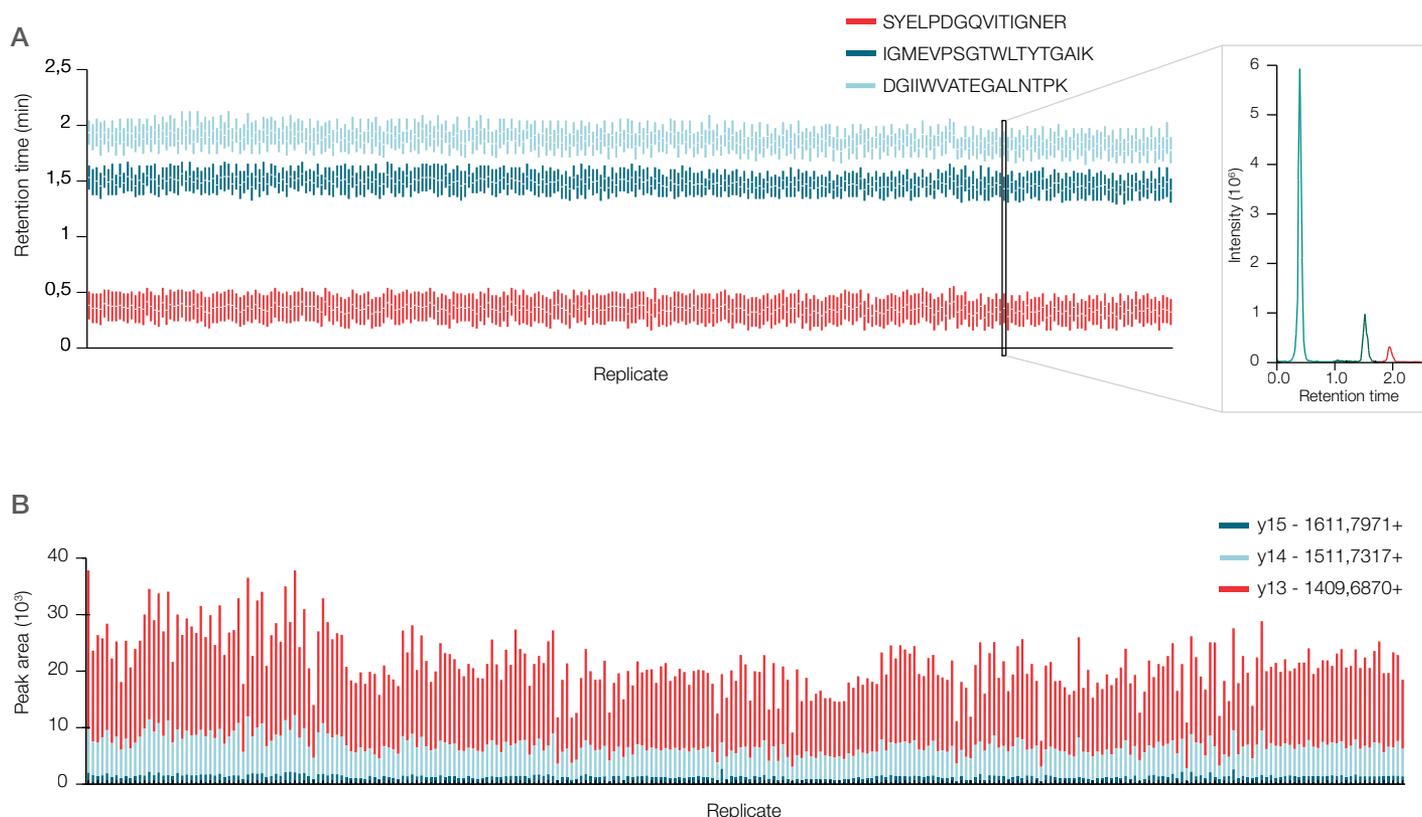
**50 samples/day**

Comparison of sample throughput for the extraction of pesticides in green tea. Throughput is based on sample analysis eight hours per day.



# Rapid detection of SARS-CoV-2 in clinical research samples

Today's clinical research requires methods that are not only highly sensitive and specific, but that are also fast, reliable, and easily reproducible. While LC-MS provides many of such benefits, sample throughput is often limited by sample preparation and the separation window. The Transcend TLX UHPLC systems with TurboFlow technology automatically remove matrix interferences, reducing or eliminating time-consuming preparation procedures for biological samples and improving sensitivity and reproducibility. Multichannel LC further improves throughput up to four fold.



Retention time (A) and peak area (B) reproducibility of a high-throughput targeted proteomics assay for quantifying SARS-CoV-2 peptides in clinical research samples across 5 days. The Transcend TLX-4 UHPLC system was utilized for on-line sample clean-up and analysis of 500 respiratory tract swab samples per day.

Cardozo, K.H.M., Lebkuchen, A., Okai, G.G. et al. Establishing a mass spectrometry-based system for rapid detection of SARS-CoV-2 in large clinical sample cohorts. *Nat Commun* 11, 6201 (2020).



“Transcend is a unique solution to boost mass spectrometry productivity, which has enhanced throughput for our assays by 2 to 4 times. By combining efficient sample clean-up and analyte enrichment with an orchestration of several chromatographic events, it has enabled us to analyze more samples with the same team size.”

Valdemir Melechco Carvalho, Fleury Group, Sao Paulo, Brazil.

# Simplicity of instrument management with Aria MX software

Thermo Scientific™ Aria™ MX software manages and controls all aspects of the Transcend LX and TLX UHPLC systems including pump operation, valve switching, and sample handling. Quickly develop methods and run batches with intuitive graphical method editing using a single method on all channels or up to four methods simultaneously on parallel channels.

Step Control

Method Info

Pressure Profile

Step Number: 1

Length: 30 s

Start: 0.00 min

Comment: Sample Loading onto TurboFlow Column

Step	Start	Sec	Flow	Grad	%A	%B	%C	%D	Tee	Loop	Flow	Grad	%A	%B	%C	%D
1	0.00	30	2.00	Step	95.0	5.0	-	-	=====	out	0.50	Step	95.0	5.0	-	-
2	0.50	5	0.10	Step	95.0	5.0	-	-	=====	out	0.40	Step	95.0	5.0	-	-
3	0.58	90	0.10	Step	95.0	5.0	-	-	T	in	0.40	Step	95.0	5.0	-	-
4	2.08	30	2.00	Step	-	100.0	-	-	=====	out	0.50	Step	10.0	90.0	-	-
5	2.58	30	2.00	Step	-	100.0	-	-	=====	in	0.50	Step	10.0	90.0	-	-
6	3.08	30	2.00	Step	-	100.0	-	-	=====	out	0.50	Step	95.0	5.0	-	-
7	3.58	60	2.00	Step	70.0	30.0	-	-	=====	in	0.50	Step	95.0	5.0	-	-
8	4.58	60	2.00	Step	95.0	5.0	-	-	=====	out	0.50	Step	95.0	5.0	-	-

Total Method Duration: 5.58 min

Data Window: Start 0.02 min, Duration 5.25 min, Channel Select: 1, 2, 3, 4, ALL

Aria MX software provides a user-friendly experience even for complex sequences by managing all aspects of the Transcend TLX systems.

Aria MX software is compatible with software including:

- Thermo Scientific™ XCalibur™ software
- Thermo Scientific™ TraceFinder™ software

Aria MX software ensures that samples are delivered to the mass spectrometer during only the relevant retention time window, saving mass spectrometer duty cycle for improved productivity.

Step Control

Method Info

Pressure Profile

Step Number: 1

Length: 0.50 min

Start: 0.00 min

Comment: Empty

Start	Len	Flow	Grad	%A	%B	%C	%D	S/D	Col	Flow	Grad	%A	%B	%C	%D
0.00	0.50	1.00	Step	50.0	50.0	-	-	Load	---->	0.40	Step	90.0	10.0	-	-

Total Method Duration: 0.50 min

Data Window: Start 0.00 min, Duration 0.50 min, Channel Select: 1, 2, 3, 4, ALL



# Complete LC-MS solutions

While most commonly paired with triple quadrupole mass spectrometers, the Transcend LX and TLX UHPLC systems integrate seamlessly with other Thermo Scientific LC-MS mass spectrometers. These include ion trap and Orbitrap instruments for screening, quantitation, or a variety of high-throughput applications.



System	Sensitivity	Resolution	Scan speed
Thermo Scientific™ TSQ Fortis™ mass spectrometer	•••	••	••••
Thermo Scientific™ TSQ Quantis™ mass spectrometer	••••		
Thermo Scientific™ TSQ Altis™ mass spectrometer	•••••	•••	

\*All systems utilize Vanquish Flex pump hardware.

Harness ultimate speed, robustness, and sensitivity with the TSQ Triple Quadrupole mass spectrometer series. A mainstay in environmental, food safety, pharmaceutical, clinical research, and toxicology, TSQ series triple quadrupole mass spectrometers instill confidence in your most challenging high-throughput analyses.



Transcend system with a TSQ Altis triple quadrupole mass spectrometer.

Unsurpassed resolution, mass accuracy, and versatility make the Orbitrap Tribrid and Orbitrap Exploris mass spectrometers an ideal solution for compound screening. Confidently and routinely characterize, quantify, and confirm identity of compounds in a single experiment.



The Transcend LX-2 UHPLC system shown with the Thermo Scientific™ Orbitrap Exploris™ 240 mass spectrometer. Transcend systems are also compatible with the Thermo Scientific™ Orbitrap Exploris™ 120 mass spectrometer.

Transcend LX and TLX systems provide solutions for the most demanding high-throughput LC-MS applications. Together they reduce sample preparation time, labor, costs, and errors while significantly increasing throughput—without compromising data quality or sensitivity. Simultaneously run a single method on up to four channels or a different method on each with multichannel LC. TurboFlow technology drastically decreases sample preparation time and increases data confidence. Complex method setup and instrument control are simplified by intuitive Aria MX software.

System	LC channels	Pumps*	Autosampler	Software	TurboFlow
TLX-1		1 Binary 1 Quaternary	CTC TriPlus RSI	Aria MX	
LX-2		2 Binary			
TLX-2		2 Binary 2 Quaternary			
LX-4		4 Binary	Dual Head		
TLX-4		4 Binary 4 Quaternary	CTC TriPlus RSI		

\*All systems utilize Vanquish Flex pump hardware.

## Transcend Multichannel UHPLC Systems

### High-throughput screening



#### Thermo Scientific Transcend LX UHPLC Systems

- Maximized throughput with multichannel LC for high-throughput screening assays
- 2 and 4-channel systems available

### High-throughput screening and automated sample clean-up



#### Thermo Scientific Transcend TLX UHPLC Systems

- Automated sample clean-up for samples in biological matrices
- Versatile methods for a broad range of sample types
- Maximized throughput with multichannel LC
- 1, 2, and 4-channel systems available

Find out more at  
[thermofisher.com/TranscendMultichannelSystems](https://www.thermofisher.com/TranscendMultichannelSystems)

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