AURORA® SERIES 5



PRODUCT SHOWCASE

Aurora Series® 5 CoreJet™ emitter columns

Built for the everyday.

The most robust Aurora Series® we've ever made: more than 1,400 runs per column format, across three formats and two instrument platforms. Consistent performance from the first injection to the last, and nothing drifted.

IN THIS SHOWCASE

Why longevity is the metric	02
The technology behind Series 5	03
The evidence, in six figures	04
What it means for your lab	08

KEYWORDS

IonOpticks, Aurora Series 5, packed emitter column, nanoZero, CoreJet integrated emitter, column longevity, backpressure stability, spray stability, retention time reproducibility, peak width, FWHM, column-to-column reproducibility, high-throughput proteomics, HeLa digest, DIA-NN Enterprise 2.6.1 © Aptila Biotech GmbH, Vanquish Neo, Astral Zoom, nanoElute 2, timsTOF HT, 120 SPD, 80 SPD, 170 SPD, TIC stability, XIC.

1,400+	< 5%	1.13 s	< 1%
RUNS PER COLUMN FORMAT	TOTAL RETENTION TIME CV	MEDIAN PEAK WIDTH, NO DRIFT (120 SPD)	COLUMN-TO-COLUMN VARIATION

WHY LONGEVITY IS THE METRIC

The runs you don’t have to repeat.

Every proteomics lab runs on a quiet assumption: that the column installed at the start of a cohort will behave the same way at the end of it. When it doesn’t, the cost is rarely just the column. It is the re-injected samples, the batch effects, and the instrument time that went with them.

Aurora Series® 5 is IonOpticks’ latest column range, engineered to deliver consistent backpressure and spray stability without compromising chromatographic performance. That stability translates directly to fewer unexpected early failures and dependable results across large sample cohorts.

This product showcase presents the performance across two LC-MS platforms: the Thermo Scientific Vanquish Neo LC paired with an Orbitrap Astral Zoom MS, and the Bruker nanoElute 2 LC paired with a timsTOF HT MS. Across more than 1,400 injections per platform, we show that backpressure, spray stability, peak shape, retention time, and protein/peptide identification all remain consistent from the first injection to the last - the foundation for reproducible data, injection after injection, column, after column.



“Aurora Series® has built its reputation on depth of coverage, sensitivity and reproducibility, but researchers increasingly need exceptional performance they can rely on every day. With Series 5, we have combined that performance with a new level of robustness, giving laboratories the confidence to use these columns routinely across demanding workflows. This is the most significant upgrade we have made to Aurora Series®, and an important step towards making exceptional chromatography the everyday standard rather than something reserved for special occasions.”

XAVIER PERRONNET

Chief Executive Officer, IonOpticks

FEWER ABORTED RUNS

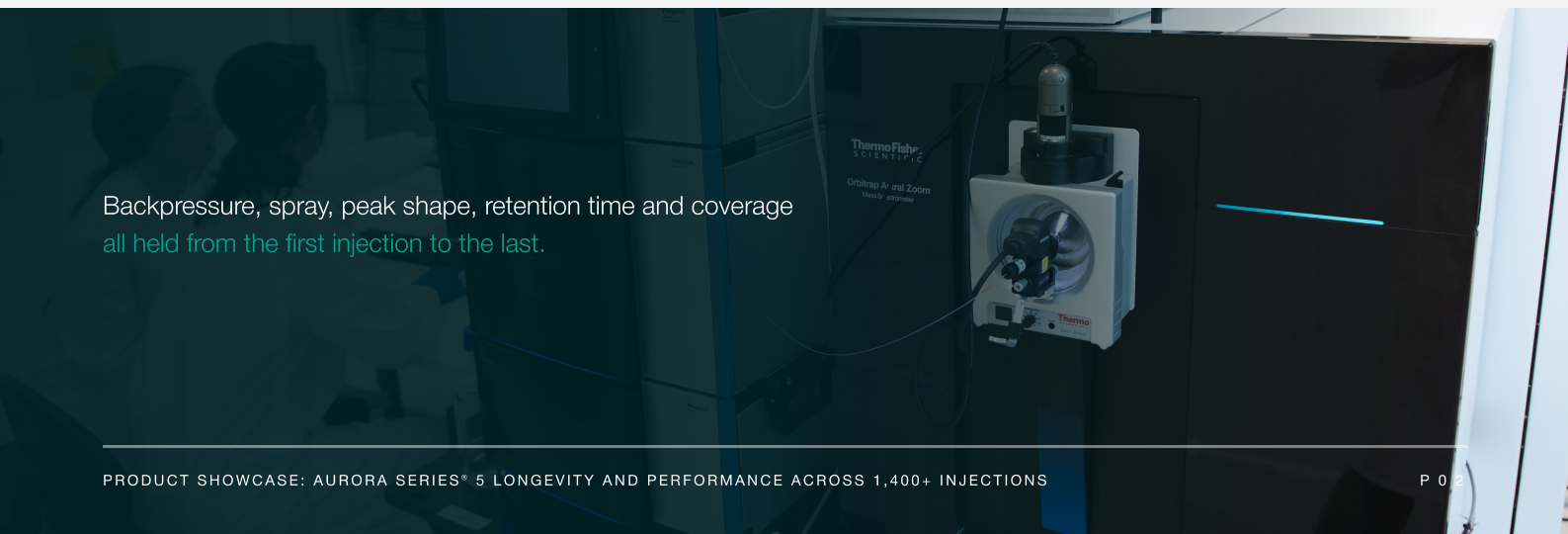
A flat pressure trace is a column still performing at the end of the cohort.

CONSISTENT ACROSS COHORTS

Quantification and identification stay consistent from the start of a large cohort to the end of it.

MORE FROM EVERY COLUMN

The column you take out of the box performs like the one it replaced.



Backpressure, spray, peak shape, retention time and coverage all held from the first injection to the last.

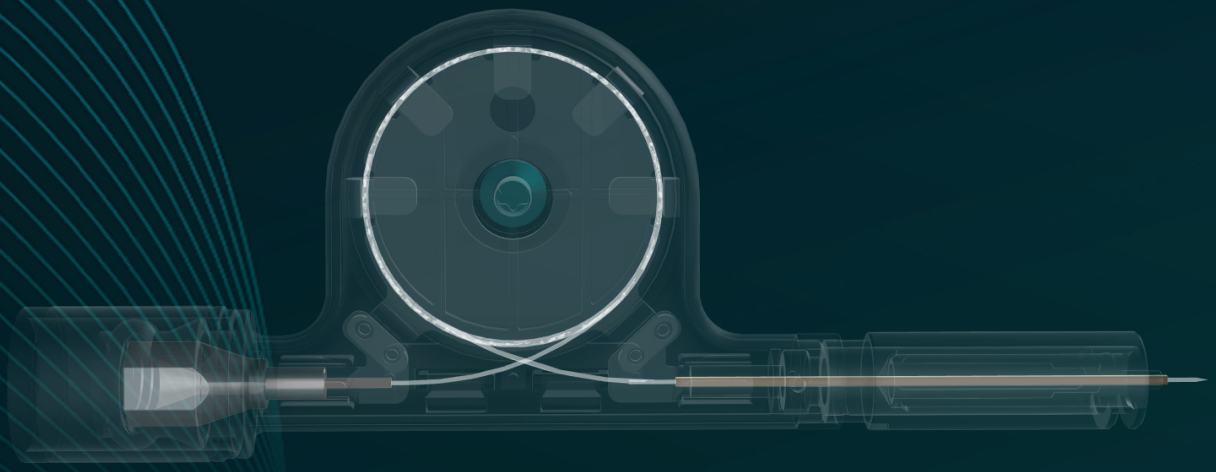
THE TECHNOLOGY

Two changes, one outcome.

Aurora Series® 5 pairs an enhanced nanoZero® union design with **NEW** CoreJet™ integrated emitter technology. CoreJet™ is a completely redesigned emitter architecture for Series 5 that resists early clogging, avoiding the back-pressure creep that shortens column life. The emitter is also integral to the column rather than connected to it, eliminating the concealed connections other products carry, resulting in zero post-column dead volume. The depth, sensitivity and column-to-column reproducibility Aurora Series® is known for are unchanged. What has changed is how long you can rely on them.

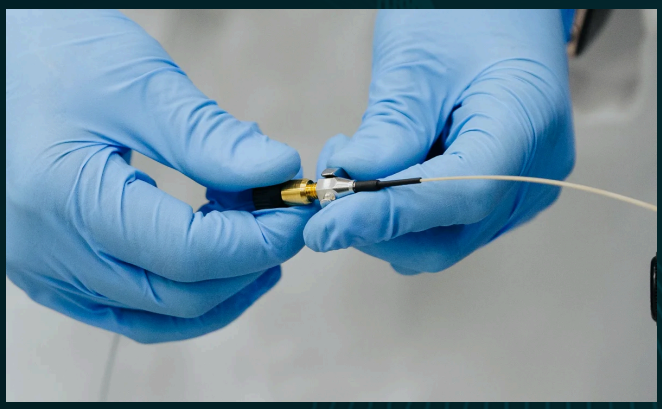
ONE COLUMN. ONE TRULY-INTEGRATED EMITTER.

No concealed connections.



NANOZERO®
Zero pre-column dead volume

COREJET™
Zero post-column dead volume



PRE-COLUMN

Enhanced nanoZero®

A new zero dead volume, high-pressure union design between column and system, for Series 5. Improved electrical conductivity through the union delivers further enhanced spray stability and uninterrupted signal, while your sample still reaches the bed without dispersion and the seal holds under more than 1,700 bar pressure for the full life of the column.



POST-COLUMN

New CoreJet™ integrated emitter

A completely redesigned emitter architecture for Series 5. The integral emitter Aurora Series® is known for, now crafted with refined manufacturing techniques that resist premature clogging and significantly increase robustness and column lifetime. With no post-column connection to introduce dead volume, align or replace, spray stays stable and reproducible for the full life of the column.

INSTRUMENTATION USED

VALIDATION PLATFORM 1



UHPLC

Thermo Scientific
Vanquish Neo

CONDITIONS

120 SPD, 0.4 µL/min
170 SPD, 2.5 µL/min



MASS SPEC

Thermo Scientific
Orbitrap Astral Zoom

SOFTWARE

DIA-NN Enterprise 2.6.1
© Aptila Biotech GmbH

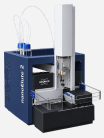


COLUMN

Aurora® Elite™ XT
C18, 15 cm × 75 µm &
15 cm × 150 µm

Aurora® Ultimate™ XT
C18, 25 cm × 75 µm

VALIDATION PLATFORM 2



UHPLC

Bruker
nanoElute 2

CONDITIONS

80 SPD, 1 µL/min

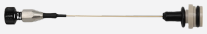


MASS SPEC

Bruker
timsTOF HT

SOFTWARE

DIA-NN Enterprise 2.6.1
© Aptila Biotech GmbH



COLUMN

Aurora® Rapid™ CSI
C18, 8 cm × 150 µm

SIX FIGURES, 1,400+ RUNS PER FORMAT

No creep. No clog. No climb.

Rising backpressure is the clearest sign that a column is approaching the end of its life, and it rarely arrives at a convenient point in a cohort. Across three column formats spanning flow rates of 0.4 to 2.5 µL/min and two instrument platforms, backpressure remained flat for more than 1,400 runs per format, with no upward drift over the lifetime of any column. No pressure accumulation, and no column required intervention. A flat pressure trace is a column still performing at the end of the cohort.

MAXIMUM BACK-PRESSURE BY RUN ORDER

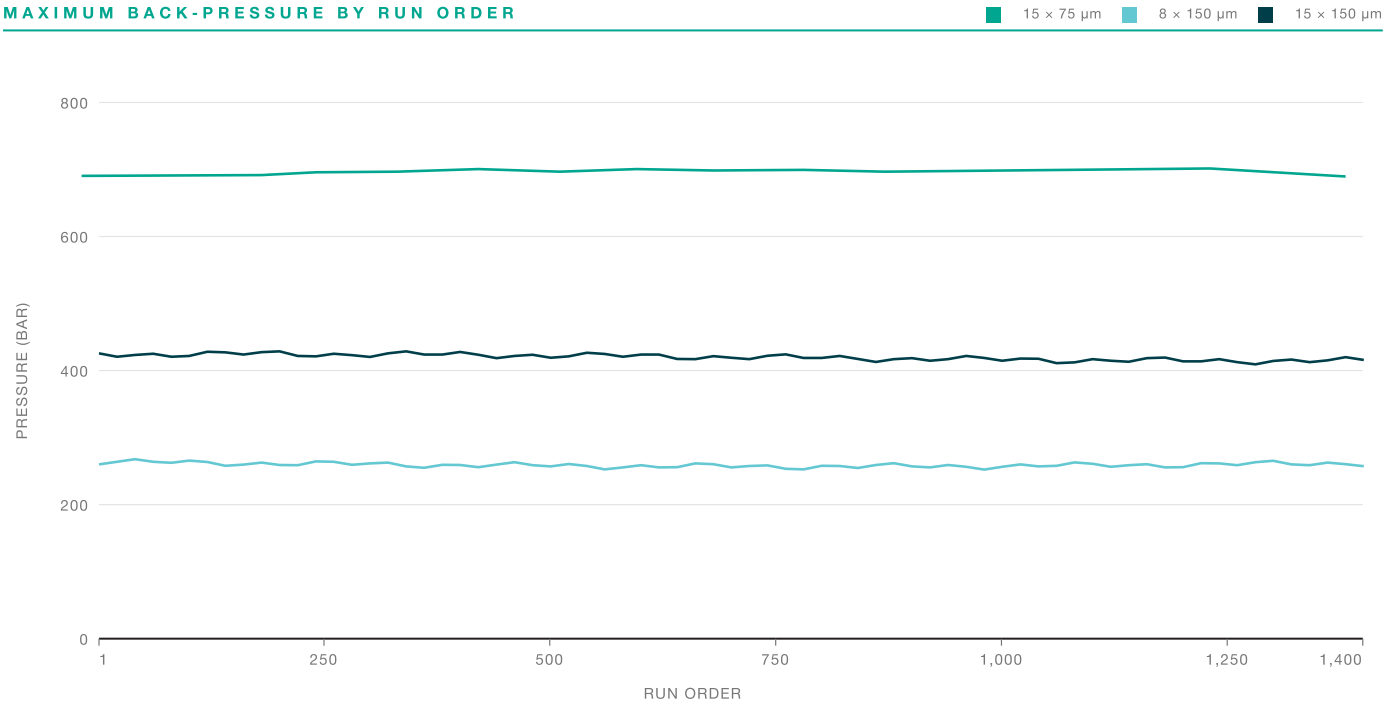


Figure 1: Stable pressure from run 1 to run 1,400+ across three column formats. Series 5 Aurora® Elite™ 15×75 µm (120 SPD, 8-min gradient, 0.4 µL/min; Thermo Vanquish Neo–Astral Zoom); Series 5 Aurora® Rapid™ CSI 8×150 µm (80 SPD, 15-min gradient, 1 µL/min; Bruker nanoElute 2–timsTOF HT); 15×150 µm (170 SPD, 2.5 µL/min; Thermo Vanquish Neo–Astral Zoom). Backpressure remained flat across the full run series for all three formats, with no upward drift over the lifetime of the columns, across 1,400+ runs per format.

0.4 – 2.5 µL/MIN

Tested across the full flow range of all three formats.

TWO PLATFORMS

Thermo Scientific Vanquish Neo and Bruker nanoElute 2.

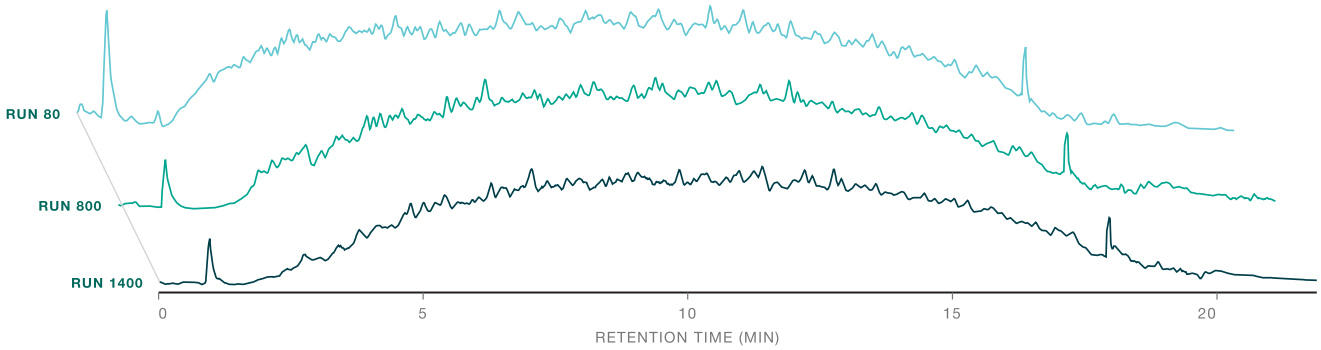
NO INTERVENTION

No pressure accumulation over the lifetime of any column.

Spray stability that lasts the whole cohort.

Spray instability is what turns an otherwise good acquisition into a lost one. Instability and dropouts in the TIC mean the data is compromised before analysis begins, and the instrument time is gone with it. On an 80 samples-per-day, 15-minute gradient, TIC traces at injections 80, 800 and 1,400 show no instability and no dropouts, with extracted ion chromatograms confirming consistent peak shape across the gradient. The trace at injection 1,400 looks like the trace at injection 80.

A · TIC CHROMATOGRAM CASCADE



B · EXTRACTED ION CHROMATOGRAMS

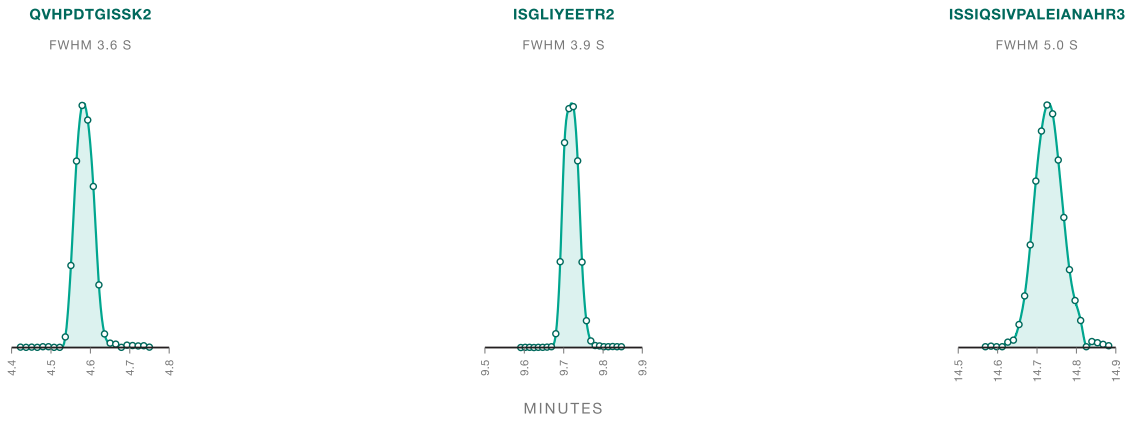


Figure 2: Spray stability demonstrated across 1,400+ runs, using an 80 SPD method and 15-minute gradient, on a Series 5 Aurora® Rapid™ CSI 8 × 150 µm column (Bruker nanoElute 2–timsTOF HT), analysed with DIA-NN Enterprise 2.6.1 © Aptila Biotech GmbH. TIC traces at injections 80, 800 and 1,400 show no instability or peak dropouts, with representative extracted ion chromatograms (XICs) at 5, 10 and 15 minutes confirming consistent peak shape across the gradient. The three TIC traces are separated on a z-axis so that each run starts at zero and the traces can be compared directly.



"True robustness is about more than how long a column lasts. It is about continuing to deliver the depth of coverage, sensitivity and throughput researchers expect, despite the variable and demanding conditions of everyday laboratory use. Across extended testing, Aurora Series® 5 maintained its chromatographic performance through more than 1,400 injections. For researchers running everything from individual experiments to large sample cohorts, that means greater confidence that the chromatography will perform consistently, day after day."

DR JARROD SANDOW
Chief Product Officer, IonOpticks

NO INSTABILITY

Smooth, continuous TIC traces at injection 1,400, the same as at injection 80.

UNIFORM TRACES

Continuous signal across every trace, with no interruption to the acquisition.

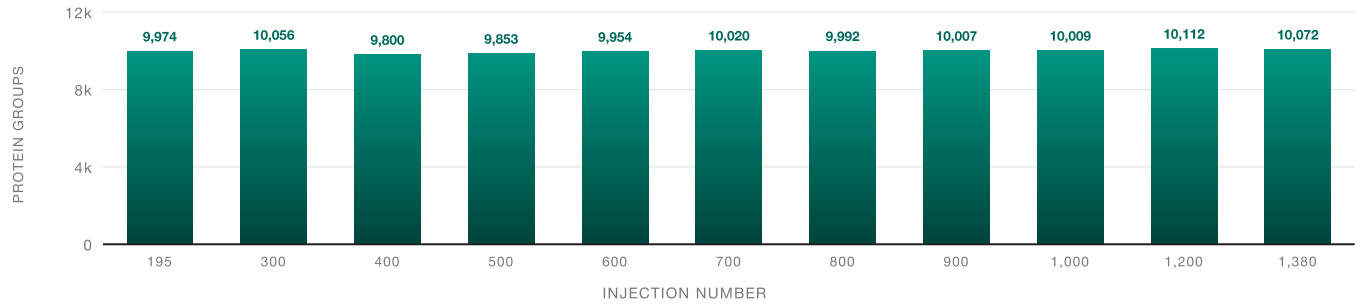
PEAK SHAPE HELD

No deviation in signal across all points in each XIC peak.

Reproducible depth across the full life of the column.

A validated method is only as stable as the column it relies on. On an 8-minute gradient, 120 SPD method, Aurora Series® 5 returned 9,800 to 10,112 protein identifications and 117,379 to 133,215 peptides across 1,380 consecutive injections. Depth of coverage at injection 1,380 matched injection 1, with no downward drift as the column aged. For labs running high-throughput cohorts, that consistency is what keeps a method reproducible from the first sample to the last.

UNIQUE PROTEIN IDS



UNIQUE PEPTIDE IDS

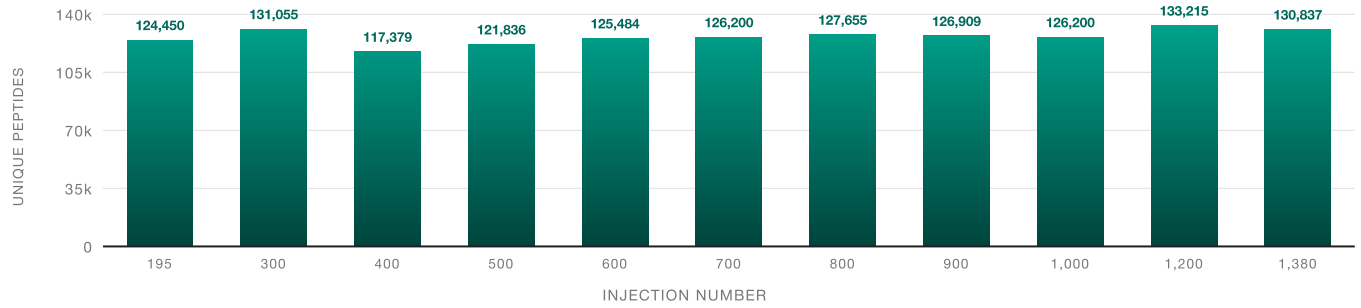
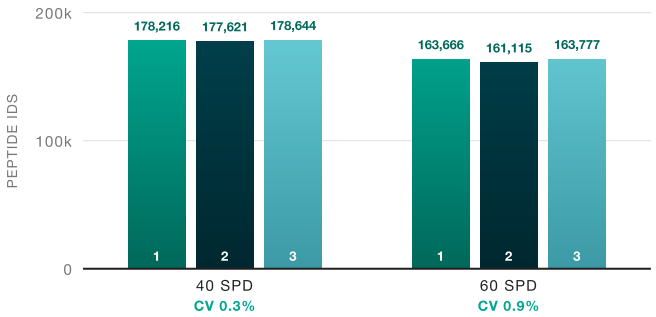


Figure 3: Protein and peptide identifications remained stable across 1,380 injections (9,800–10,112 proteins; 117,379–133,215 peptides) on an 8-minute gradient, 120 SPD method, demonstrating reproducible depth of coverage injection after injection using a Series 5 Aurora® Elite™ XT 15 × 75 µm column. Acquired on a Vanquish Neo–Astral Zoom and analysed with DIA-NN Enterprise 2.6.1 © Aptila Biotech GmbH.

Column-to-column reproducibility across three columns.

A validated method depends on every column behaving like the one before it. When it does not, the method has to be re-established. Three Aurora Series® 5 XT columns were run at two gradients, 40 and 60 samples per day, on a 50 ng HeLa digest. Median peptide and protein identifications were consistent across all three columns at both gradients, with coefficients of variation between 0.2% and 0.9%. The column you take out of the box performs like the one it replaced.

A · MEDIAN UNIQUE PEPTIDE IDS



B · MEDIAN UNIQUE PROTEIN IDS

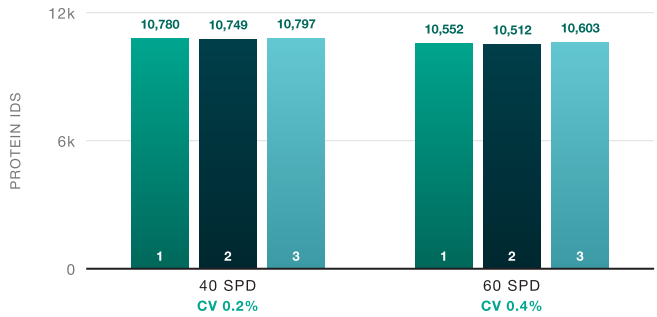


Figure 4: Column-to-column reproducibility of peptide and protein identifications across three Series 5 Aurora® Ultimate™ XT 25 cm × 75 µm columns (Column 1, Column 2, Column 3) at two gradients (40 SPD, 60 SPD), 50 ng HeLa digest load. (A) Median unique peptide IDs per column, computed across n = 9–10 replicate injections per column/gradient combination. (B) Median unique protein IDs per column, computed identically. CV (%) below each bar triplet is the coefficient of variation calculated across the three column medians for that gradient (n = 3). Analysed with DIA-NN Enterprise 2.6.1 © Aptila Biotech GmbH.

Stable retention times across more than 1,400 injections.

Retention time drift forces choices no one wants to make: accept poor quantification, widen the windows, or change the column to recover the retention times. Across more than 1,400 injections on an 8-minute gradient, 120 SPD method, retention times held with a total CV below 5%. Peaks eluted where they were expected from the first injection to the last, so an acquisition schedule set at the start of a cohort still holds at the end.

RETENTION TIME OF 10 REPRESENTATIVE PEPTIDES

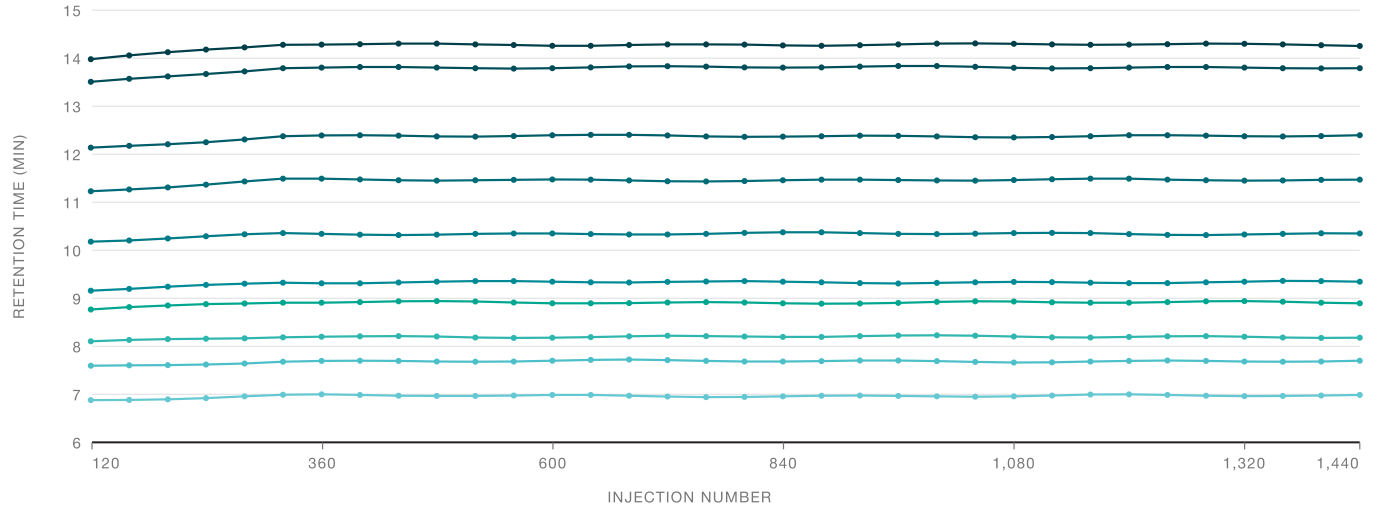
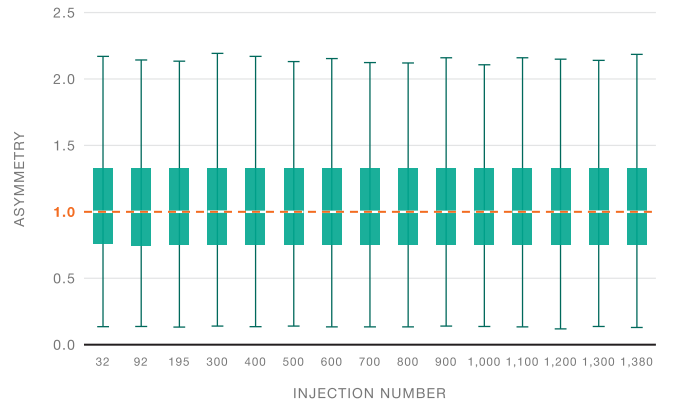


Figure 5: Retention time traces for 10 representative peptides across 1,400+ injections (8-minute, 120 SPD gradient, Series 5 Aurora® Elite™ XT 15 × 75 µm column, Vanquish Neo–Astral Zoom, analysed with DIA-NN Enterprise 2.6.1 © Aptila Biotech GmbH). Across the complete dataset, total RT CV was < 5%.

Peak widths that hold.

Peak broadening is a recognised early symptom of column degradation: bed compaction, void formation and fouling all widen peaks as identifications fall away. We monitored it across extended use. Across an 8-minute gradient, 120 SPD method, Aurora Series® 5 held a median peak width of 1.13 seconds FWHM and a median peak asymmetry factor of 1.00, with no broadening, tailing or drift from injection 32 through injection 1,380. The separation on the last injection was the separation on the first.

(A) · PEAK ASYMMETRY FACTOR



(B) · FULL WIDTH AT HALF MAXIMUM

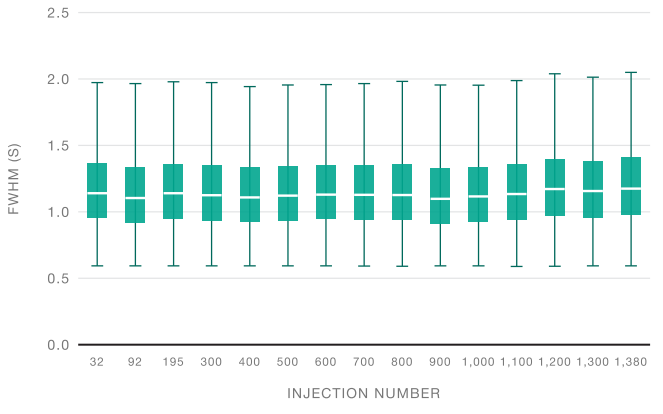


Figure 6: Peak shape parameter distributions across injections of a 50 ng HeLa digest standard separated on a Series 5 Aurora® Elite™ XT 15 × 75 µm column at 120 SPD throughput (Vanquish Neo–Astral Zoom, analysed with DIA-NN Enterprise 2.6.1 © Aptila Biotech GmbH). **(A)** Individual box plots tracking the peak asymmetry factor for each monitored QC run throughout a > 1,350 injection series; the dashed line marks a symmetrical peak at 1.0. **(B)** Individual box plots tracking the full width at half maximum (FWHM).

RETENTION TIMES HOLD

Total RT CV below 5% across the full 1,400+ injection series.

NO PEAK BROADENING

Median FWHM steady at 1.13 s from injection 32 to 1,380.

PEAK SHAPE HELD

Asymmetry stayed at 1.00, so peaks kept their symmetry throughout.

WHAT IT MEANS FOR YOUR LAB

Fewer aborted runs, more consistent cohorts.

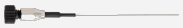
Labs running high-throughput cohorts, long studies or routine analysis get more usable injections from every column, and fewer interruptions to the methods built around them. The change is not in what the column does on its best day. It is in how many days look like that one.

CHOOSING THE RIGHT COLUMN FOR YOUR WORKFLOW

PRODUCT	FORMAT	FLOW TYPE	BEST SUITED TO	SOURCE INTERFACE UNI	CSI	XT	XS
Aurora® Rapid™ 5×75	5 cm × 75 µm	Nano flow	Very fast, low-input workflows where sensitivity still matters	•	•	•	–
Aurora® Rapid™ 5×150	5 cm × 150 µm	Capillary flow	Very high-throughput cohorts and routine workflows	•	•	•	–
Aurora® Rapid™ 8×75	8 cm × 75 µm	Nano flow	High-throughput work needing more separation than 5 cm	–	•	•	–
Aurora® Rapid™ 8×150	8 cm × 150 µm	Capillary flow	Large cohorts, plasma and clinical high-throughput work	–	•	•	–
Aurora® Elite™ 15×75	15 cm × 75 µm	Nano flow	Discovery, low-input work and medium-sized cohorts	•	•	•	•
Aurora® Elite™ 15×150	15 cm × 150 µm	Capillary flow	Routine proteomics and larger cohorts needing robustness	•	•	•	•
Aurora® Ultimate™ 25×75	25 cm × 75 µm	Nano flow	Deep discovery, complex samples and phosphoproteomics	•	•	•	•
Aurora® Ultimate™ 25×150	25 cm × 150 µm	Capillary flow	Deeper proteomics at higher flow, with robustness	•	•	•	•
Aurora® Frontier™ 60×75	60 cm × 75 µm	Nano flow	Maximum-depth discovery proteomics and long-gradient workflows	•	•	•	–

• IonOpticks Rapid Housing Kit required for use with IonOpticks HeatSync™ products on Thermo Scientific EASY-Spray and NanoSpray Flex ion sources

SOURCE INTERFACES



UNI
For general use with Thermo Scientific NanoSpray Flex source.



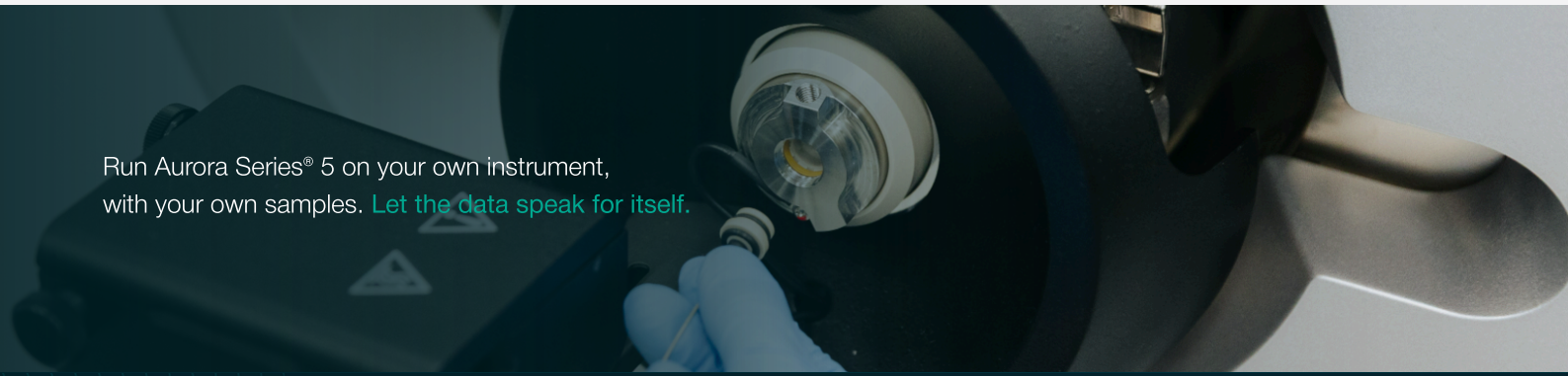
CSI
Bruker CaptiveSpray / 2
Bruker CaptiveSpray Ultra / 2



XT
Thermo Scientific EASY-Spray
Thermo Scientific NanoSpray Flex
Newomics Duo/Uni ESI for Agilent



XS
SCIEX OptiFlow Pro
SCIEX OptiFlow Turbo V



Run Aurora Series® 5 on your own instrument,
with your own samples. Let the data speak for itself.

BUILT TO GO FURTHER

Across three column formats, two instrument platforms and more than 1,400 runs each, nothing drifted. Identifications held, retention times held, peak width held, spray stayed stable and backpressure stayed flat. Aurora Series® 5 is available now in every existing format, length and source configuration, so your current methods move across unchanged.

ION OPTICKS PTY LTD

12 Gipps Street, Collingwood
3066 Victoria, Australia
ABN 99 621 674 459

ION OPTICKS UK LIMITED

17NC, 127 Olympic Avenue, Milton Park
Oxfordshire OX14 4SA, United Kingdom
CRN 16531589

EXPLORE AURORA SERIES® 5

www.ionopticks.com/aurora-series-5
or speak to your sales representative

IOSC26-01-01 | **FOR RESEARCH USE ONLY** | Not for use in diagnostic procedures.
'IonOpticks' and all represented trademarks remain the property of Ion Opticks Research Pty Ltd, and its related companies, unless otherwise specified.
'Orbitrap', 'Astral Zoom', 'Vanquish Neo', 'Nanospray Flex' and 'EASY-Spray' are trademarks of Thermo Fisher Scientific. 'timsTOF', 'nanoElute' and 'CaptiveSpray' are trademarks of Bruker Daltonics. 'OptiFlow' is a trademark of AB Sciex.

© Copyright 2026 Ion Opticks Research Pty Ltd
All Rights Reserved