

TECHNICAL NOTE

Product Comparison: Generation 3 and Generation 4 Aurora® Series™ columns deliver the same exceptional performance in peak symmetry, reproducibility, and retention time stability.

KEYWORDS

Aurora Series columns, Generation 3, Generation 4, HeatSync, column heater, heater controller, Vanquish Neo, UHPLC system, TSQ Quantis, mass spectrometer, chromatography, peak symmetry, retention time stability, reproducibility, proteomics, FWHM performance, column longevity, HeLa tryptic digest.

INTRODUCTION

Refined manufacturing techniques allow Generation 4 Aurora® Series columns to stand up to demanding conditions without sacrificing performance. With enhanced robustness, your research continues uninterrupted, even when analysing the most challenging samples. By maintaining stability, Generation 4 Aurora® Series columns reduces variability of chromatography, letting you focus on the science, rather than column performance concerns.

A comparison between Generation 3 and Generation 4 Aurora® Series columns shows that both deliver excellent performance in peak symmetry, reproducibility, and retention time stability, ensuring robust and reliable peptide separations suitable for deep proteome analysis. Generation 4 continues the proven reliability of Generation 3, extending column longevity while maintaining reproducibility, and high-resolution peptide separation.

Peak symmetry comparison
Aurora® Series Gen 3 vs Gen 4

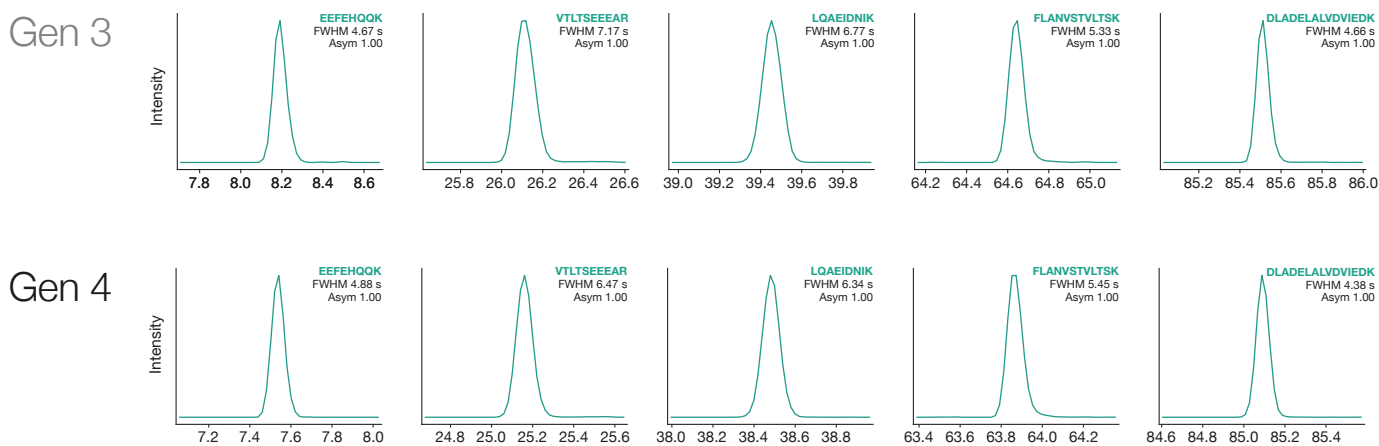


Figure 1: Example chromatographic peaks across an identical 90 min gradient at 400 nL/min using both Generation 3 and 4 Aurora® Ultimate™ 25 cm × 75 μm columns. Both generations show excellent FWHM and peak symmetry throughout the gradient.

INSTRUMENTATION

CHROMATOGRAPHY

LC/MS



Aurora® Ultimate™
25x75 XT column
(Gen4)



Aurora® Ultimate™
25x75 XT column
(Gen3)



IonOpticks HeatSync™
Heater and Controller



Thermo Scientific
Vanquish Neo LC



Thermo Scientific
TSQ Quantis MS

Retention time stability

Both Generation 3 and Generation 4 columns exhibit outstanding retention time stability, with only minimal drift detected across multiple consecutive runs. Comparative analysis revealed no statistically significant differences between the two generations, confirming that each provides highly reliable and reproducible peptide retention times. This consistency demonstrates the precision of the manufacturing process and the robustness of the column design, ensuring dependable chromatographic performance even under repeated analytical conditions.

Δ Asymmetry vs retention time

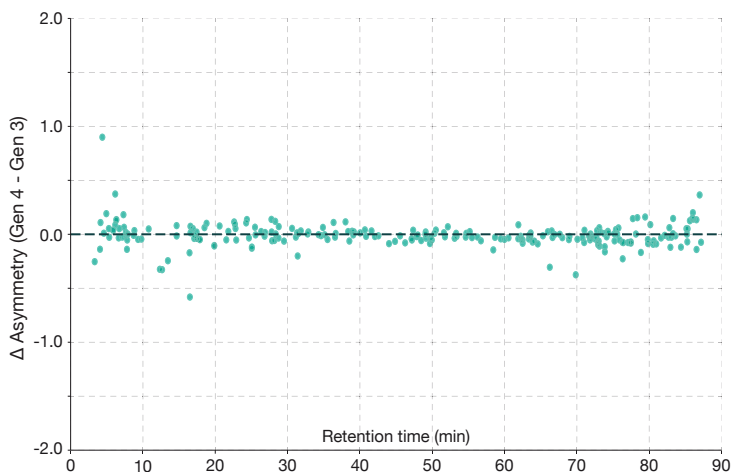


Figure 3: Δ Asymmetry and retention time comparison between Generation 3 and 4 Aurora® Ultimate™ 25 cm × 75 μm columns. Each dot represents an individual peptide across the gradient and results presented are averaged across 35 runs. Δ asymmetry is minimal, with both generations producing consistent peak shapes.

Retention time stability, Generation 3 vs Generation 4



Figure 2: Retention time stability comparison between Generation 3 and Generation 4 Aurora® Ultimate™ 25 cm × 75 μm columns.

METHOD

A HeLa tryptic digest was separated on both Generation 3 and Generation 4 Aurora® Ultimate™ 25 cm × 75 μm columns. Samples were run on a Thermo Scientific Vanquish Neo LC coupled to a Thermo Scientific TSQ Quantis mass spectrometer. Peptides were characterised using an in-house developed SRM list.

CONTINUE READING

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