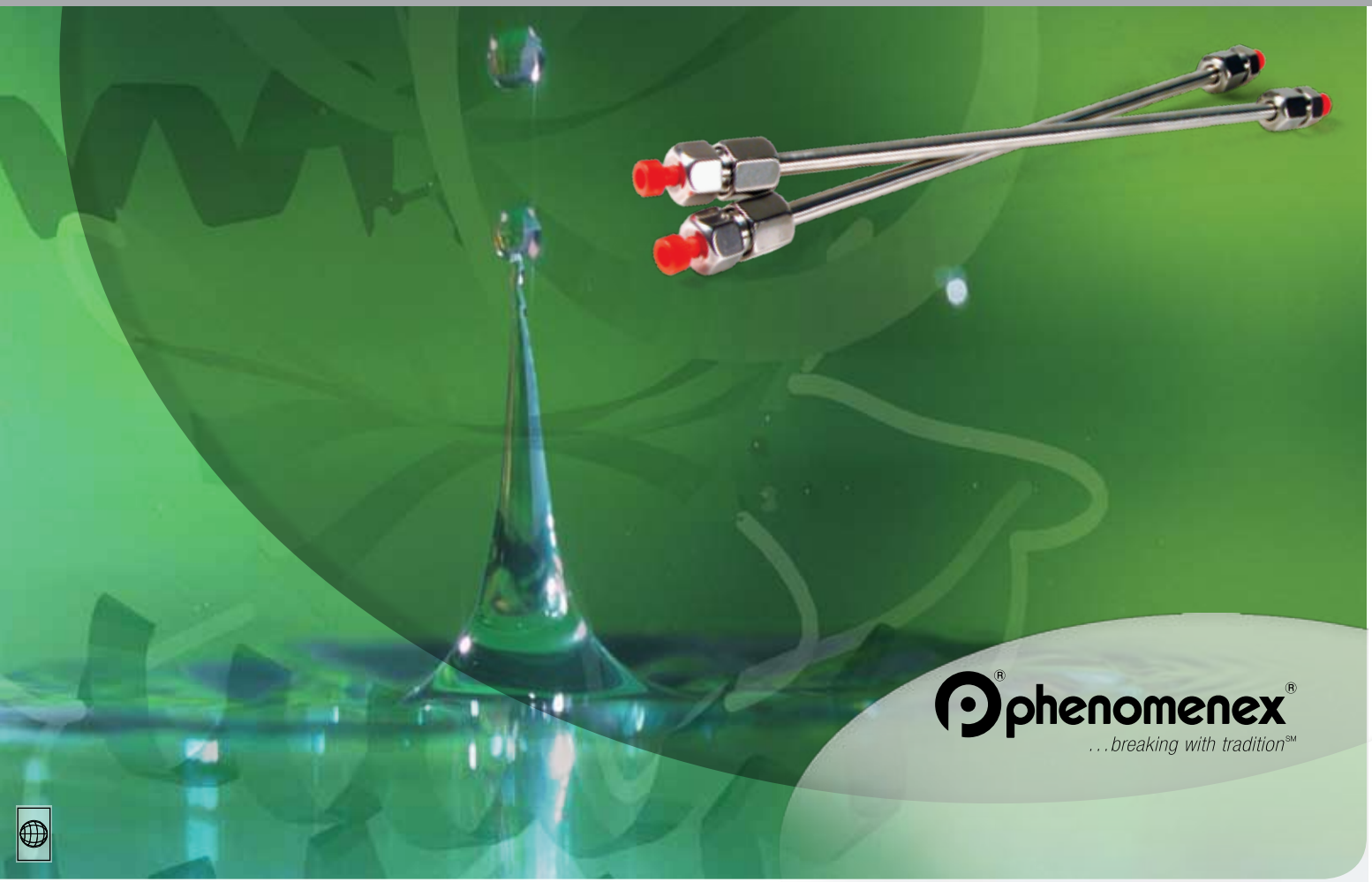
Yarra™

The New Standard in High Resolution Size Exclusion



phenomenex®

. . . breaking with tradition℠

Introducing Yarra, Ultra-High Resolution Size Exclusion Columns for Biomolecules

Yarra™

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EFFICIENT
3 µm particle size for sharp peaks and increased resolution p. 04

REPRODUCIBLE
Expert manufacturing for consistent performance, time and time again p. 06

DURABLE
Engineered for long column lifetime p. 08

INERT
Optimized bonding for extreme surface inertness, ensuring accurate recoveries p. 10

VERSATILE
Three phases to achieve optimal separation p. 12

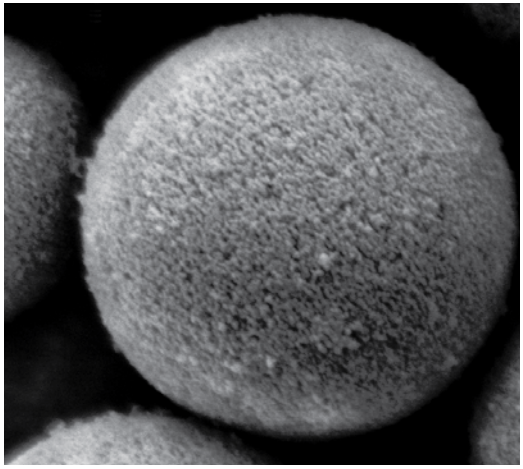
www.phenomenex.com/Yarra

Engineered for Higher Efficiencies and Increased Resolving Power

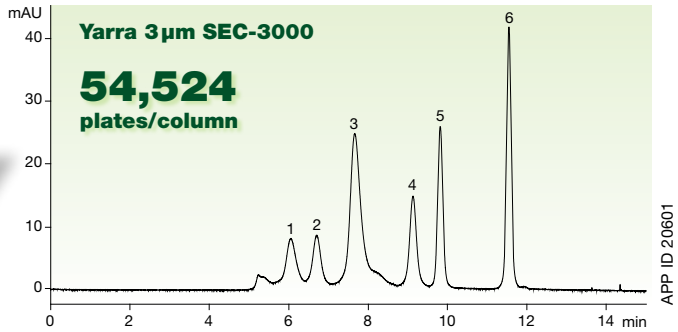
Starting with 3 µm ultra-pure silica, Yarra particles are densely bonded with a proprietary hydrophilic surface chemistry. Coupled with tight particle and pore size distribution as well as strict packing and QC specifications, Yarra columns allow for the highest efficiencies and resolution possible.

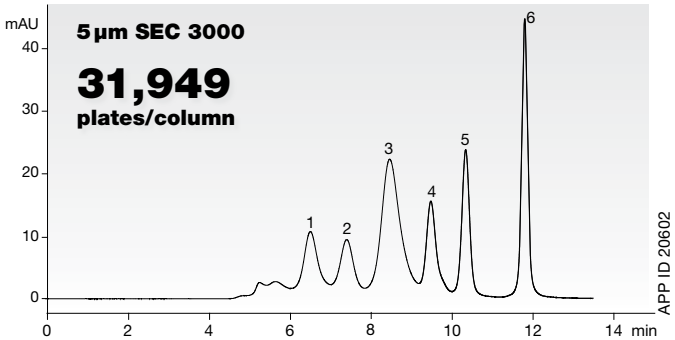
Up to 70 % higher efficiencies delivering better resolution

SEM of Yarra™ 3 µm Particle



Yarra 3 µm SEC-3000 vs. 5 µm SEC 3000 Column





Conditions for all columns:

Columns: Yarra 3 µm SEC-3000
5 µm SEC 3000 Column

Dimensions: 300 x 7.8 mm

Mobile Phase: 100 mM Sodium Phosphate in Water pH 6.8 + 0.025 % NaN_3

Flow Rate: 1 mL/min

Temperature: Ambient

Detection: UV @ 280 nm

Sample:
1. Thyroglobin (699 kDa)
2. IgA (300 kDa)
3. IgG (150 kDa)
4. Ovalbumin (44 kDa)
5. Myoglobin (17 kDa)
6. Uridine

Comparative separations may not be representative of all applications.

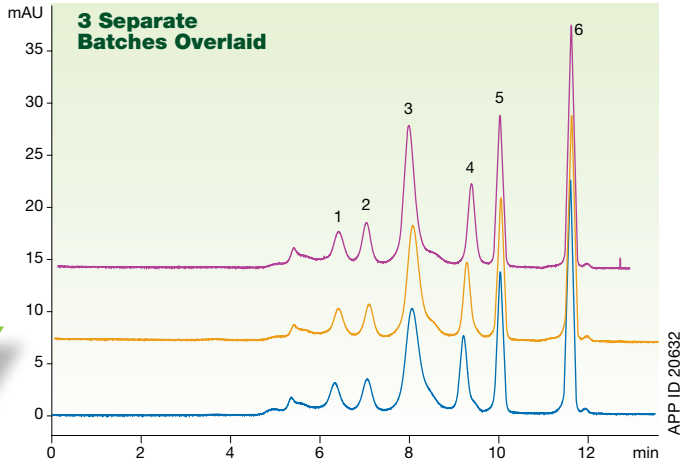
Yarra™
How does your current SEC column compare?
www.phenomenex.com/Yarra

Expert Manufacturing for Optimal Performance and Reliability

Reproducible GFC columns require extreme detail in every aspect of the manufacturing and packing process. First, Yarra silica particles are synthesized using narrow tolerances for pore and particle size. Next, bonding of a proprietary hydrophilic ligand is tightly controlled, and packing of each column requires validated recipes tested to high specifications.

Reproducible performance, column-to-column and batch-to-batch

Batch-to-Batch Reproducibility Yarra™ 3 µm SEC-3000



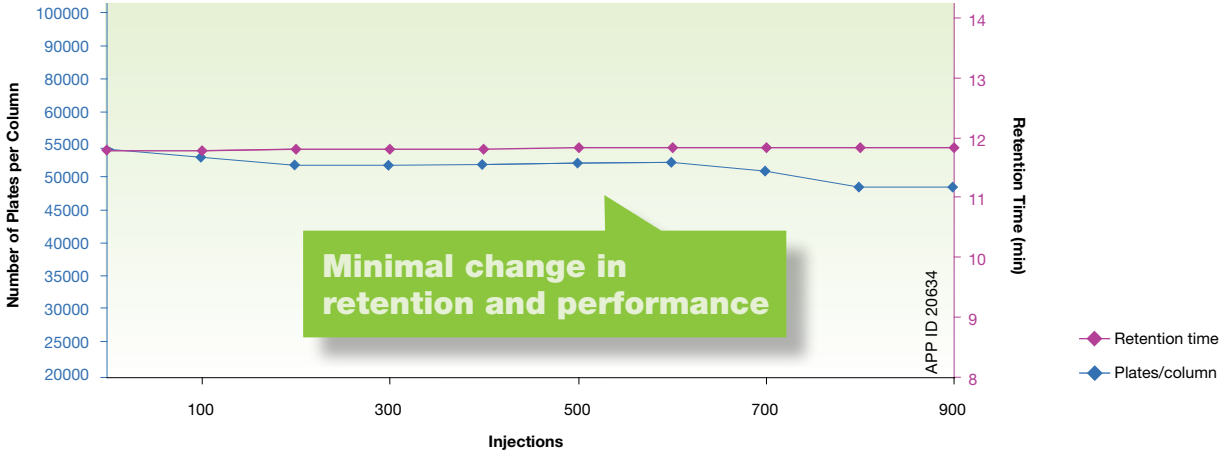
Columns: Yarra 3 µm SEC-3000
Dimensions: 300 x 7.8 mm
Part No.: 00H-4513-K0
Mobile Phase: 100 mM Sodium Phospate pH 6.8 + 0.025 % NaN_3
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV @ 280 nm
Sample:
1. Thyroglobin (699 kDa)
2. IgA (300 kDa)
3. IgG (150 kDa)
4. Ovalbumin (44 kDa)
5. Myoglobin (17 kDa)
6. Uridine

Yarra™
Doing Reversed Phase Analysis?
Try Aeris core-shell columns for ultra-high resolution separations of proteins and peptides on HPLC and UHPLC systems.
www.phenomenex.com/Aeris
AERIS™

Robust Columns with Long Lifetimes to Get the Most Out of Your Investment

The great care exhibited in both engineering and packing Yarra™ columns can produce stable performance over longer lifetimes than other size exclusion columns on the market. Over the course of time, reduced numbers of column replacements add up to significant time and money savings for your lab.

Efficiency and Retention Time Stability on Yarra 3 µm SEC-2000 over 900 Injections



Columns: Yarra 3 µm SEC-2000
Dimensions: 300 x 7.8 mm
Part No.: 00H-4512-K0
Mobile Phase: 100 mM Sodium Phosphate in Water pH 6.8 + 0.025 % NaN_3
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV @ 280 nm
Sample:
1. Thyroglobin (699 kDa)
2. IgA (300 kDa)
3. IgG (150 kDa)
4. Ovalbumin (44 kDa)
5. Myoglobin (17 kDa)
6. Uridine

Yarra™

Increase Your Column Lifetime.

Use the SecurityGuard™ column protection system to extend the lifetime of your GFC column.

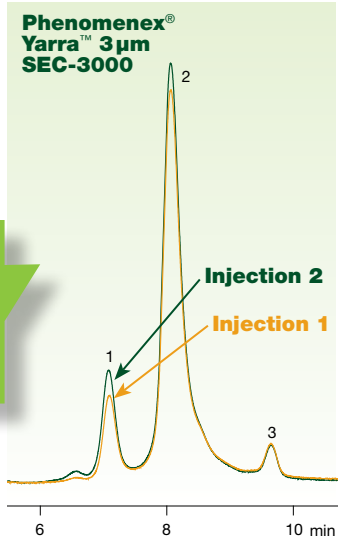
www.phenomenex.com/Yarra

Extreme Surface Inertness for Accurate and Confident Recoveries

Phenomenex's proprietary surface chemistry provides an inertness unmatched by other GFC columns. The result is minimal adsorption of proteins and other protein aggregates leading to more accurate quantitation.

Minimal "Priming Effect" with Yarra Columns

Minimal protein adsorption compared to other GFC columns



IgG dimer peak is adsorbed

Conditions for all columns:

Columns:	Yarra 3 µm SEC-3000 TSKgel G3000 SWxl 5 µm
Dimensions:	300 x 7.8 mm
Mobile Phase:	50 mM Sodium Phosphate pH 5.0/ 0.1 M Sodium Sulfate
Flow Rate:	1 mL/min
Temperature:	Ambient
Detection:	UV @ 280 nm
Sample:	1. IgG Dimer 2. IgG Monomer 3. Albumin

TSKgel is a registered trademark of Tosoh Corporation.
Comparative separations may not be representative of all applications.

For Method Development
and Optimization Tips, go to:
www.phenomenex.com/Yarra

Column Options to Fit a Variety of Applications

Yarra™ columns are available in three phases to separate a wide range of analytes:

SEC-2000

- **Biosimilar aggregate applications**
- **Peptide therapeutics**
- **Small proteins**
- **PEGylated peptides and small proteins**

SEC-3000

- **Immunoglobulin aggregate applications**
- **Medium to large size proteins**
- **Serum proteins**
- **PEGylated proteins**

SEC-4000

- **Large proteins**
- **PEGylated IgG**

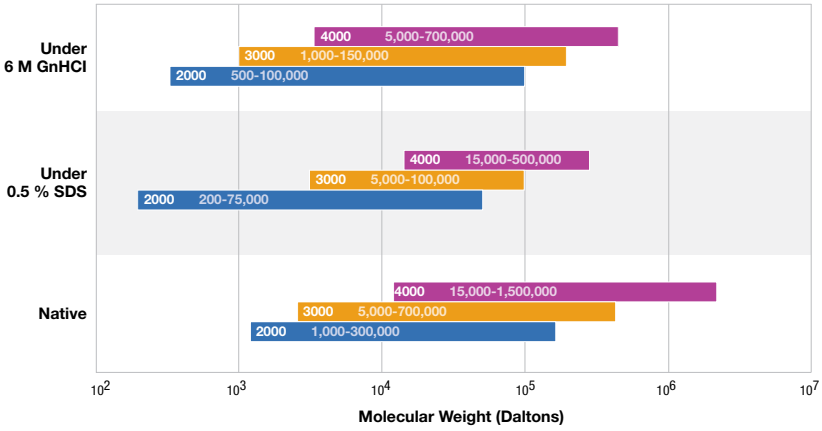
Search Yarra
Applications online at
www.phenomenex.com/Yarra

Selecting the Right Yarra™ Column for Your Application

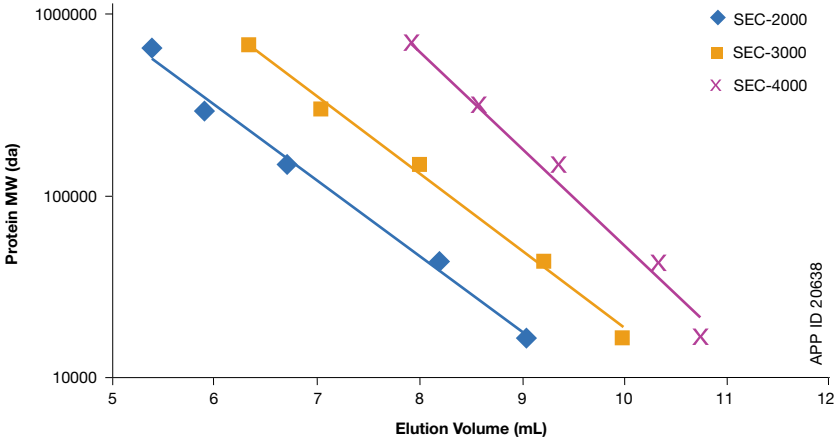
It is useful to employ the differences in selectivity between Yarra SEC-2000, 3000 and 4000 columns. For molecular weight ranges where overlap occurs, we suggest screening at least two phases to identify the optimal selectivity for your separation.

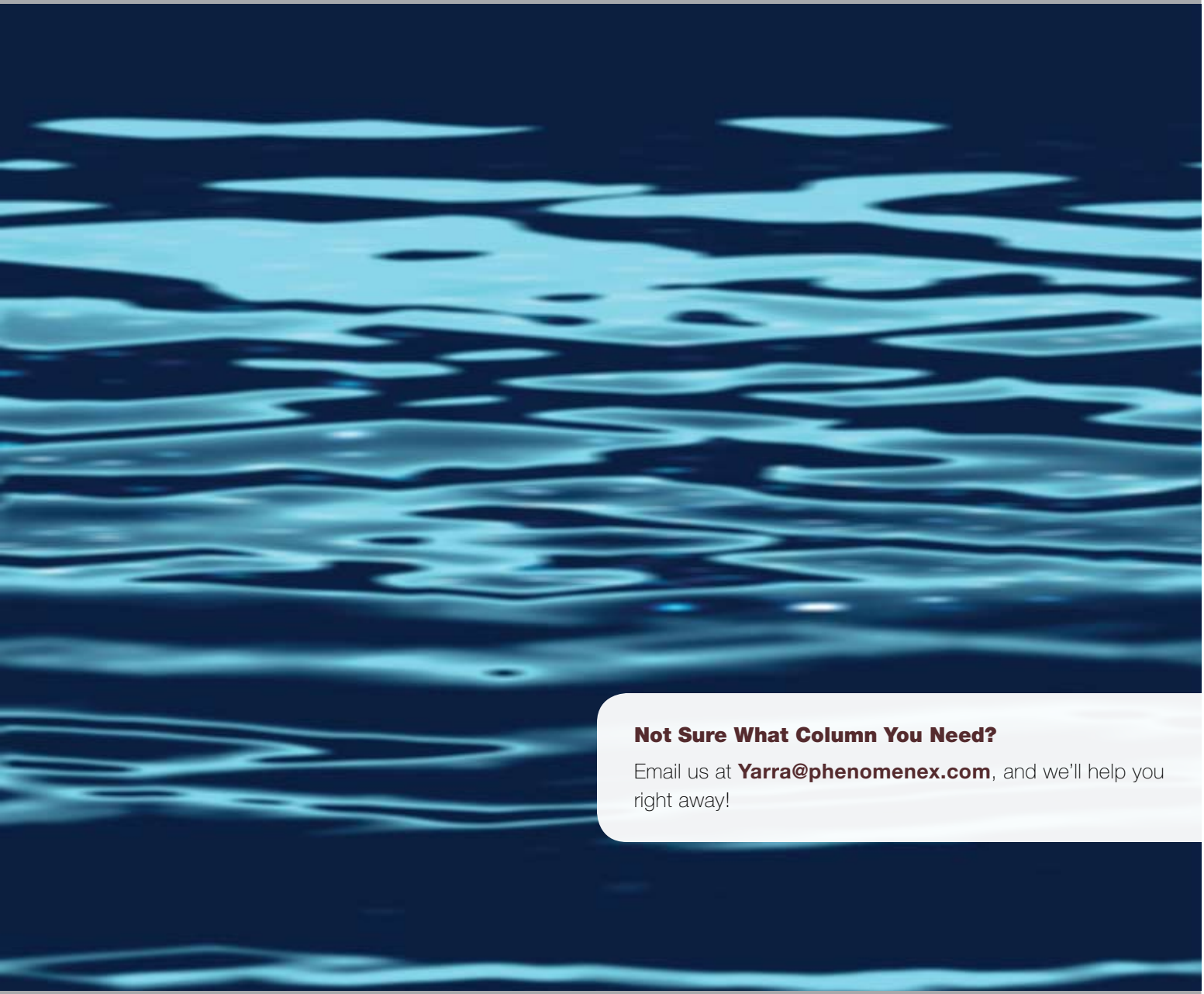
Use the MW chart and/or calibration curves to select the most appropriate phase(s) to evaluate.

Molecular Weight (MW) Separation Ranges for Yarra



MW Calibration Curves for Protein Separation





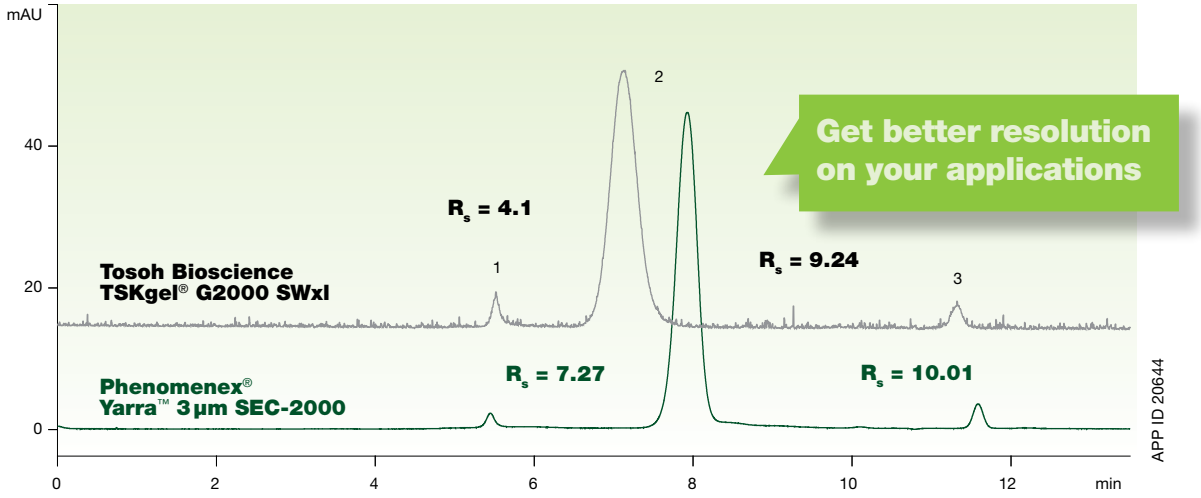
Not Sure What Column You Need?

Email us at **Yarra@phenomenex.com**, and we'll help you right away!

We Stand Behind Yarra's Performance

Set Yarra side-by-side with your current size exclusion column. We GUARANTEE similar or better performance, or keep the column for FREE.

Recombinant Human Erythropoietin (rHuEPO)
Yarra 3 µm SEC-2000 vs. TSKgel G2000 SWxl



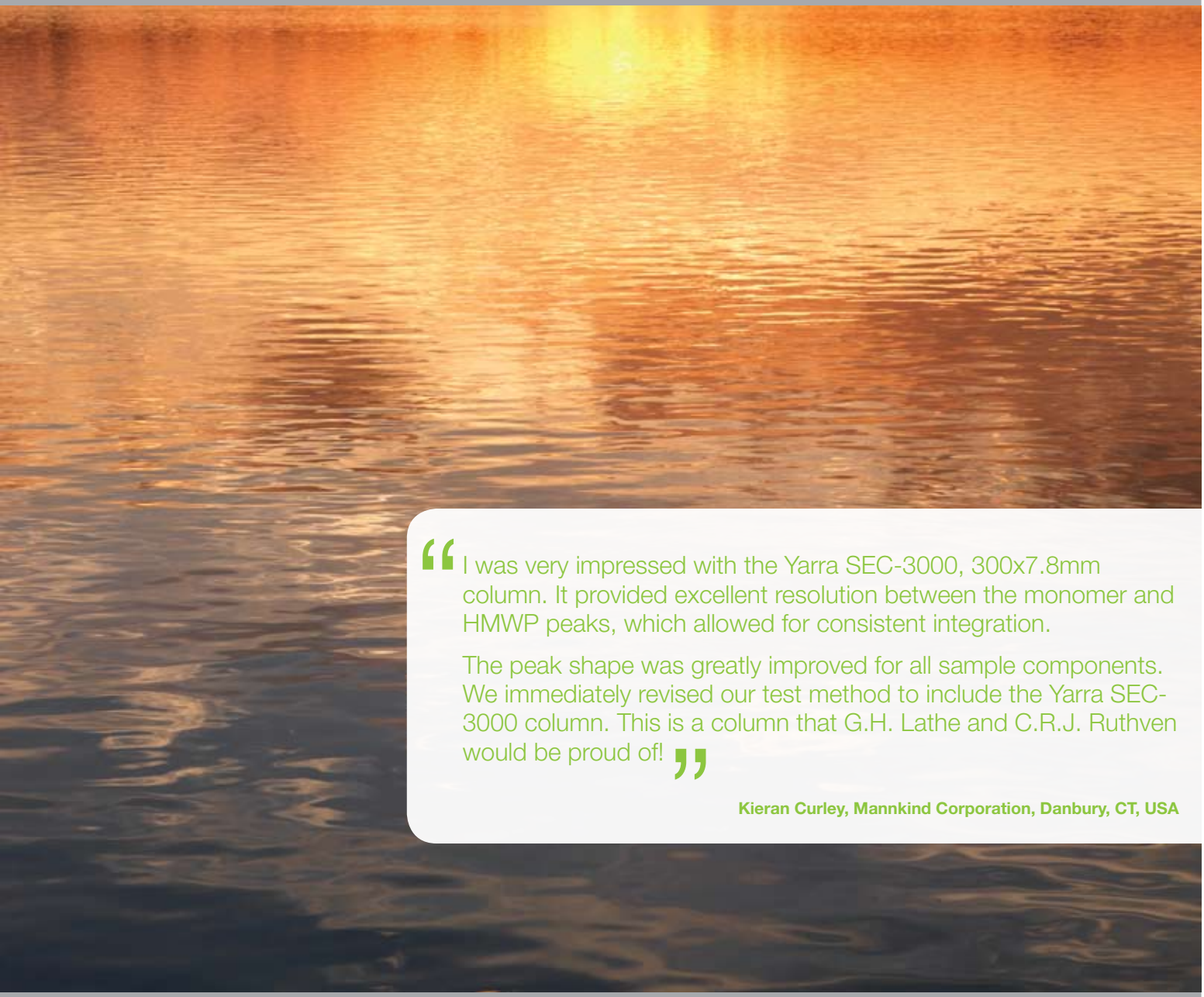
Conditions for all columns:

Columns: Yarra 3 µm SEC-2000
TSKgel G2000 SWxl 5 µm
Dimensions: 300 x 7.8 mm
Mobile Phase: 50 mM Sodium Phosphate pH 6.8 / 0.3 M Sodium Chloride
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV @ 214 nm
Sample:
1. High Molecular Weight Aggregate
2. EPO Monomer
3. Low MW Peak

guarantee

If Yarra analytical columns do not provide you with at least an equivalent separation as any other GFC column of similar porosity, type, and dimensions, send in your comparative data within 45 days and keep the column for FREE.

TSKgel is a registered trademark of Tosoh Corporation.
Comparative separations may not be representative of all applications.



"I was very impressed with the Yarra SEC-3000, 300x7.8mm column. It provided excellent resolution between the monomer and HMWP peaks, which allowed for consistent integration.

The peak shape was greatly improved for all sample components. We immediately revised our test method to include the Yarra SEC-3000 column. This is a column that G.H. Lathe and C.R.J. Ruthven would be proud of!"

Kieran Curley, Mannkind Corporation, Danbury, CT, USA

Ordering Information

Yarra™ 3 µm SEC Columns (mm)

	Narrow Bore	Analytical	SecurityGuard™ Cartridges (mm)
Phases	300 x 4.6	300 x 7.8	4 x 3.0*
			/10 pk
Yarra SEC-2000	00H-4512-E0	00H-4512-K0	AJ0-4487
Yarra SEC-3000	00H-4513-E0	00H-4513-K0	AJ0-4488
Yarra SEC-4000	–	00H-4514-K0	AJ0-4489
			for ID 4.6 - 7.8 mm

*SecurityGuard Analytical cartridges require holder, Part No.: KJ0-4282

SecurityGuard Cartridge Holder Kit

Part No.	Description	Price
KJ0-4282	for 4.6 to 7.8 mm ID column	

Aqueous SEC 1 Column Check Standard

Aqueous SEC 1 Column Check Standard
(for Yarra 3 µm SEC and other protein SEC columns)

Part No.: AL0-3042 Price:

Unit quantity: Dry; reconstituted to 2 mL
Contains: Bovine thyroglobulin; Human gamma globulin (contains IgA and IgG); Ovalbumin; Myoglobin; Uridine (reconstitute with 1 mL of 100 mM Sodium phosphate pH 6.8)
Diluent: 100 mM Sodium phosphate pH 6.8
Storage: Add 0.1 % NaN_3 to the solution and refrigerate

Test Conditions
Mobile phase: 100 mM Sodium phosphate, pH 6.8
Flow rate: 1.0 mL/min for a 300 x 7.8 mm column
Injection volume: 10 µL
Detection: UV @ 280 nm

Column Specifications

	Yarra SEC-2000	Yarra SEC-3000	Yarra SEC-4000
Resin Type	Silica	Silica	Silica
Particle Size (µm)	3	3	3
Pore Size (Å)	145	290	500
pH Range	2.5 - 7.5	2.5 - 7.5	2.5 - 7.5
Maximum Backpressure (psi)	3,000	3,000	3,000
Typical Backpressure (psi)	1,300	1,300	1,300
Efficiency (minimum number of theoretical plates, 300 x 7.8)	48,000	48,000	38,000
Max. Flow Rate	1.5 mL/min	1.5 mL/min	1.5 mL/min

Terms and Conditions
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SecurityGuard is patented by Phenomenex. U.S. Patent No. 6,162,362
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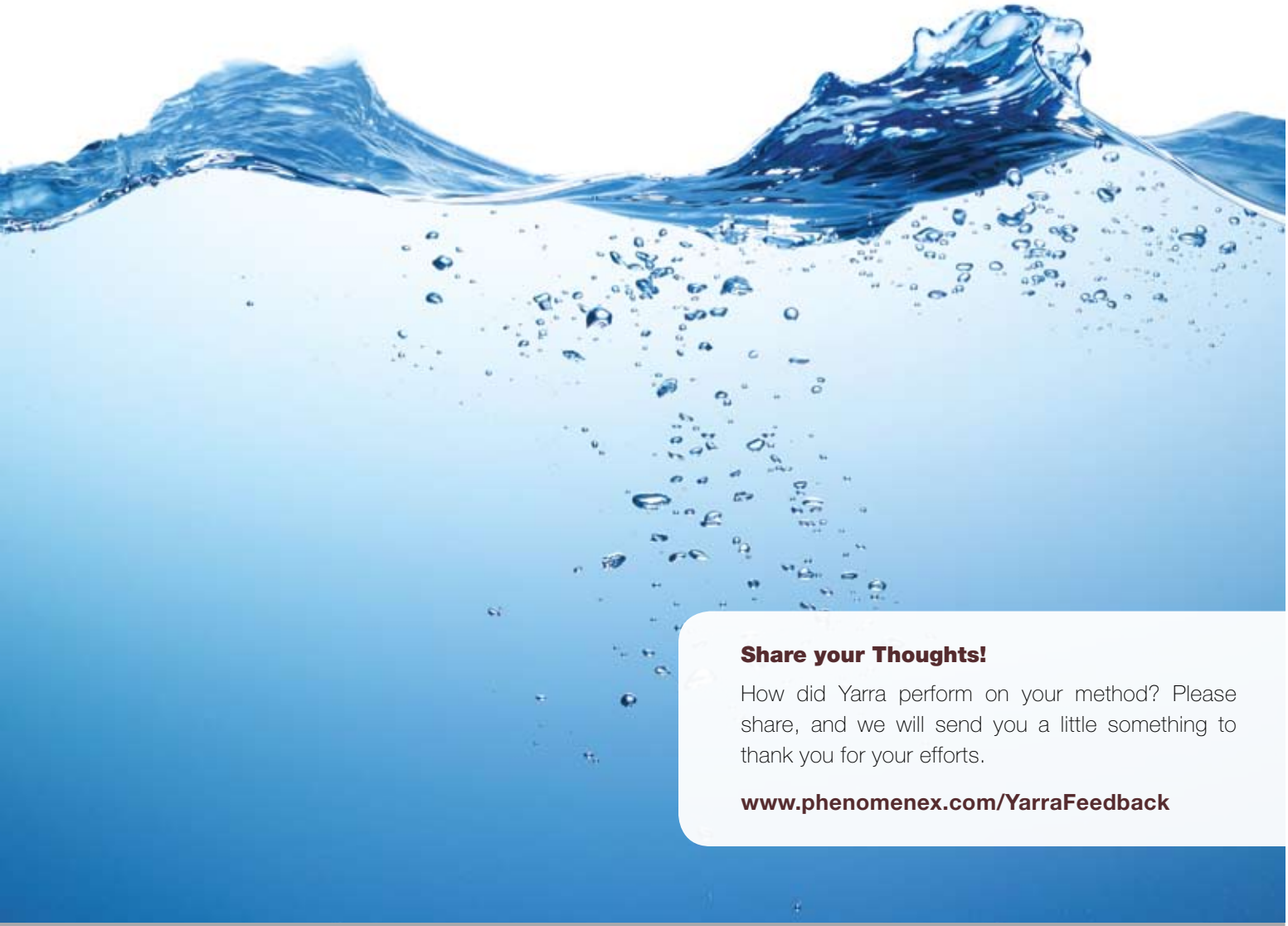

Share your Thoughts!

How did Yarra perform on your method? Please share, and we will send you a little something to thank you for your efforts.

www.phenomenex.com/YarraFeedback

Yarra™

Aqueous Size Exclusion Columns

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