

Better Size Exclusion, Even Better Price

 Yarra™



 **phenomenex**®
...breaking with traditionSM



www.phenomenex.com/Yarra

Ultra-High Resolution Size Exclusion for Biomolecules at an **Unbelievable Price**

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

EFFICIENT

3µm 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

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Higher Efficiency, Much Lower Price Compared to TSKgel® – GUARANTEED*!

Phenomenex®
Yarra™



VS.



Tosoh Bioscience®
TSKgel†

SEC-2000	SEC-3000	SEC-4000		G2000SWxl	G3000SWxl	G4000SWxl
3	3	3	Particle Size (µm)	5	5	8
145	290	500	Pore Size (Å)	125	250	450
1 K - 300 K	5 K - 700 K	15 K - 1,500 K	MW Range (native conditions)	5 K - 150 K	10 K - 500 K	20 K - 7,000 K
2.5 - 7.5	2.5 - 7.5	2.5 - 7.5	pH Stability	2.5 - 7.5	2.5 - 7.5	2.5 - 7.5
3000	3000	1700	Maximum Backpressure (psi)	1015	1015	508
50	50	50	Maximum Temperature (°C)	30	30	30
1.5	1.5	1.2	Maximum Flow Rate (mL/min)	1.2	1.2	1.2
48,000	48,000	38,000	Efficiency (minimum theoretical plates)	20,000	20,000	16,000

*Also guaranteed against other aqueous GFC columns 3 µm or above.

*

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, return the column with comparative data within 45 days for a FULL REFUND.

TSKgel and Tosoh Bioscience are registered trademarks of Tosoh Corporation. Comparative separations may not be representative of all applications.
† All TSKgel specifications were taken from Tosoh Bioscience 2004-5 Laboratory Products Catalog

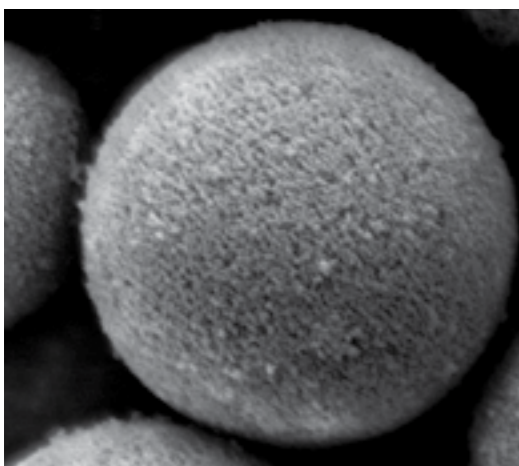
Engineered for Higher Efficiencies and Increased Resolving Power



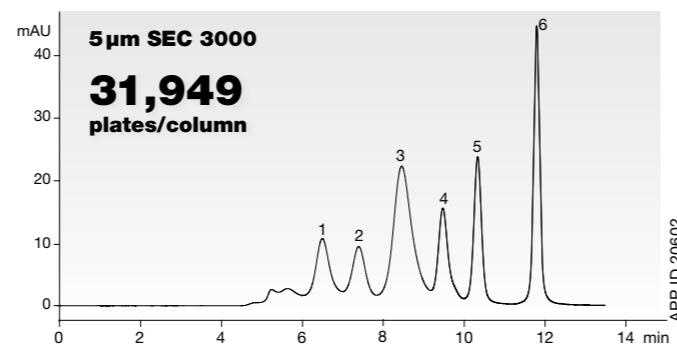
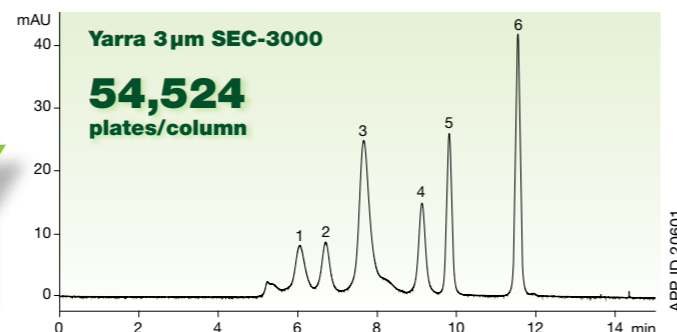
Starting with 3 µm ultra-pure silica, Yarra particles are densely bonded with a proprietary hydrophilic surface chemistry. Coupled with tight particle and pore size distribution as well as strict packing and QC specifications, Yarra columns allow for the highest efficiencies and resolution possible.

**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% Na₂S
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.

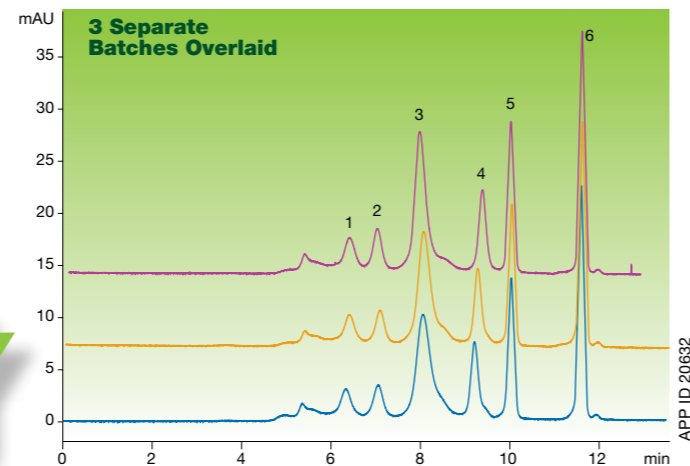
How does your current SEC column compare?
www.phenomenex.com/Yarra



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 Phosphate in Water pH 6.8 + 0.025 % Na₂S
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

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

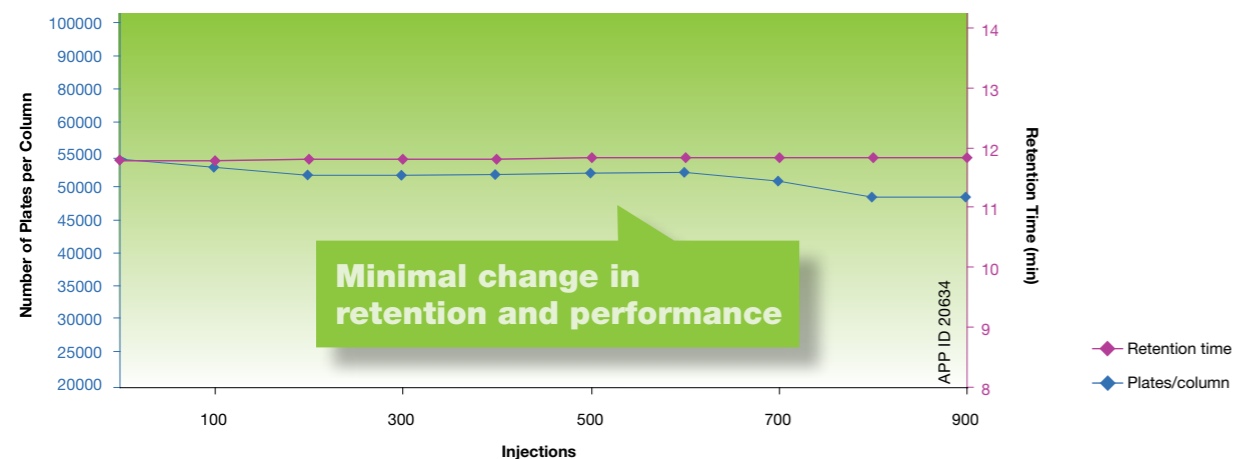


Robust Columns with Long Lifetimes to Get the Most Out of Your Investment



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 % Na₃
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

Increase Your Column Lifetime.

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

www.phenomenex.com/SecurityGuardHPLC

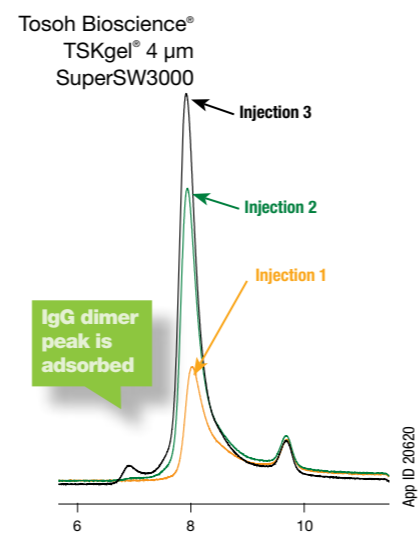
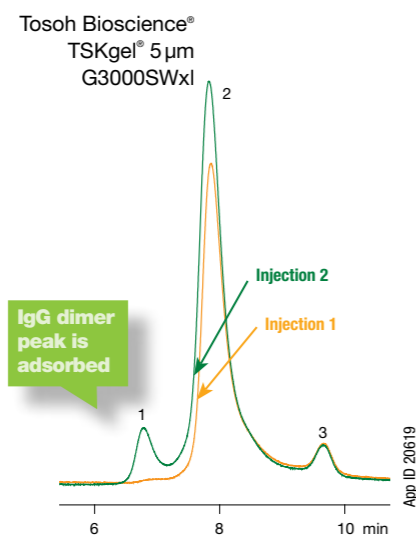
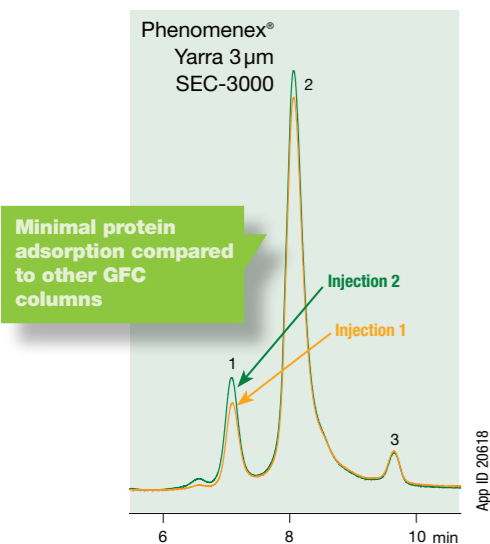


Extreme Surface Inertness for Accurate and Confident Recoveries



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



Conditions for all columns (except where noted):

Columns: Yarra 3 µm SEC-3000
 TSKgel 5 µm G3000SWxl
 TSKgel 4 µm SuperSW3000
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
 0.35 mL/min (SuperSW3000)
Temperature: Ambient
Detection: UV @ 280 nm
Sample: 1. IgG Dimer
 2. IgG Monomer
 3. Albumin

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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
- Antibodies
- PEGylated IgG



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

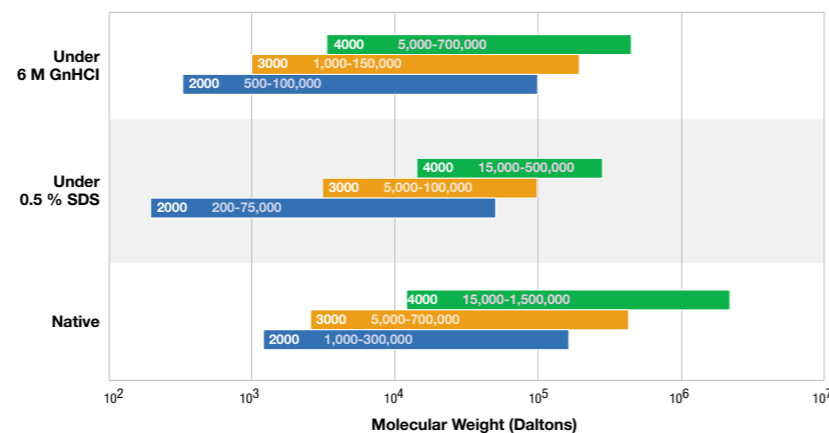
Selecting the Right Yarra™ Column for Your Application



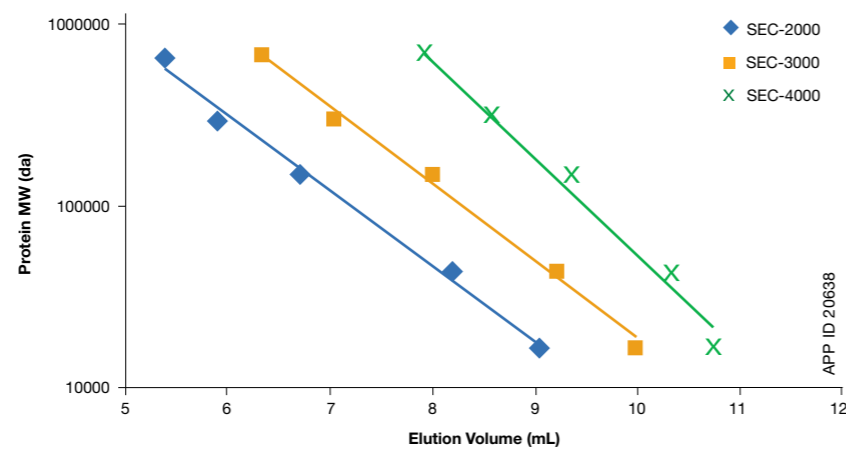
It is useful to employ the differences in selectivity between Yarra SEC-2000, SEC-3000 and SEC-4000 columns. For molecular weight ranges where overlap occurs, we suggest screening at least two phases to identify the optimal selectivity for your separation.

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



APP ID 20638

Not Sure What Column You Need?

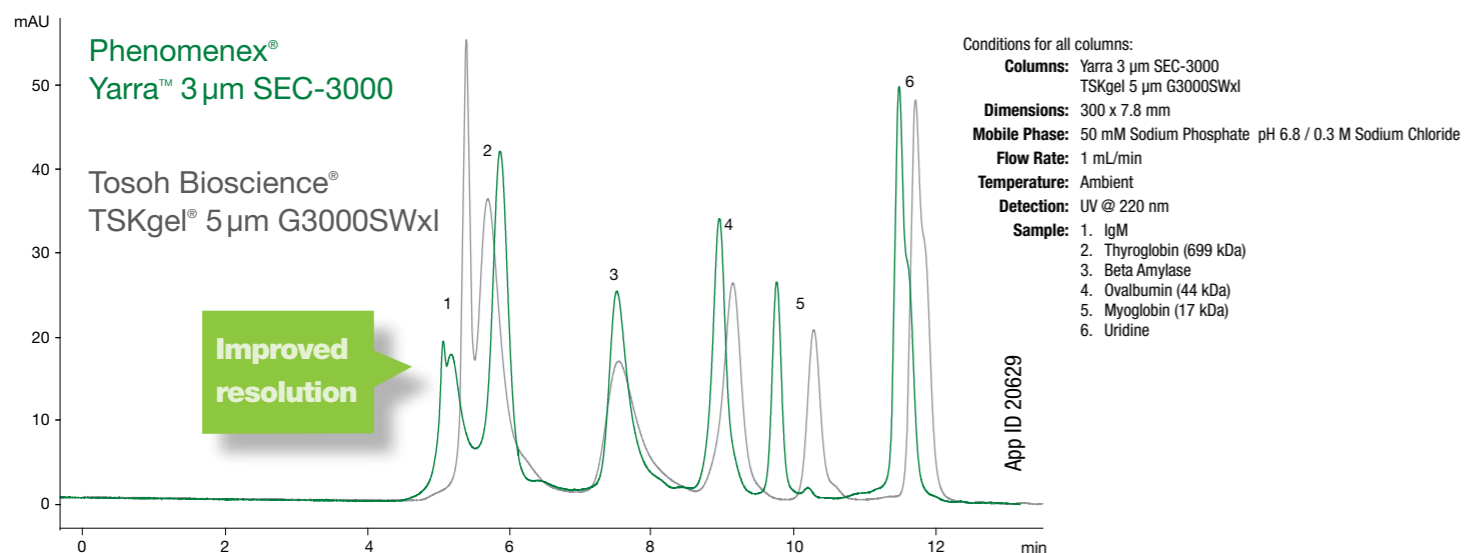
Email us at Yarra@phenomenex.com, and we'll help you right away!

We Stand Behind Yarra's Performance



Set Yarra side-by-side with your current size exclusion column. We GUARANTEE* similar or better performance, or receive a FULL REFUND.

Compare Yarra's Resolving Power to TSKgel's



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, return the column with comparative data within 45 days for a FULL REFUND.

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“ I was very impressed with the Yarra 3µm 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

Yarra™ 3 μm SEC Columns (mm)

	Narrow Bore	Analytical	Analytical	SecurityGuard™ Cartridges (mm)
Phases	300 x 4.6	150 x 7.8	300 x 7.8	4 x 3.0* /10 pk
Yarra 3 μm SEC-2000	00H-4512-E0	00F-4512-K0	00H-4512-K0	AJ0-4487
Yarra 3 μm SEC-3000	00H-4513-E0	00F-4513-K0	00H-4513-K0	AJ0-4488
Yarra 3 μm SEC-4000	00H-4514-E0	–	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	1,700
Typical Backpressure (psi)	1,300	1,300	1,000
Efficiency (minimum number of theoretical plates, 300 x 7.8)	48,000	48,000	38,000
Max. Flow Rate (mL/min)	1.5	1.5	1.2

Terms and Conditions
Subject to Phenomenex Standard Terms and Conditions which may be viewed at <http://www.phenomenex.com/TermsAndConditions>.

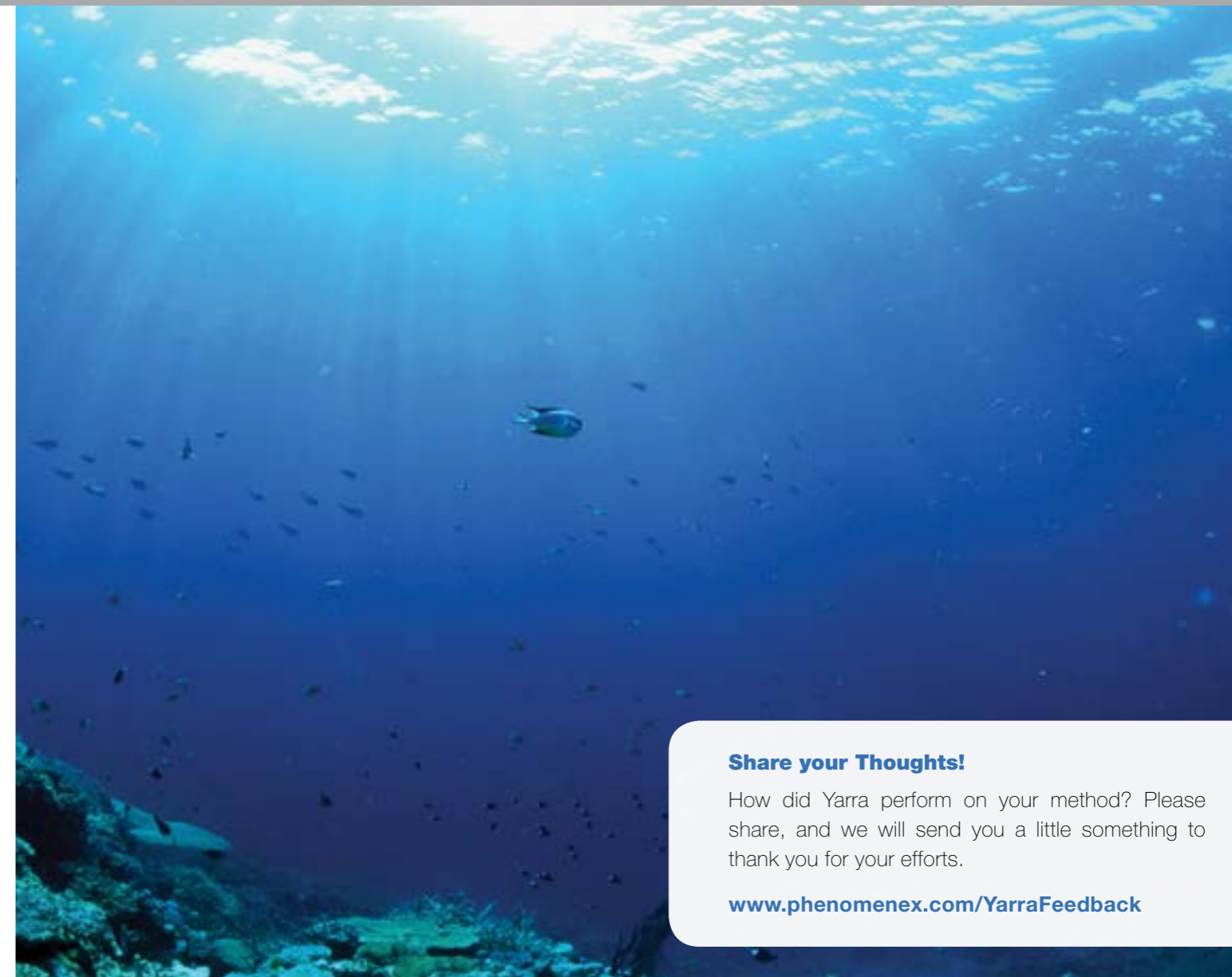
Trademarks
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Disclaimer
Phenomenex is in no way affiliated with Tosoh Corporation. Comparative separations may not be representative of all applications.

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

The opinions stated herein are solely those of the speaker and not necessarily those of any company or organization.

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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



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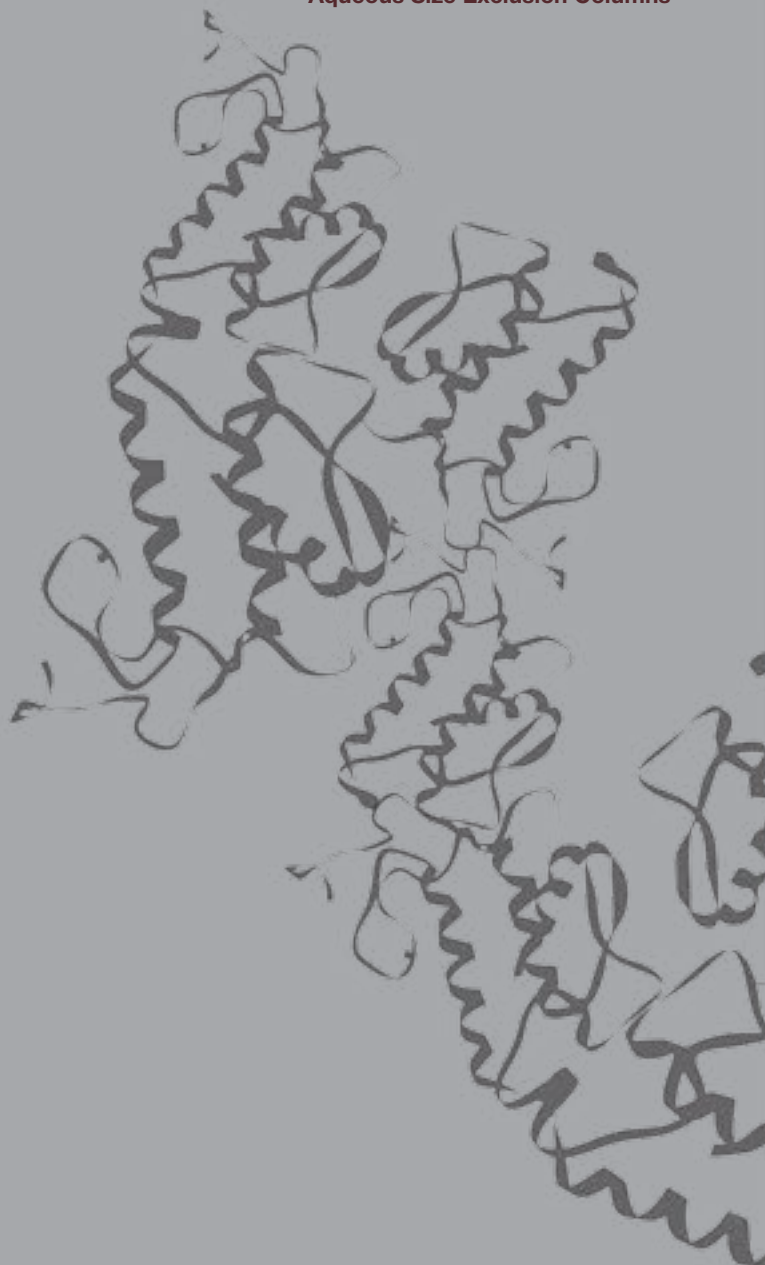
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