

Protein Purification Workflow



- High quality, resolution, and capacity
- Ideal workflow solutions
- Tagged protein purification
- Antibody purification

Bio-Rad's High-Performance Columns for Antibody and Tagged Protein Purifications

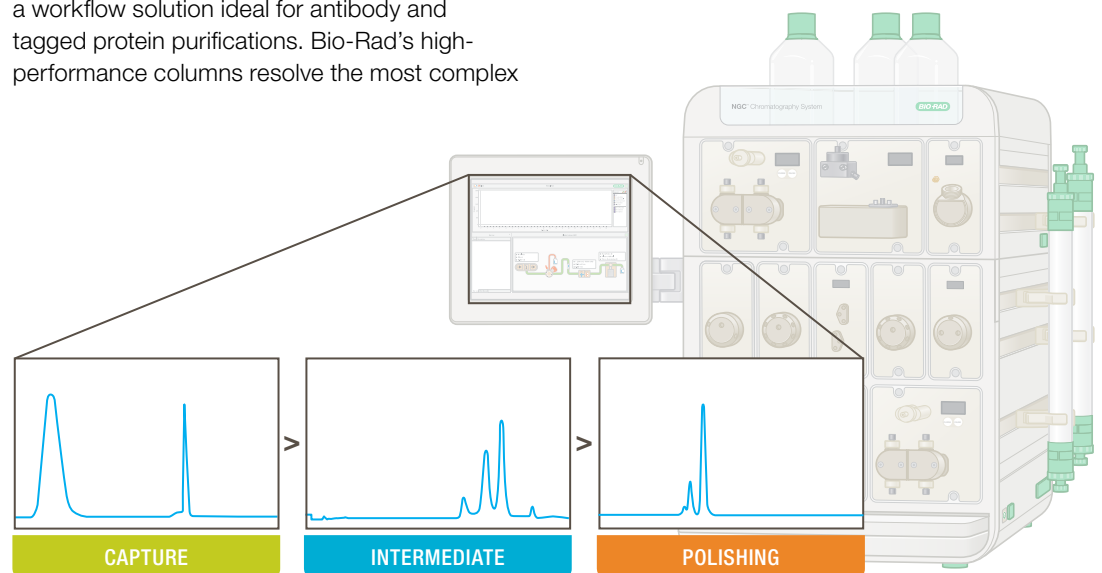
ENrich™ Q and S
ENrich SEC 70 and 650
UNOsphere SUPrA™ rProtein A

Nuvia™ IMAC
Profinity™ GST
Profinity eXact™

CHT™ and CFT™
Bio-Gel® P-6

Bio-Rad's suite of high-performance chromatography columns is designed for high-resolution laboratory scale protein purification, offering fast, high-quality, and reproducible results. These high-resolution and high-capacity columns can be used sequentially to provide a workflow solution ideal for antibody and tagged protein purifications. Bio-Rad's high-performance columns resolve the most complex

and challenging protein purifications, resulting in highly purified target proteins. This suite of Bio-Rad columns is designed to work on low- to medium-pressure chromatography systems including Bio-Rad's NGC™ System.



BIO-RAD

TAGGED PROTEIN PURIFICATION WORKFLOW SOLUTIONS

Highly pure protein products are obtained when using high-performance Nuvia and Profinity affinity columns for the first step purification of tagged proteins. Nuvia and Profinity affinity columns provide fast, easy, and reproducible purifications of tagged proteins. Using high-performance ENrich ion exchange and/or size exclusion columns for subsequent steps of a tagged protein purification workflow consistently provides proteins of the highest purity.

CAPTURE

- Nuvia IMAC Nickel-Charged Columns provide fast, reproducible purification of highly pure histidine-tagged proteins (Figure 1)
- Profinity GST Columns conveniently provide exceptional purity of proteins tagged with GST
- Profinity eXact Columns provide tag-free proteins by employing a convenient, self-cleaving tag sequence

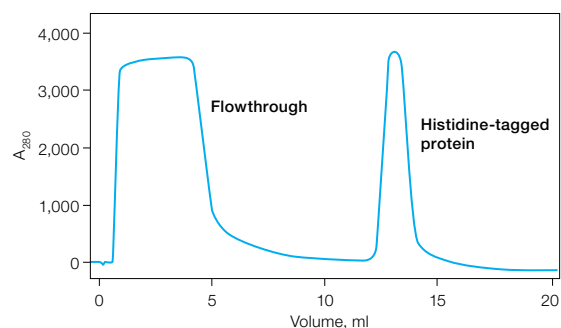


Fig. 1. The Nuvia IMAC Column provides highly purified products in short separation times.

DESALTING

- Bio-Scale™ Mini Bio-Gel® P-6 Columns are ideal for desalting purified tagged proteins

INTERMEDIATE

- ENrich Q and S high-resolution, 10 μm particle size, ion exchange columns can be used as a second purification step to provide higher resolution and purity of isolated tagged proteins (Figure 2)

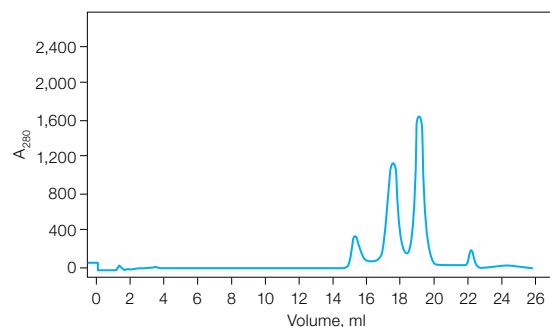


Fig. 2. The ENrich Q Column provides high-resolution separation of several proteins.

POLISHING

- ENrich SEC 70 and 650 high-resolution, 10 μm particle size, size exclusion columns are used for an additional step of aggregate, dimer, and trimer removal or purity analysis (Figure 3)

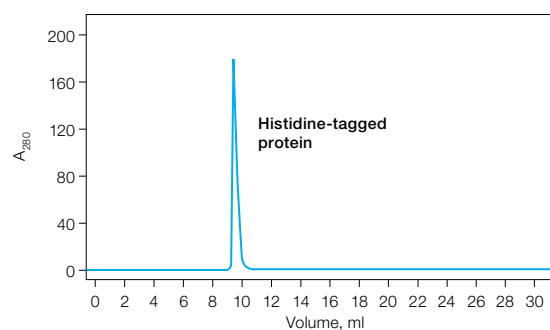


Fig. 3. The ENrich SEC 70 Column provides purity analysis of the purified protein sample.

ANTIBODY PURIFICATION WORKFLOW SOLUTIONS

Bio-Rad's high-resolution, high-performance preparative columns are ideal for the multi-step antibody chromatography purification workflow. Exceptional high-performance columns are available for each step of this workflow, and when used together in sequential purifications, these high-performance columns can resolve the most complex and challenging antibody purifications to provide antibodies of the highest purity.

CAPTURE

- UNOsphere SUPra rProtein A high-capacity columns provide monoclonal antibodies of the highest purity and are ideal for the first step purification of monoclonal and polyclonal antibodies (Figure 4)

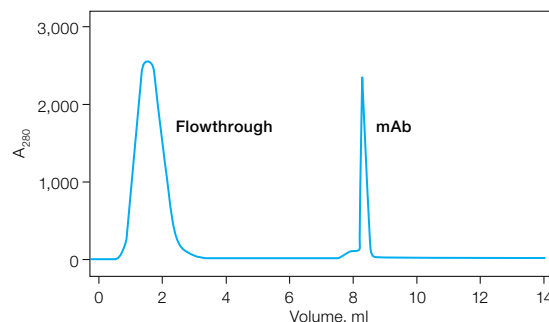


Fig. 4. The UNOsphere SUPra rProtein A Column provides high capacity and peak efficiency for the purification of monoclonal antibodies.

SECONDARY PURIFICATION AND POLISHING

Further purification of an antibody can be achieved using one or more of Bio-Rad's high-performance chromatography columns for the removal of biomolecules and contaminants as listed below:

Host Cell Proteins/ Antibody Variants	Aggregates	Protein A	DNA, Endotoxins
ENrich Q ENrich S CHT CFT	ENrich SEC CHT CFT	ENrich S CHT CFT	ENrich Q CHT CFT

- ENrich Q and S high-resolution, 10 μ m particle size, ion exchange columns remove host cell proteins and variants, as well as protein A and contaminating DNA, providing a highly pure target antibody
- CHT and CFT Columns provide unparalleled resolution of antibodies with the unique capability to remove protein A, endotoxins, nucleic acids, and aggregates (Figure 5)
- ENrich SEC 650 high-resolution, 10 μ m particle size, size exclusion columns are ideal for the removal of dimers, trimers, and other aggregates and are typically used as a final purification step (Figure 6)

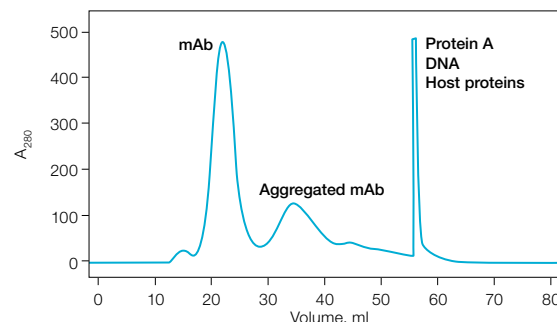


Fig. 5. The CHT Column provides the unique capability of purifying antibodies from aggregates, protein A, endotoxins, and nucleic acids.

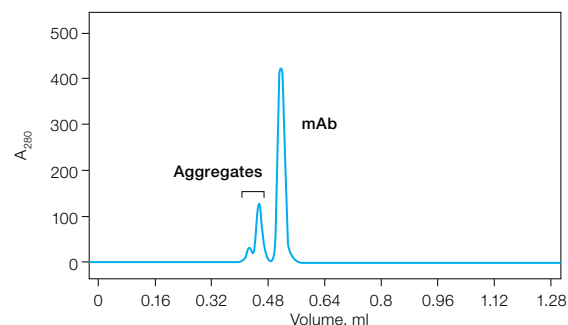


Fig. 6. The high-resolution capacity of the ENrich 650 Column allows the separation of a monoclonal antibody from its aggregates.

Ordering Information

Catalog #	Description	Mode of Separation	Column Volume, ml	Column Dimensions (W x L), mm
ENrich High-Resolution Ion Exchange Columns				
780-0001	ENrich Q 5 x 50 Column	Strong anion exchange	1	5 x 50
780-0021	ENrich S 5 x 50 Column	Strong cation exchange	1	5 x 50
ENrich High-Resolution Size Exclusion Columns				
780-1070	ENrich 70 10 x 300 Column	Size exclusion	24	10 x 300
780-1650	ENrich 650 10 x 300 Column	Size exclusion	24	10 x 300
Bio-Scale CHT Type I Columns				
751-0021	Bio-Scale CHT2-I Column	Mixed mode	2	7 x 52
751-0023	Bio-Scale CHT5-I Column	Mixed mode	5	10 x 64
751-0025	Bio-Scale CHT10-I Column	Mixed mode	10	12 x 88
751-0027	Bio-Scale CHT20-I Column	Mixed mode	20	15 x 113
Foresight™ UNOsphere SUPra™ Protein A Columns				
732-4729	Foresight UNOsphere SUPra Column	Affinity	1	8 x 20
732-4749	Foresight UNOsphere SUPra Column	Affinity	5	8 x 100

Description	Mode of Separation	Catalog #			
		1 x 1 ml	1 x 5 ml	5 x 1 ml	5 x 5 ml
Prepacked Bio-Scale Mini Cartridges					
UNOsphere SUPra rProtein A Resin	Affinity	732-4200	732-4202	732-4201	
Nuvia IMAC Ni-Charged Resin	Affinity		780-0811		780-0812
Profinity GST Resin	Affinity		732-4622	732-4620	732-4624
CHT Type I, 40 µm Resin	Mixed mode		732-4322		732-4324
CHT Type II, 40 µm Resin	Mixed mode		732-4332		732-4334
CFT Type II, 40 µm Resin	Mixed mode		732-4405		732-4406
Description	Mode of Separation	Pack of 1	Pack of 5		
Bio-Scale Mini Bio-Gel P Desalting Cartridges					
Bio-Scale Mini Bio-Gel P-6 Desalting Cartridges, 5 ml	Size exclusion	732-4502			
Bio-Scale Mini Bio-Gel P-6 Desalting Cartridges, 10 ml	Size exclusion		732-5304		
Bio-Scale Mini Bio-Gel P-6 Desalting Cartridges, 50 ml	Size exclusion	732-5312	732-5314		

Description	Mode of Separation	Column, 10 x 0.1 ml	Cartridge, 1 x 5 ml	Cartridge, 2 x 1 ml	Cartridge, 4 x 1 ml
Profinity eXact Column and Cartridges	Affinity	156-3007	732-4648	732-4646	732-4647

For More Information

Bio-Scale Ceramic Hydroxyapatite Type I Columns. Bio-Rad Bulletin 1929.

Bio-Scale Mini Cartridges. Bio-Rad Bulletin 5584.

CFT Ceramic Fluoroapatite Media. Bio-Rad Bulletin 3111.

CHT Ceramic Hydroxyapatite. Bio-Rad Bulletin 1842.

ENrich High Resolution Protein Purification Columns. Bio-Rad Bulletin 6395.

How CHT Ceramic Hydroxyapatite Works. Bio-Rad Bulletin 5709.

Monoclonal Antibody Purification Using UNOsphere SUPra Media.

Bio-Rad Bulletin 5728.

Premade Buffer Kits, Media, and Prepacked Cartridges for Affinity Purification.

Bio-Rad Bulletin 5925.

Profinity eXact Purification Methods on the Profinia System. Bio-Rad Bulletin 5742.

UNOsphere SUPra Affinity Chromatography Media. Bio-Rad Bulletin 5729.

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**Bio-Rad
Laboratories, Inc.**

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