

Affinity Purification



**Profinia™**  
Protein Purification System



Purify your samples. Simplify your life.

**BIO-RAD**

# Purify your samples. Simplify your life.

Discovering the relationship between protein structure and biological function continues to be a main focus of biological research worldwide. Because it provides highly specific results, affinity chromatography is a preferred technique of researchers engaged in purifying recombinant tagged proteins for further study. The Profinia protein purification system brings unprecedented speed and simplicity to the practice of affinity chromatography, and creates a push-button alternative to lengthy manual methods of purification. The Profinia instrument is preprogrammed with purification methods that are optimized to work with prepackaged buffer and cartridge kits for fast, easy, and reproducible results.

## Key Features

- **Preprogrammed methods** — work with prepackaged reagent kits to automate common protocols and optimize reproducibility
- **Simple setup and installation** — components are designed to work together to eliminate time spent on method development, troubleshooting, and reagent preparation
- **Self-cleaning** — automatic cleaning protocols and reagents are part of the methods and buffer kits to help maintain reliable performance with minimal user maintenance
- **Ready to use** — preset methods assist with successful purifications by any user in the laboratory



**Buffer compartment**  
Numbered bottles match designated positions

**Touch-screen user interface**  
Enables selection from a variety of preprogrammed methods and run options

**Sample compartment**  
Allows running two samples in series

**Cartridge compartment**  
Allows automated affinity and desalting purifications

**Stylus and USB flash drive slots**  
Facilitates export of run data

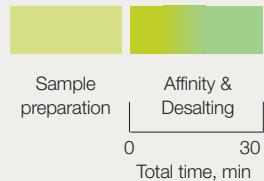
**Fraction collection compartment**  
Purified protein is easily accessible

**Waste collection bottle**  
Waste is visible and contained

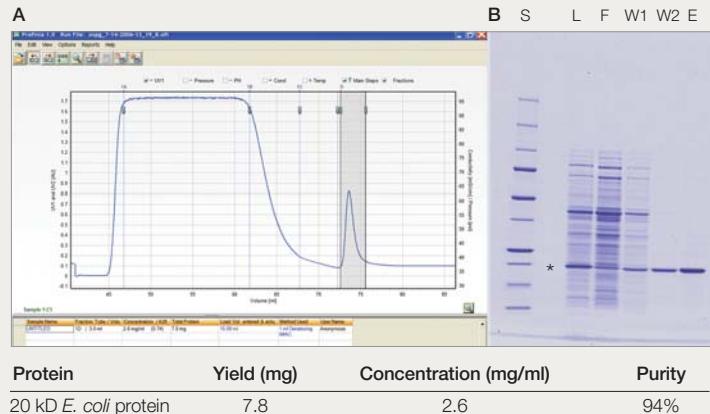
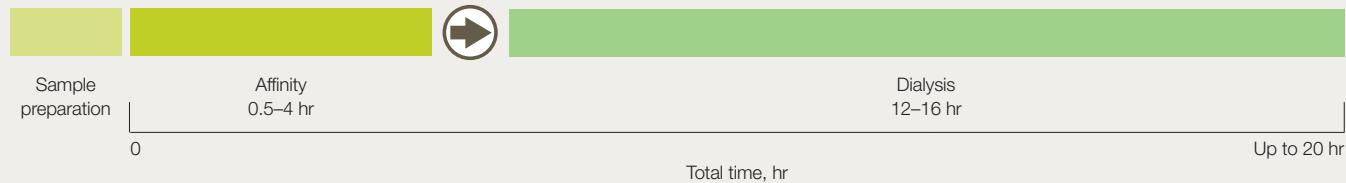
**Diluent bottle (not shown)**  
Instrument automatically dilutes preformulated buffers

The Profinia protein purification system outpaces conventional purification methods such as gravity-flow columns. No manual purification technique can match the reliability, reproducibility, and speed of the Profinia system.

#### Automated Purification: Profinia System, Native IMAC + Desalting



#### Manual Purification: Gravity Flow, Native IMAC



**Purification of a 20 kD *E. coli* His-tagged protein.** **A**, the protein was purified with the Profinia system's denaturing IMAC method and purification kit, and recovered within 30 min. **B**, its purity was assessed on an SDS-PAGE gel. Left to right, lanes loaded with Precision Plus Protein™ standards (S), lysate (L), flowthrough (F), and wash 1 (W1), wash 2 (W2), and elution (E) fractions. Asterisk indicates position of tagged protein.

#### Proteins Purified Under Typical Run Conditions

MW (kD)	Derivation	Protein Characteristics		Expression and Purification Results			
		Function/Description		Expression	Purification Conditions	Yield (mg)	Gel Purity (%)
<b>His-Tagged Proteins, 1 ml Cartridge</b>							
75	<i>Escherichia coli</i>	Proprietary		High	Native IMAC	7.5	98
37	<i>Bacillus subtilis</i>	Putative asparaginyl hydroxylase ( <i>yxbC</i> product)		High	Denaturing	5.0	90
32	<i>Saccharomyces cerevisiae</i>	NGG1p interacting factor (Nif3)		High	Native IMAC	6.0	90
28	<i>Aequorea victoria</i>	Green Fluorescent Protein (GFP)		High	Denaturing	10.1	95
17	<i>Agrobacterium tumefaciens</i>	Unknown		High	Native IMAC	5.5	98
10	<i>Saccharomyces cerevisiae</i>	RNA processing protein (Smc1p)		Medium	Native IMAC	1.4	95
<b>GST-Tagged Proteins, 1 ml Cartridge</b>							
101	<i>Escherichia coli</i>	Proprietary		High	Native IMAC	10.0	88
76	<i>Escherichia coli</i>	Proprietary		High	Native IMAC	3.7	82
44	<i>Homo sapiens</i>	Endoribonuclease, inhibits translation		Low	Native IMAC	5.5	82
26	<i>Schistosoma japonicum</i>	Glutathione S-transferase (GST)		Medium	Native IMAC	3.4	95

The Profinia instrument has a large touch screen that displays clear instructions and graphics, eliminating the need for training or special expertise. Any user can run successful affinity purifications by following illustrated setup routines for buffers, cartridges, samples, and fraction tubes.

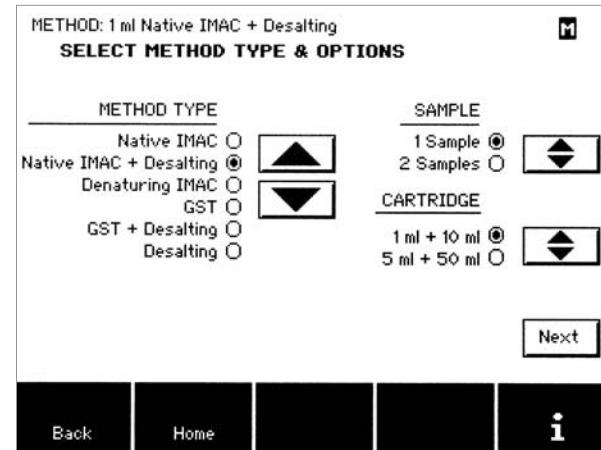
- Dynamic screens show components and volumes required for the method selected without the need for calculations or lookup tables
- Context-specific help screens give answers and step-by-step guidance
- Methods can be customized by user-defined changes to accommodate variations in affinity procedures and techniques

#### Data Display

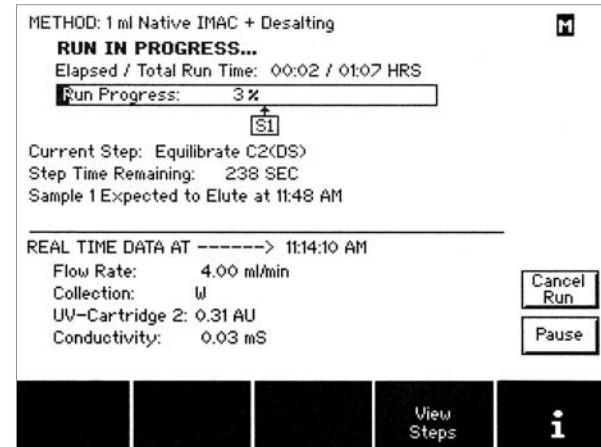
The run summary screen and the progress bar show elapsed time and real clock time at a glance; the sample is eluted without the need to count drops or catch the eluted protein. When a run is completed, protein yield and concentration data are reported in tabular form, making subsequent experiments faster and more efficient.

#### Self-Cleaning and Low Maintenance

Bio-Rad (preprogrammed) methods and customized methods include a self-cleaning protocol in each run that automatically maintains the internal instrument components and prepares the system lines and cartridges for future purifications. Touch-screen instructions guide the cleaning protocols when purification methods are changed or the instrument is shut down, thereby ensuring that each user leaves the system in optimal condition and ready to begin a new purification run.



The method selection screen allows the user to choose a preprogrammed method, the number of samples, and the size and number of cartridges to be used.



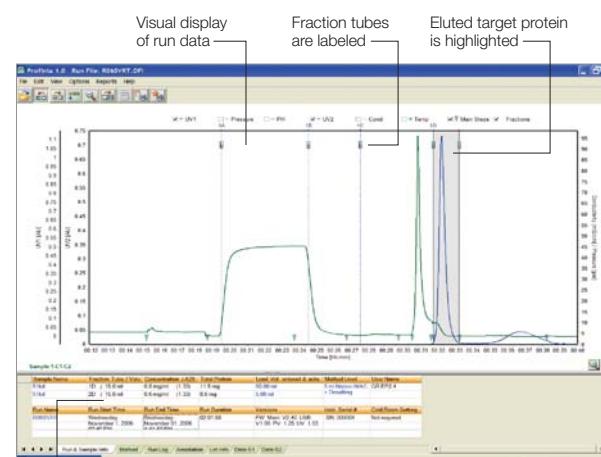
The run in progress screen displays detailed information on expected sample elution time, purification step, and run conditions.

Profinia software allows users to view purification data, perform basic analyses, and create reports. Run data can be transferred to a PC via a USB portable memory device, or the Profinia instrument can be connected to a PC running Profinia software for real-time observation and data collection.

Profinia software provides:

- Color chromatograms with UV, conductivity, fraction marks, and other functions
- Estimated yield, concentration, and run data in results table
- Overlays of multiple runs for comparison of protein characteristics
- Run reports in a customizable format for presentations and record keeping

Note: Optional Profinia software is used to view data and create reports; it is not used to modify methods or to operate the Profinia instrument.



Results give data on yield, concentration, method used, and more. Native IMAC purification run data are displayed using Profinia software. The UV trace of the eluted and desalted protein peak is automatically highlighted, while the results table appears below.

A complete line of premade and optimally formulated consumables is available for use with the Profinia system for immobilized metal affinity chromatography (IMAC), glutathione S-transferase (GST) affinity-tagged protein purification, and desalting applications. Kits and components available for the Profinia system include:

- Purification and buffer kits
- Bio-Scale™ Mini cartridges prepacked with Profinity™ IMAC, Profinity GST, or Bio-Gel® P-6 desalting media
- Application-specific purification buffers, including those for histidine (His)-tagged proteins, GST-tagged proteins, general desalting, and buffer exchange applications
- Bacterial lysis reagents
- His and GST antibody detection reagents

Profinia purification kits contain purification cartridges (affinity and desalting) in addition to a complete set of buffers, solutions, and reagents (urea and glutathione). System setup and initial purification is facilitated with Profinia starter kits, which contain one set of Bio-Scale Mini cartridges, application-specific buffers, and reagents but are also supplied with a control protein lysate. Finally, Profinia buffer kits are the appropriate choice for researchers who require only additional buffers and cleaning and storage reagents. All reagents are made with chromatography grade solutions and have been prefiltered through a 0.2 µm filter to ensure optimal results. Consult the selection table below to choose the consumables to suit your purification needs.



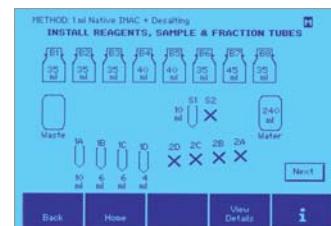
It's easy to set up your experiment, and no guesswork means more time saved.



1. The Profinia system includes buffer bottle lids for placement on each buffer bottle to prevent dust and other contaminants from entering the system.



2. The position number on the bottle corresponds to the position number on the Profinia instrument buffer compartment.



3. The touch screen guides you through each step with clear instructions and illustrations.

### Profinia Purification and Buffer Kit Selection Guide

Control Lysate	Buffer Sets				Powdered Reagents		Bio-Scale Mini Cartridges*	
	Lysis and Wash	Desalting	Cleaning and Storage		Urea	Glutathione	Affinity	Desalting
<b>IMAC Kits</b>								
Native IMAC starter kit	•		•	•			•	•
Native IMAC purification kits	•		•	•			•	•
Denaturing IMAC purification kits	•			•	•		•	
Native IMAC buffer kit	•	•	•	•				
Denaturing IMAC buffer kit	•			•	•			
<b>GST Kits</b>								
GST starter kit	•		•	•	•	•	•	•
GST purification kits	•		•	•	•	•	•	•
GST buffer kit	•	•		•	•	•		
<b>Desalting Kits</b>								
Desalting purification kits			•	•				•
Desalting buffer kit		•	•	•	•			

\* Denaturing IMAC kits do not contain desalting cartridges or desalting buffer; dialysis is the recommended method for desalting, buffer exchange, and renaturing of proteins purified under denaturing conditions.

## Ordering Information

Catalog #	Description	Catalog #	Description
<b>Profinia Instruments</b>			
620-1004	<b>Profinia Instrument With Accessory Kit</b> , 100–240 V, includes cleaning tray, inline filter pack, 2 x 50 ml sample lids, 2 x 15 ml sample lids, bottle starter pack, waste/diluent bottle set	620-0237	<b>Profinia Denaturing IMAC Purification Kit</b> , 5 ml, includes 2 Profinia denaturing IMAC buffer kits, 2 x 1 ml IMAC cartridges
620-1005	<b>Profinia Instrument With Accessory Kit and Native IMAC Starter Kit</b> , 100–240 V, includes cleaning tray, inline filter pack, 2 x 50 ml sample lids, 2 x 15 ml sample lids, bottle starter pack, waste/diluent bottle set, Profinia native IMAC buffer kit, 1 x 1 ml IMAC and 1 x 10 ml desalting cartridge, <i>E. coli</i> lysate	620-0226	<b>Profinia GST Purification Kit</b> , 1 ml, includes Profinia GST buffer kit, 2 x 1 ml GST and 2 x 10 ml desalting cartridges
620-1006	<b>Profinia Instrument With Accessory Kit and GST Starter Kit</b> , 100–240 V, includes cleaning tray, inline filter pack, 2 x 50 ml sample lids, 2 x 15 ml sample lids, bottle starter pack, waste/diluent bottle set, Profinia GST buffer kit, 1 x 1 ml GST and 1 x 10 ml desalting cartridge, <i>E. coli</i> lysate, glutathione reagent	620-0236	<b>Profinia GST Purification Kit</b> , 5 ml, includes 2 Profinia GST buffer kits, 1 x 5 ml GST and 1 x 50 ml desalting cartridge
<b>Profinia Systems</b>			
620-1009	<b>Profinia Protein Purification System</b> , 100–240 V, includes same as 620-1004 with Profinia software	620-0228	<b>Profinia Desalting Purification Kit</b> , 10 ml, includes Profinia desalting buffer kit, 2 x 10 ml desalting cartridges
620-1010	<b>Profinia Protein Purification System With Native IMAC Starter Kit</b> , 100–240 V, includes same as 620-1005 with Profinia software	620-0238	<b>Profinia Desalting Purification Kit</b> , 50 ml, includes 2 Profinia desalting buffer kits, 1 x 50 ml desalting cartridge
620-1011	<b>Profinia Protein Purification System With GST Starter Kit</b> , 100–240 V, includes same as 620-1006 with Profinia software	<b>Profinia Buffer Kits*</b>	
<b>Profinia Systems With Computers</b>			
620-1014	<b>Profinia Protein Purification System With Computer</b> , 100–240 V, includes same as 620-1009 with computer	620-0221	<b>Profinia Native IMAC Buffer Kit</b> , includes purification buffers, cleaning and storage solutions
620-1015	<b>Profinia Protein Purification System With Computer and Native IMAC Starter Kit</b> , 100–240 V, includes same as 620-1010 with computer	620-0222	<b>Profinia Denaturing IMAC Buffer Kit</b> , includes purification buffers, cleaning and storage solutions, urea reagent
620-1016	<b>Profinia Protein Purification System With Computer and GST Starter Kit</b> , 100–240 V, includes same as 620-1011 with computer	620-0223	<b>Profinia GST Buffer Kit</b> , includes purification buffers, cleaning and storage solutions, glutathione reagent
<b>Profinia Accessories</b>			
620-0010	<b>Profinia Software</b> , includes USB cable	620-0224	<b>Profinia Desalting Buffer Kit</b> , includes purification buffers, cleaning and storage solutions
620-0401	<b>Profinia Instrument Cooling Accessory</b> , includes 2 cooling units	<b>Profinia Starter Kits</b>	
620-0402	<b>Profinia Desalting Sample Loop</b> , 2 ml	620-0229	<b>Profinia Native IMAC Starter Kit</b> , includes Profinia native IMAC buffer kit, 1 x 1 ml IMAC and 1 x 10 ml desalting cartridge, <i>E. coli</i> lysate
620-0403	<b>Profinia Desalting Sample Loop</b> , 10 ml	620-0230	<b>Profinia GST Starter Kit</b> , includes Profinia GST buffer kit, 1 x 1 ml GST and 1 x 10 ml desalting cartridge, <i>E. coli</i> lysate, glutathione reagent
620-0405	<b>Profinia Sipper Tube Replacement Kit</b> , includes 10 pieces of precut tubing	<b>Profinia Reagents</b>	
620-0410	<b>Profinia Instrument Accessory Kit</b> , includes cleaning tray, inline filter pack, 2 x 50 ml sample lids, 2 x 15 ml sample lids, bottle starter pack, waste/diluent bottle set	620-0220	<b>Profinia Bacterial Lysis/Extraction Reagent</b>
620-0231	<b>Bottle Starter Pack</b> , includes 4 x 125 ml bottles, 4 x 250 ml bottles, 8 buffer bottle lids	620-0203	<b>Profinia His Antibody</b>
620-0232	<b>Waste/Diluent Bottle Set</b> , includes 2 graduated bottles with caps, tubing	620-0204	<b>Profinia GST Antibody</b>
620-0411	<b>Profinia pH Monitor Kit</b> , includes pH electrode, flow cell, mounting accessories	620-0233	<b>Profinia Control Lysate</b>
<b>Profinia Purification Kits</b>		620-0200	<b>Profinia Small Urea Pack</b> , 2 x 45 g
620-0225	<b>Profinia Native IMAC Purification Kit</b> , 1 ml, includes Profinia native IMAC buffer kit, 2 x 1 ml IMAC and 2 x 10 ml desalting cartridges	620-0201	<b>Profinia Large Urea Pack</b> , 2 x 90 g
620-0235	<b>Profinia Native IMAC Purification Kit</b> , 5 ml, includes 2 Profinia native IMAC buffer kits, 1 x 5 ml IMAC and 1 x 50 ml desalting cartridge	620-0202	<b>Profinia Glutathione Pack</b> , 1.23 g
620-0227	<b>Profinia Denaturing IMAC Purification Kit</b> , 1 ml, includes Profinia denaturing IMAC buffer kit, 2 x 1 ml IMAC cartridges	<b>Bio-Scale Mini Affinity and Desalting Cartridges</b>	
		732-4610	<b>Bio-Scale Mini Profinity IMAC Cartridges</b> , 5 x 1 ml
		732-4612	<b>Bio-Scale Mini Profinity IMAC Cartridge</b> , 1 x 5 ml
		732-4614	<b>Bio-Scale Mini Profinity IMAC Cartridges</b> , 5 x 5 ml
		732-4620	<b>Bio-Scale Mini Profinity GST Cartridges</b> , 5 x 1 ml
		732-4622	<b>Bio-Scale Mini Profinity GST Cartridge</b> , 1 x 5 ml
		732-4624	<b>Bio-Scale Mini Profinity GST Cartridges</b> , 5 x 5 ml
		732-5304	<b>Bio-Scale Mini Bio-Gel P-6 Desalting Cartridges</b> , 5 x 10 ml
		732-5312	<b>Bio-Scale Mini Bio-Gel P-6 Desalting Cartridge</b> , 1 x 50 ml
		732-5314	<b>Bio-Scale Mini Bio-Gel P-6 Desalting Cartridges</b> , 5 x 50 ml

\* Each buffer kit includes sufficient buffers, solutions, and reagents for 10 applications.

Purification and preparation of fusion proteins and affinity peptides containing at least two adjacent histidine residues may require a license under US patent 5,284,933 and US patent 5,310,663, including foreign patents (assignee: Hoffmann-La Roche).

Expression and purification of GST fusion proteins may require a license under US patent 5,654,176 (assignee: Chemicon International).



**Bio-Rad  
Laboratories, Inc.**

Life Science  
Group

Web site [www.bio-rad.com](http://www.bio-rad.com) USA 800 4BIORAD Australia 61 02 9914 2800 Austria 01 877 89 01 Belgium 09 385 55 11 Brazil 55 21 3237 9400 Canada 905 712 2771 China 86 21 6426 0808 Czech Republic 420 241 430 532 Denmark 44 52 10 00 Finland 09 804 22 00 France 01 47 95 69 65 Germany 089 318 84 0 Greece 30 210 777 4396 Hong Kong 852 2789 3300 Hungary 36 1 455 8800 India 91 124 4029300 Israel 03 963 6050 Italy 39 02 216091 Japan 03 5811 6270 Korea 82 2 3473 4460 Mexico 52 555 488 7670 The Netherlands 0318 540666 New Zealand 0508 805 500 Norway 23 38 41 30 Poland 48 22 331 99 99 Portugal 351 21 472 7700 Russia 7 495 721 14 04 Singapore 65 6415 3188 South Africa 27 861 246 723 Spain 34 91 590 5200 Sweden 08 555 12700 Switzerland 061 717 95 55 Taiwan 886 2 2578 7189 United Kingdom 020 8328 2000